



# UNITED STATES PATENT AND TRADEMARK OFFICE

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[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|------------|------------|---------------------|------------------|
| 16/536,103      | 08/04/2020 | 10735320   | K379-012001         | 6346             |

164 7590 07/15/2020  
KINNEY & LANGE, P.A.  
312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002

## 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 0 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):

Ping Pan, San Jose, CA;  
Global Innovation Aggregators LLC., Pasadena, CA;  
Richard D. Gitlin, Little Silver, NJ;

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](http://SelectUSA.gov).

# **PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

By fax, send to: (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)

**FILED VIA EFS-WEB**

164 7590 03/25/2020  
KINNEY & LANGE, P.A.  
312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002

|                 |                         |
|-----------------|-------------------------|
| Ian MacKinnon   | (Typed or printed name) |
| /Ian MacKinnon/ | (Signature)             |
| June 25, 2020   | (Date)                  |

|                 |             |                      |                     |                  |
|-----------------|-------------|----------------------|---------------------|------------------|
| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 16/536,103      | 08/08/2019  | Ping Pan             | K379-012001         | 6346             |

TITLE OF INVENTION: APPLICATION WIRE

|                |               |               |                     |                      |                  |            |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
| nonprovisional | UNDISCOUNTED  | \$1000        | \$0.00              | \$0.00               | \$1000           | 06/25/2020 |

|                   |          |                |
|-------------------|----------|----------------|
| EXAMINER          | ART UNIT | CLASS-SUBCLASS |
| RENNER, BRANDON M | 2478     | 370-235000     |

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 03-09 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 Kinney & Lange, P.A.

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

K.Mizra LLC

Los Angeles, California

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

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

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

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 11-0982

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

**NOTE:** Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

**NOTE:** If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

**NOTE:** Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

**NOTE:** This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Ian MacKinnon/

Date June 25, 2020

Typed or printed name Ian MacKinnon

Registration No. 34,660

## Electronic Patent Application Fee Transmittal

|                                                       |                                   |                 |               |                             |
|-------------------------------------------------------|-----------------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                            | 16536103                          |                 |               |                             |
| <b>Filing Date:</b>                                   | 08-Aug-2019                       |                 |               |                             |
| <b>Title of Invention:</b>                            | APPLICATION WIRE                  |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>           | Ping Pan                          |                 |               |                             |
| <b>Filer:</b>                                         | Ian David MacKinnon/Allison Bakke |                 |               |                             |
| <b>Attorney Docket Number:</b>                        | K379-012001                       |                 |               |                             |
| Filed as Large Entity                                 |                                   |                 |               |                             |
| <b>Filing Fees for    Utility under 35 USC 111(a)</b> |                                   |                 |               |                             |
| <b>Description</b>                                    | <b>Fee Code</b>                   | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                                  |                                   |                 |               |                             |
| <b>Pages:</b>                                         |                                   |                 |               |                             |
| <b>Claims:</b>                                        |                                   |                 |               |                             |
| <b>Miscellaneous-Filing:</b>                          |                                   |                 |               |                             |
| <b>Petition:</b>                                      |                                   |                 |               |                             |
| <b>Patent-Appeals-and-Interference:</b>               |                                   |                 |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>              |                                   |                 |               |                             |
| UTILITY APPL ISSUE FEE                                | 1501                              | 1               | 1000          | 1000                        |

| Description        | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|--------------------|----------|----------|--------|----------------------|
| Extension-of-Time: |          |          |        |                      |
| Miscellaneous:     |          |          |        |                      |
| Total in USD (\$)  |          |          |        | 1000                 |

## Electronic Acknowledgement Receipt

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>EFS ID:</b>                              | 39831037                    |
| <b>Application Number:</b>                  | 16536103                    |
| <b>International Application Number:</b>    |                             |
| <b>Confirmation Number:</b>                 | 6346                        |
| <b>Title of Invention:</b>                  | APPLICATION WIRE            |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                    |
| <b>Customer Number:</b>                     | 164                         |
| <b>Filer:</b>                               | Ian David MacKinnon         |
| <b>Filer Authorized By:</b>                 |                             |
| <b>Attorney Docket Number:</b>              | K379-012001                 |
| <b>Receipt Date:</b>                        | 25-JUN-2020                 |
| <b>Filing Date:</b>                         | 08-AUG-2019                 |
| <b>Time Stamp:</b>                          | 19:42:24                    |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a) |

### Payment information:

|                                          |                  |
|------------------------------------------|------------------|
| Submitted with Payment                   | yes              |
| Payment Type                             | DA               |
| Payment was successfully received in RAM | \$ 1000          |
| RAM confirmation Number                  | E202060J42569778 |
| Deposit Account                          | 110982           |
| Authorized User                          | Ian MacKinnon    |

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

37 CFR 1.21 (Miscellaneous fees and charges)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.19 (Document supply fees)  
37 CFR 1.17 (Patent application and reexamination processing fees)  
37 CFR 1.16 (National application filing, search, and examination fees)

## 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) | 2020-06-25_PART-B_K379-012001.pdf | 184550                                   | no               | 1                |
|                 |                             |                                   | 87907cc097678f0594ab15520ac83173580577dd |                  |                  |

### Warnings:

### Information:

|   |                      |              |                                          |    |   |
|---|----------------------|--------------|------------------------------------------|----|---|
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30234                                    | no | 2 |
|   |                      |              | 524d448e50d88552a89607dd308d726fc7c24048 |    |   |

### Warnings:

### Information:

|                                     |        |
|-------------------------------------|--------|
| <b>Total Files Size (in bytes):</b> | 214784 |
|-------------------------------------|--------|

**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

164 7590 03/25/2020  
KINNEY & LANGE, P.A.  
312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002

|                   |              |
|-------------------|--------------|
| EXAMINER          |              |
| RENNER, BRANDON M |              |
| ART UNIT          | PAPER NUMBER |

2478

DATE MAILED: 03/25/2020

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 16/536,103      | 08/08/2019  | Ping Pan             | K379-012001         | 6346             |

TITLE OF INVENTION: APPLICATION WIRE

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | UNDISCOUNTED  | \$1000        | \$0.00              | \$0.00               | \$1000           | 06/25/2020 |

**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 ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at [www.uspto.gov/PatentMaintenanceFees](http://www.uspto.gov/PatentMaintenanceFees).**

# PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

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

By fax, send to: (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)

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.

164 7590 03/25/2020  
KINNEY & LANGE, P.A.  
312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002

## 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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

|                         |
|-------------------------|
| (Typed or printed name) |
| (Signature)             |
| (Date)                  |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 16/536,103      | 08/08/2019  | Ping Pan             | K379-012001         | 6346             |

TITLE OF INVENTION: APPLICATION WIRE

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | UNDISCOUNTED  | \$1000        | \$0.00              | \$0.00               | \$1000           | 06/25/2020 |

| EXAMINER          | ART UNIT | CLASS-SUBCLASS |
|-------------------|----------|----------------|
| RENNER, BRANDON M | 2478     | 370-235000     |

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies \_\_\_\_\_

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

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. \_\_\_\_\_

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_



# UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
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Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.                                                              | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 16/536,103                                                                   | 08/08/2019  | Ping Pan             | K379-012001         | 6346             |
| 164                                                                          | 7590        | 03/25/2020           | EXAMINER            |                  |
| KINNEY & LANGE, P.A.<br>312 SOUTH THIRD STREET<br>MINNEAPOLIS, MN 55415-1002 |             |                      | RENNER, BRANDON M   |                  |
|                                                                              |             |                      | ART UNIT            | PAPER NUMBER     |
|                                                                              |             |                      | 2478                |                  |
| DATE MAILED: 03/25/2020                                                      |             |                      |                     |                  |

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

## OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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 30 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.

### 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) 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.

|                               |                                      |                                   |                                |
|-------------------------------|--------------------------------------|-----------------------------------|--------------------------------|
| <b>Notice of Allowability</b> | <b>Application No.</b><br>16/536,103 | <b>Applicant(s)</b><br>Pan et al. |                                |
|                               | <b>Examiner</b><br>BRANDON M RENNER  | <b>Art Unit</b><br>2478           | <b>AIA (FITF) Status</b><br>No |

**-- 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 amendment filed 3/9/2020.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

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 1-20. 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](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

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

**Certified copies:**

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. <input type="checkbox"/> Notice of References Cited (PTO-892)                                                  | 5. <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____.          | 6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material _____. | 7. <input type="checkbox"/> Other _____.                                             |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date. _____.                           |                                                                                      |

|                                                       |  |
|-------------------------------------------------------|--|
| /BRANDON M RENNER/<br>Primary Examiner, Art Unit 2478 |  |
|-------------------------------------------------------|--|

**DETAILED ACTION**

***Notice of Pre-AIA or AIA Status***

The present application is being examined under the pre-AIA first to invent provisions.

***Response to Amendment***

This communication is in response to the amendment filed 3/9/2020. The amendment has been entered and considered.

***Allowable Subject Matter***

Claims 1-20 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record, either alone or in combination, fails to teach or suggest identifying information from a flow based on an unencapsulated packet header or ingress stream, wherein the flows are mapped to pseudowires in a MPLS network based on stored information wherein the stored information indicates, for the sending device application, a mapping of the flow via a pseudowire and the data associated with the application is communicated via the pseudowire. These limitations in combination with the other limitations of the independent claims are not taught or suggested in the art of record and thus deemed allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should

preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

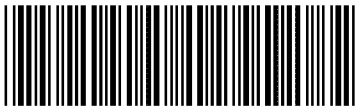
Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M RENNER whose telephone number is (571)270-3621. The examiner can normally be reached on Monday-Friday 7am-5pm EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick Ferris can be reached on (571)-272-3123. 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.

/BRANDON M RENNER/  
Primary Examiner, Art Unit 2478

|                                                                                                                  |                                              |                                                              |  |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------|--|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>16/536,103 | <b>Applicant(s)/Patent Under Reexamination</b><br>Pan et al. |  |
|                                                                                                                  | <b>Examiner</b><br>BRANDON M RENNER          | <b>Art Unit</b><br>2478                                      |  |

| CPC    |   |    |   |      |      |            |
|--------|---|----|---|------|------|------------|
| Symbol |   |    |   |      | Type | Version    |
| H04L   | / | 45 | / | 68   | F    | 2013-01-01 |
| H04L   | / | 45 | / | 00   | I    | 2013-01-01 |
| H04L   | / | 45 | / | 38   | I    | 2013-01-01 |
| H04L   | / | 45 | / | 50   | I    | 2013-01-01 |
| H04L   | / | 69 | / | 22   | I    | 2013-01-01 |
| H04L   | / | 65 | / | 1013 | I    | 2013-01-01 |
| H04L   | / | 45 | / | 74   | I    | 2013-01-01 |
| H04L   | / | 47 | / | 24   | I    | 2013-01-01 |

| CPC Combination Sets |      |     |         |         |
|----------------------|------|-----|---------|---------|
| Symbol               | Type | Set | Ranking | Version |
| /                    |      |     |         |         |

|                                                                                                        |  |                                    |                        |
|--------------------------------------------------------------------------------------------------------|--|------------------------------------|------------------------|
| NONE<br>(Assistant Examiner) _____ (Date) _____                                                        |  | <b>Total Claims Allowed:</b><br>20 |                        |
| /BRANDON M RENNER/<br>Primary Examiner, Art Unit 2478<br>(Primary Examiner) _____ (Date) 19 March 2020 |  | O.G. Print Claim(s)<br>1           | O.G. Print Figure<br>4 |

|                                                                                                                  |                                              |                                                              |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>16/536,103 | <b>Applicant(s)/Patent Under Reexamination</b><br>Pan et al. |
|                                                                                                                  | <b>Examiner</b><br>BRANDON M RENNER          | <b>Art Unit</b><br>2478                                      |

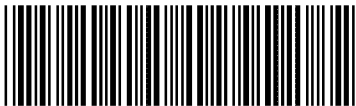
|                                     |   |    |      |
|-------------------------------------|---|----|------|
| <b>INTERNATIONAL CLASSIFICATION</b> |   |    |      |
| <b>CLAIMED</b>                      |   |    |      |
| H04L                                | / | 29 | / 06 |

|                    |  |   |  |
|--------------------|--|---|--|
| <b>NON-CLAIMED</b> |  |   |  |
| /                  |  | / |  |

|                                   |                 |
|-----------------------------------|-----------------|
| <b>US ORIGINAL CLASSIFICATION</b> |                 |
| <b>CLASS</b>                      | <b>SUBCLASS</b> |
|                                   |                 |

|                            |                                          |  |  |  |  |  |
|----------------------------|------------------------------------------|--|--|--|--|--|
| <b>CROSS REFERENCES(S)</b> |                                          |  |  |  |  |  |
| <b>CLASS</b>               | <b>SUBCLASS (ONE SUBCLASS PER BLOCK)</b> |  |  |  |  |  |
|                            |                                          |  |  |  |  |  |

|                                                       |               |                              |                   |
|-------------------------------------------------------|---------------|------------------------------|-------------------|
| NONE                                                  |               | <b>Total Claims Allowed:</b> |                   |
| (Assistant Examiner)                                  | (Date)        | 20                           |                   |
| /BRANDON M RENNER/<br>Primary Examiner, Art Unit 2478 | 19 March 2020 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                                    | (Date)        | 1                            | 4                 |

|                                                                                                                  |                                              |                                                              |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>16/536,103 | <b>Applicant(s)/Patent Under Reexamination</b><br>Pan et al. |
|                                                                                                                  | <b>Examiner</b><br>BRANDON M RENNER          | <b>Art Unit</b><br>2478                                      |

|                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input checked="" type="checkbox"/> T.D. <input type="checkbox"/> R.1.47 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| CLAIMS |          |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|--------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| Final  | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|        | 1        |       | 10       |       | 19       |       |          |       |          |       |          |       |          |       |          |
|        | 2        |       | 11       |       | 20       |       |          |       |          |       |          |       |          |       |          |
|        | 3        |       | 12       |       |          |       |          |       |          |       |          |       |          |       |          |
|        | 4        |       | 13       |       |          |       |          |       |          |       |          |       |          |       |          |
|        | 5        |       | 14       |       |          |       |          |       |          |       |          |       |          |       |          |
|        | 6        |       | 15       |       |          |       |          |       |          |       |          |       |          |       |          |
|        | 7        |       | 16       |       |          |       |          |       |          |       |          |       |          |       |          |
|        | 8        |       | 17       |       |          |       |          |       |          |       |          |       |          |       |          |
|        | 9        |       | 18       |       |          |       |          |       |          |       |          |       |          |       |          |

|                                                                                                        |  |                                    |                        |
|--------------------------------------------------------------------------------------------------------|--|------------------------------------|------------------------|
| NONE<br><br>(Assistant Examiner) _____ (Date) _____                                                    |  | <b>Total Claims Allowed:</b><br>20 |                        |
| /BRANDON M RENNER/<br>Primary Examiner, Art Unit 2478<br>(Primary Examiner) _____ (Date) 19 March 2020 |  | O.G. Print Claim(s)<br>1           | O.G. Print Figure<br>4 |

|                                                                                                                 |                                              |                                                              |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------|
| <b><i>Search Notes</i></b><br> | <b>Application/Control No.</b><br>16/536,103 | <b>Applicant(s)/Patent Under Reexamination</b><br>Pan et al. |
|                                                                                                                 | <b>Examiner</b><br>BRANDON M RENNER          | <b>Art Unit</b><br>2478                                      |

| CPC - Searched*           |            |          |
|---------------------------|------------|----------|
| Symbol                    | Date       | Examiner |
| h04l12/465 - text limited | 12/06/2019 | BR       |
| updated search            | 03/19/2020 | BR       |

| CPC Combination Sets - Searched* |      |          |
|----------------------------------|------|----------|
| Symbol                           | Date | Examiner |
|                                  |      |          |

| US Classification - Searched* |          |      |          |
|-------------------------------|----------|------|----------|
| Class                         | Subclass | Date | Examiner |
|                               |          |      |          |

\* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

| Search Notes                                                                                              |            |          |
|-----------------------------------------------------------------------------------------------------------|------------|----------|
| Search Notes                                                                                              | Date       | Examiner |
| EAST Class limited with text search; Inventor & assignee search and text search (as per attached history) | 12/06/2019 | BR       |
| updated search                                                                                            | 03/19/2020 | BR       |

| Interference Search |                       |            |          |
|---------------------|-----------------------|------------|----------|
| US Class/CPC Symbol | US Subclass/CPC Group | Date       | Examiner |
| h04l                | all text limited      | 03/19/2020 | BR       |

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EAST Search History

EAST Search History (Interference)

| Ref # | Hits | Search Query                                                             | DBs   | Default Operator | Plurals | Time Stamp       |
|-------|------|--------------------------------------------------------------------------|-------|------------------|---------|------------------|
| L14   | 14   | (pseudowire and rate).clm.                                               | USPAT | OR               | ON      | 2020/03/19 09:37 |
| L15   | 152  | (pseudowire and data).clm.                                               | USPAT | OR               | ON      | 2020/03/19 09:37 |
| L16   | 24   | (h04l29/06 h04l12/66 h04l65/\$).cpc. and (pseudowire).clm.               | USPAT | OR               | ON      | 2020/03/19 09:37 |
| L17   | 1152 | (h04l29/06 h04l12/66 h04l65/\$).cpc. and (pseudowire encapsulat\$4).clm. | USPAT | OR               | ON      | 2020/03/19 09:37 |
| L19   | 1152 | (h04l29/06 h04l12/66 h04l65/\$).cpc. and (pseudowire encapsulat\$4).clm. | USPAT | OR               | ON      | 2020/03/19 09:39 |

3/19/2020 9:48:14 AM  
C:\Users\brenner\Documents\EAST\Workspaces\16536103.wsp

**EAST Search History****EAST Search History (Prior Art)**

| Ref # | Hits | Search Query                                                                                             | DBs             | Default Operator | Plurals | Time Stamp       |
|-------|------|----------------------------------------------------------------------------------------------------------|-----------------|------------------|---------|------------------|
| L1    | 1822 | ((virtual adj circuit) pseudowire) same map\$5                                                           | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L2    | 511  | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4)                                           | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L3    | 280  | ((virtual adj circuit) pseudowire) same map\$5 same flow                                                 | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L4    | 105  | (pan near ping).in.                                                                                      | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L5    | 21   | (pan near ping).in. and pseudowire.clm.                                                                  | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L6    | 213  | pseudo\$wire same (exceed\$4 rate threshold)                                                             | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L7    | 217  | h04l12/465.cpc.                                                                                          | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L8    | 6450 | encapsulat\$4 with (first portion subset) near4 data                                                     | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L9    | 200  | encapsulat\$4 with (second another different) near4 (portion subset) near4 data                          | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L10   | 195  | L8 and L9                                                                                                | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:36 |
| L11   | 135  | ((virtual adj circuit) pseudowire) same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007" | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:37 |
| L12   | 67   | (map\$4 split\$4 divid\$4) with (Stream data flow) and pseudo\$wire and @ad<="20051007"                  | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:37 |
| L13   | 0    | L11 and L12                                                                                              | US-PGPUB; USPAT | OR               | ON      | 2020/03/19 09:37 |

**3/19/2020 9:48:09 AM****C:\Users\brenner\Documents\EAST\Workspaces\16536103.wsp**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                                    |                                |
|------------------------------------|--------------------------------|
| First Named<br>Inventor : Ping Pan |                                |
| Appln. No. : 16/536,103            | Confirmation No.: 6346         |
| Filed : August 8, 2019             | Group Art Unit: 2478           |
| Title : APPLICATION WIRE           | Examiner: Brandon M.<br>Renner |
| Docket No. : K379-012001           |                                |

**AMENDMENT**

Mail Stop Amendment  
Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**FILED VIA EFS-WEB**

March 9, 2020

**INTRODUCTION**

This is in response to the Office Action dated December 11, 2019. Please amend the above-identified application as follows:

**AMENDMENTS TO THE CLAIMS**

Please amend claims 15-20, such that the status of the claims is as follows:

1. (Original) A method comprising:  
at a node associated with a multiprotocol label switching system (MPLS) network, performing:  
    identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow;  
    in response to identifying the information, and based on stored data that maps application flows with pseudowires, determining a plurality of pseudowires corresponding to paths through the MPLS network, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and  
    communicating data related to the sending device application via at least one of the plurality of pseudowires.
2. (Original) The method of claim 1, wherein the stored data defines an application wire for use by the sending device application, the application wire configured to communicate particular data from a particular application flow of the sending device application to an edge node.
3. (Original) The method of claim 1, wherein the stored data further defines an application wire for use by the sending device application, the application wire configured to communicate particular data from an edge node through the MPLS network via the plurality of pseudowires.
4. (Original) The method of claim 1, wherein each of the plurality of pseudowires extends from

the application flow in an ingress direction into the MPLS network.

5. (Original) The method of claim 1, wherein each of the plurality of pseudowires is virtually coupled between a particular device and a particular application being executed at a particular client device.

6. (Original) The method of claim 1, wherein the application flow includes data packets transmitted and received by the sending device application, wherein the data is communicated via the at least one of the plurality of pseudowires, and further comprising assigning, at an edge node, sequence numbers to ingress data packets in an order in which they are received by the node.

7. (Original) The method of claim 1, wherein the stored data maps the application flow to the plurality of pseudowires to create an application wire.

8. (Original) A device comprising:

- a processor; and

- a memory that stores instructions executable by the processor to:

- identify information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow;

- in response to identifying the information, and based on stored data mapping application flows to pseudowires, determine a plurality of pseudowires as paths through a multiprotocol label switching (MPLS) network for the application flow, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and

- communicate data associated with the sending device application via at least one

of the plurality of pseudowires.

9. (Original) The device of claim 8, wherein the stored data defines an application wire for use by the sending device application, the application wire configured to communicate particular data from a particular application flow of the sending device application to an edge node.

10. (Original) The device of claim 8, wherein the stored data further defines an application wire for use by the sending device application, the application wire configured to communicate particular data from an edge node through the MPLS network via the plurality of pseudowires.

11. (Original) The device of claim 8, wherein each of the plurality of pseudowires extends from the application flow in an ingress direction into the MPLS network.

12. (Original) The device of claim 8, wherein each of the plurality of pseudowires is virtually coupled between a particular device and a particular application being executed at a particular client device.

13. (Original) The device of claim 8, wherein:  
the application flow includes data packets transmitted and received by the sending device application,  
the data is communicated via the at least one of the plurality of pseudowires, and the instructions are executable by the processor to cause assigning, at an edge node, of sequence numbers to ingress data packets in an order in which they are received by the node.

14. (Original) The device of claim 8, wherein the stored data maps the application flow to the plurality of pseudowires to create an application wire.

15. (Amended) A computer-readable non-transitory medium storing instructions that are executable by a processor to initiate or perform:

identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow;  
in response to identifying the information, and based on stored data that maps application flows with pseudowires, determining a plurality of pseudowires corresponding to paths through a multiprotocol label switching system (MPLS) network, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and  
communicating data related to the sending device application via at least one of the plurality of pseudowires.

16. (Amended) The computer-readable non-transitory medium of claim 15, wherein the instructions are executable to perform the identifying, the determining, and the communicating at a node associated with the MPLS network.

17. (Amended) The computer-readable non-transitory medium of claim 15, wherein the stored data defines an application wire for use by the sending device application, the application wire configured to communicate particular data from a particular application flow of the sending device application to an edge node.

18. (Amended) The computer-readable non-transitory medium of claim 15, wherein the stored data further defines an application wire for use by the sending device application, the application wire configured to communicate particular data from an edge node through the MPLS network via the plurality of pseudowires.

19. (Amended) The computer-readable non-transitory medium of claim 15, wherein each

of the plurality of pseudowires extends from the application flow in an ingress direction into the MPLS network.

20. (Amended) The computer-readable non-transitory medium of claim 15, wherein each of the plurality of pseudowires is virtually coupled between a particular device and a particular application being executed at a particular client device.

**REMARKS**

Claims 1-20 are pending in the present application.

Claims 1-20 are rejected on the ground of non-statutory double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 10,411,999. A terminal disclaimer has been filed March 9<sup>th</sup>, 2020 to address the Examiner's concern.

Claims 15-20 stand rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 15-20 have been amended as suggested by the Examiner.

The Commissioner is hereby authorized to charge any additional fees which may be required under 37 C.F.R. 1.16 and 1.17, or credit any overpayment, to Deposit Account No. 11-0982.

Applicant respectfully submits that the Application as presented is in condition for allowance. Should the Examiner believe that anything further is necessary in order to place the application in better condition for allowance, the Examiner is requested to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date: 03/09/2020

By: /IanMacKinnon/  
Ian MacKinnon, Reg. No. 34,660  
312 South Third Street  
Minneapolis, MN 55415-1002  
Telephone: (612) 339-1863  
Fax: (612) 339-6580

IDM:akb

## Electronic Acknowledgement Receipt

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>EFS ID:</b>                              | 38810897                    |
| <b>Application Number:</b>                  | 16536103                    |
| <b>International Application Number:</b>    |                             |
| <b>Confirmation Number:</b>                 | 6346                        |
| <b>Title of Invention:</b>                  | APPLICATION WIRE            |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                    |
| <b>Customer Number:</b>                     | 164                         |
| <b>Filer:</b>                               | Ian David MacKinnon         |
| <b>Filer Authorized By:</b>                 |                             |
| <b>Attorney Docket Number:</b>              | K379-012001                 |
| <b>Receipt Date:</b>                        | 09-MAR-2020                 |
| <b>Filing Date:</b>                         | 08-AUG-2019                 |
| <b>Time Stamp:</b>                          | 17:09:31                    |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a) |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description | File Name                            | File Size(Bytes)/<br>Message Digest           | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|--------------------------------------|-----------------------------------------------|------------------|------------------|
| 1               |                      | 2020-03-09_AMEND_K379-012<br>001.pdf | 36936                                         | yes              | 7                |
|                 |                      |                                      | f4532033dccc2e25e3fa4be012586600feec4<br>1b02 |                  |                  |

| Multipart Description/PDF files in .zip description   |       |     |  |
|-------------------------------------------------------|-------|-----|--|
| Document Description                                  | Start | End |  |
| Amendment/Req. Reconsideration-After Non-Final Reject | 1     | 1   |  |
| Claims                                                | 2     | 6   |  |
| Applicant Arguments/Remarks Made in an Amendment      | 7     | 7   |  |

**Warnings:**

**Information:**

|                                     |       |
|-------------------------------------|-------|
| <b>Total Files Size (in bytes):</b> | 36936 |
|-------------------------------------|-------|

**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.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                          |                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Doc Code: DIST.E.FILE</b><br><b>Document Description: Electronic Terminal Disclaimer - Filed</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                          | PTO/SB/26<br>U.S. Patent and Trademark Office<br>Department of Commerce |
| Electronic Petition Request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT</b> |                                                                         |
| Application Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 16536103                                                                                 |                                                                         |
| Filing Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 08-Aug-2019                                                                              |                                                                         |
| First Named Inventor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ping Pan                                                                                 |                                                                         |
| Attorney Docket Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | K379-012001                                                                              |                                                                         |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | APPLICATION WIRE                                                                         |                                                                         |
| <input checked="" type="checkbox"/> Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action<br><br><input checked="" type="checkbox"/> This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                         |
| Owner                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Percent Interest                                                                         |                                                                         |
| K.Mizra LLC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 100%                                                                                     |                                                                         |
| <p>The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)</p> <p>10411999</p> <p>as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.</p> <p>In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:</p> <ul style="list-style-type: none"> <li>- expires for failure to pay a maintenance fee;</li> <li>- is held unenforceable;</li> <li>- is found invalid by a court of competent jurisdiction;</li> <li>- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;</li> <li>- has all claims canceled by a reexamination certificate;</li> <li>- is reissued; or</li> <li>- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.</li> </ul> <p><input checked="" type="radio"/> Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.</p> |                                                                                          |                                                                         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <input type="radio"/> I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |
| Applicant claims the following fee status:<br><br><input type="radio"/> Small Entity<br><br><input type="radio"/> Micro Entity<br><br><input checked="" type="radio"/> Regular Undiscounted                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |
| 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.                                                                                                                                                             |                 |
| THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES<br><br>I certify, in accordance with 37 CFR 1.4(d)(4) that I am:<br><br><input checked="" type="radio"/> An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application<br><br>Registration Number <u>34660</u><br><br><input type="radio"/> A sole inventor<br><br><input type="radio"/> A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application<br><br><input type="radio"/> A joint inventor; all of whom are signing this request |                 |
| Signature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | /Ian MacKinnon/ |
| Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Ian MacKinnon   |

\*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).  
 Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

## Electronic Patent Application Fee Transmittal

|                                                    |                     |                 |               |                             |
|----------------------------------------------------|---------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                         | 16536103            |                 |               |                             |
| <b>Filing Date:</b>                                | 08-Aug-2019         |                 |               |                             |
| <b>Title of Invention:</b>                         | APPLICATION WIRE    |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>        | Ping Pan            |                 |               |                             |
| <b>Filer:</b>                                      | Ian David MacKinnon |                 |               |                             |
| <b>Attorney Docket Number:</b>                     | K379-012001         |                 |               |                             |
| Filed as Large Entity                              |                     |                 |               |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</b> |                     |                 |               |                             |
| <b>Description</b>                                 | <b>Fee Code</b>     | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                               |                     |                 |               |                             |
| STATUTORY OR TERMINAL DISCLAIMER                   | 1814                | 1               | 160           | 160                         |
| <b>Pages:</b>                                      |                     |                 |               |                             |
| <b>Claims:</b>                                     |                     |                 |               |                             |
| <b>Miscellaneous-Filing:</b>                       |                     |                 |               |                             |
| <b>Petition:</b>                                   |                     |                 |               |                             |
| <b>Patent-Appeals-and-Interference:</b>            |                     |                 |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>           |                     |                 |               |                             |

| Description        | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|--------------------|----------|----------|--------|----------------------|
| Extension-of-Time: |          |          |        |                      |
| Miscellaneous:     |          |          |        |                      |
| Total in USD (\$)  |          |          |        | 160                  |

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 16536103

Filing Date: 08-Aug-2019

Applicant/Patent under Reexamination: Pan

Electronic Terminal Disclaimer filed on March 9, 2020

☒ APPROVED

**This patent is subject to a terminal disclaimer**

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

## Electronic Acknowledgement Receipt

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>EFS ID:</b>                              | 38810361                    |
| <b>Application Number:</b>                  | 16536103                    |
| <b>International Application Number:</b>    |                             |
| <b>Confirmation Number:</b>                 | 6346                        |
| <b>Title of Invention:</b>                  | APPLICATION WIRE            |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                    |
| <b>Customer Number:</b>                     | 164                         |
| <b>Filer:</b>                               | Ian David MacKinnon         |
| <b>Filer Authorized By:</b>                 |                             |
| <b>Attorney Docket Number:</b>              | K379-012001                 |
| <b>Receipt Date:</b>                        | 09-MAR-2020                 |
| <b>Filing Date:</b>                         | 08-AUG-2019                 |
| <b>Time Stamp:</b>                          | 16:31:09                    |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a) |

### Payment information:

|                                          |                  |
|------------------------------------------|------------------|
| Submitted with Payment                   | yes              |
| Payment Type                             | DA               |
| Payment was successfully received in RAM | \$ 160           |
| RAM confirmation Number                  | E202039G31064202 |
| Deposit Account                          | 110982           |
| Authorized User                          | Ian MacKinnon    |

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)  
37 CFR 1.20 (Post Issuance fees)  
37 CFR 1.21 (Miscellaneous fees and charges)

## File Listing:

| Document Number | Document Description                   | File Name                | File Size(Bytes)/<br>Message Digest      | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------------------------|--------------------------|------------------------------------------|------------------|------------------|
| 1               | Terminal Disclaimer-Filed (Electronic) | eTerminal-Disclaimer.pdf | 33476                                    | no               | 2                |
|                 |                                        |                          | ce3870ca6aa00f82aceec1f667463799edc8fb34 |                  |                  |

### Warnings:

### Information:

|   |                      |              |                                          |    |   |
|---|----------------------|--------------|------------------------------------------|----|---|
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30198                                    | no | 2 |
|   |                      |              | 1e1149331a33bcb071dab3545639211fae59e223 |    |   |

### Warnings:

### Information:

|                                     |       |
|-------------------------------------|-------|
| <b>Total Files Size (in bytes):</b> | 63674 |
|-------------------------------------|-------|

**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.**

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.

|                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------|---------------|---------------------------|--|---------------------------------------|--|--|
| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                               |                                                                                          |                                                                                                                                                                                                                               |              | Application or Docket Number<br>16/536,103 |               | Filing Date<br>08/08/2019 |  | <input type="checkbox"/> To be Mailed |  |  |
| ENTITY: <input checked="" type="checkbox"/> LARGE <input type="checkbox"/> SMALL <input type="checkbox"/> MICRO                 |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
| <b>APPLICATION AS FILED - PART I</b>                                                                                            |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|                                                                                                                                 |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   |                                            |               |                           |  |                                       |  |  |
| FOR                                                                                                                             |                                                                                          | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA | RATE (\$)                                  |               | FEE (\$)                  |  |                                       |  |  |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                             |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          | N/A                                        |               |                           |  |                                       |  |  |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (i), or (m))                                                            |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          | N/A                                        |               |                           |  |                                       |  |  |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                       |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          | N/A                                        |               |                           |  |                                       |  |  |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                                                                |                                                                                          | minus 20 =                                                                                                                                                                                                                    | *            | x \$100 =                                  |               |                           |  |                                       |  |  |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                          |                                                                                          | minus 3 =                                                                                                                                                                                                                     | *            | x \$460 =                                  |               |                           |  |                                       |  |  |
| <input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))                                                                  |                                                                                          | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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). |              |                                            |               |                           |  |                                       |  |  |
| <input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                                                      |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                       |                                                                                          |                                                                                                                                                                                                                               |              | TOTAL                                      |               |                           |  |                                       |  |  |
| <b>APPLICATION AS AMENDED - PART II</b>                                                                                         |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|                                                                                                                                 |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   | (Column 3)                                 |               |                           |  |                                       |  |  |
| <b>AMENDMENT</b>                                                                                                                | 03/09/2020                                                                               | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |              | HIGHEST NUMBER PREVIOUSLY PAID FOR         | PRESENT EXTRA | RATE (\$)                 |  | ADDITIONAL FEE (\$)                   |  |  |
|                                                                                                                                 | Total<br>(37 CFR 1.16(i))                                                                | * 20                                                                                                                                                                                                                          | Minus        | ** 20                                      | = 0           | x \$100 =                 |  | 0                                     |  |  |
|                                                                                                                                 | Independent<br>(37 CFR 1.16(h))                                                          | * 3                                                                                                                                                                                                                           | Minus        | *** 3                                      | = 0           | x \$460 =                 |  | 0                                     |  |  |
|                                                                                                                                 | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|                                                                                                                                 | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | TOTAL ADD'L FEE           |  | 0                                     |  |  |
|                                                                                                                                 |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   | (Column 3)                                 |               |                           |  |                                       |  |  |
| <b>AMENDMENT</b>                                                                                                                |                                                                                          | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |              | HIGHEST NUMBER PREVIOUSLY PAID FOR         | PRESENT EXTRA | RATE (\$)                 |  | ADDITIONAL FEE (\$)                   |  |  |
|                                                                                                                                 | Total<br>(37 CFR 1.16(i))                                                                | *                                                                                                                                                                                                                             | Minus        | **                                         | =             | x \$0 =                   |  |                                       |  |  |
|                                                                                                                                 | Independent<br>(37 CFR 1.16(h))                                                          | *                                                                                                                                                                                                                             | Minus        | ***                                        | =             | x \$0 =                   |  |                                       |  |  |
|                                                                                                                                 | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|                                                                                                                                 | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |
|                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | TOTAL ADD'L FEE           |  |                                       |  |  |
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.                                           |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | Non-Examiner              |  |                                       |  |  |
| ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".                                       |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | /RICARDO ANTONIO CAMOU/   |  |                                       |  |  |
| *** 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. |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |  |                                       |  |  |

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.*



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UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
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P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 16/536,103         | 08/08/2019            | Ping Pan              | 5015-0003C1            |

**CONFIRMATION NO. 6346**

## POWER OF ATTORNEY NOTICE



\*OC000000114512347\*

60533  
TOLER LAW GROUP  
TOLER LAW GROUP  
8500 BLUFFSTONE COVE  
SUITE A201  
AUSTIN, TX 78759

Date Mailed: 02/06/2020

## NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/04/2020.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sleutchit/



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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www.uspto.gov

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 16/536,103         | 08/08/2019            | Ping Pan              | K379-012001            |

164  
KINNEY & LANGE, P.A.  
312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002

**CONFIRMATION NO. 6346**  
**POA ACCEPTANCE LETTER**



Date Mailed: 02/06/2020

## NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/04/2020.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sleutchit/

## TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

|                        |                   |
|------------------------|-------------------|
| Application Number     | 16/536103         |
| Filing Date            | 2019-08-08        |
| First Named Inventor   | Ping Pan          |
| Title                  | APPLICATION WIRE  |
| Art Unit               | 2478              |
| Examiner Name          | Brandon M. Renner |
| Attorney Docket Number | K379-012001       |

### SIGNATURE of Applicant or Patent Practitioner

|                                                    |                    |                     |            |
|----------------------------------------------------|--------------------|---------------------|------------|
| Signature                                          | /Ian D. MacKinnon/ | Date (Optional)     | 2020-02-03 |
| Name                                               | Ian D. MacKinnon   | Registration Number | 34,660     |
| Title (if Applicant is a juristic entity)          |                    |                     |            |
| Applicant Name (if Applicant is a juristic entity) |                    |                     |            |

**NOTE:** This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



\*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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.*

## POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

00164

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR



Firm or  
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

K.Mizra LLC



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

### SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Charles Hausman

Title

Chief Legal Officer

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.



Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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.

## Electronic Acknowledgement Receipt

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>EFS ID:</b>                              | 38474237                    |
| <b>Application Number:</b>                  | 16536103                    |
| <b>International Application Number:</b>    |                             |
| <b>Confirmation Number:</b>                 | 6346                        |
| <b>Title of Invention:</b>                  | APPLICATION WIRE            |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                    |
| <b>Customer Number:</b>                     | 60533                       |
| <b>Filer:</b>                               | Ian David MacKinnon         |
| <b>Filer Authorized By:</b>                 |                             |
| <b>Attorney Docket Number:</b>              | 5015-0003C1                 |
| <b>Receipt Date:</b>                        | 04-FEB-2020                 |
| <b>Filing Date:</b>                         | 08-AUG-2019                 |
| <b>Time Stamp:</b>                          | 10:09:26                    |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a) |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description | File Name                      | File Size(Bytes)/<br>Message Digest      | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|--------------------------------|------------------------------------------|------------------|------------------|
| 1               | Power of Attorney    | 2020-02-03_POA_K379-012001.pdf | 1936536                                  | no               | 2                |
|                 |                      |                                | 9bc6450bfaded54846c890f2f9a507a2ca8315b9 |                  |                  |

### Warnings:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1936536 |
| <p><b>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.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/>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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/>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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/>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.</p> |         |



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 16/536,103         | 08/08/2019            | Ping Pan              | 5015-0003C1            |

60533  
TOLER LAW GROUP  
TOLER LAW GROUP  
8500 BLUFFSTONE COVE  
SUITE A201  
AUSTIN, TX 78759

**CONFIRMATION NO. 6346**  
**IMPROPER CPOA LETTER**



Date Mailed: 01/30/2020

## NOTICE REGARDING POWER OF ATTORNEY

This is in response to the power of attorney filed 01/24/2020. The power of attorney in this application is not accepted for the reason(s) listed below:

- The power of attorney has not been accepted because the party who is giving power has not been identified. Power of attorney may only be signed by the applicant for patent (37 CFR 1.42) or the patent owner. A party who is not the applicant must become the applicant in accordance with 37 CFR 1.46(c) and appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. For a reissue application, reexamination proceeding, or supplemental examination proceeding, a patent owner who was not the applicant under 37 CFR 1.46 must appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. See 37 CFR 1.32(b)(4).

The power of attorney filed 01/24/2020 has not been accepted because the power of attorney must be signed by the applicant for patent. See 37 CFR 1.32(b)(4).

- The person or entity attempting the change to power of attorney is not the applicant of record in the application. Any request to change the applicant once the applicant has been specified must include (1) an application data sheet (ADS) specifying the new applicant in the Applicant Information section, and (2) a statement under 37 CFR 3.73(c) (USPTO Form PTO/AIA/96 or an equivalent) to show chain of title to the new applicant. The ADS must contain markings to show the information that is being changed, with underlining for insertions and strike-through or brackets for text removed. See 37 CFR 1.76(c)(2).

Because the request to change or update the applicant cannot be accepted, the power of attorney is not properly signed by the applicant and cannot be accepted. The change to applicant must be acceptable before the new applicant can appoint power of attorney.

00164  
KINNEY & LANGE, P.A.  
312 SOUTH THIRD STREET  
MINNEAPOLIS, MN 55415-1002  
UNITED STATES

/dtdinh/

---

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

## TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

|                        |                   |
|------------------------|-------------------|
| Application Number     | 16/536103         |
| Filing Date            | 2019-08-08        |
| First Named Inventor   | Ping Pan          |
| Title                  | APPLICATION WIRE  |
| Art Unit               | 2478              |
| Examiner Name          | Brandon M. Renner |
| Attorney Docket Number | K379-012001       |

### SIGNATURE of Applicant or Patent Practitioner

|                                                    |                      |                     |            |
|----------------------------------------------------|----------------------|---------------------|------------|
| Signature                                          | /David R. Fairbairn/ | Date (Optional)     | 2020-01-24 |
| Name                                               | David R. Fairbairn   | Registration Number | 26,047     |
| Title (if Applicant is a juristic entity)          |                      |                     |            |
| Applicant Name (if Applicant is a juristic entity) |                      |                     |            |

**NOTE:** This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



\*Total of 1 forms are submitted.

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*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

00164

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR



Firm or  
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

K. Mizra



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

### SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Charles Hausman

Title

Chief Licensing Officer

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.



Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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.

## Electronic Acknowledgement Receipt

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>EFS ID:</b>                              | 38388727                    |
| <b>Application Number:</b>                  | 16536103                    |
| <b>International Application Number:</b>    |                             |
| <b>Confirmation Number:</b>                 | 6346                        |
| <b>Title of Invention:</b>                  | APPLICATION WIRE            |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                    |
| <b>Customer Number:</b>                     | 60533                       |
| <b>Filer:</b>                               | David Richard Fairbairn     |
| <b>Filer Authorized By:</b>                 |                             |
| <b>Attorney Docket Number:</b>              | 5015-0003C1                 |
| <b>Receipt Date:</b>                        | 24-JAN-2020                 |
| <b>Filing Date:</b>                         | 08-AUG-2019                 |
| <b>Time Stamp:</b>                          | 14:15:53                    |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a) |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description | File Name                      | File Size(Bytes)/<br>Message Digest      | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|--------------------------------|------------------------------------------|------------------|------------------|
| 1               | Power of Attorney    | 2020-01-24_POA_K379-012001.pdf | 1887415                                  | no               | 2                |
|                 |                      |                                | 8ab7c1431f74bc22e79db51bb30108c042d8ec54 |                  |                  |

### Warnings:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1887415 |
| <p><b>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.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/>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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/>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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/>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.</p> |         |

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5908383

|                                    |                        |                       |
|------------------------------------|------------------------|-----------------------|
| <b>SUBMISSION TYPE:</b>            | NEW ASSIGNMENT         |                       |
| <b>NATURE OF CONVEYANCE:</b>       | ASSIGNMENT             |                       |
| <b>CONVEYING PARTY DATA</b>        |                        |                       |
| <b>Name</b>                        |                        | <b>Execution Date</b> |
| GLOBAL INNOVATION AGGREGATORS, LLC |                        | 12/24/2019            |
| <b>RECEIVING PARTY DATA</b>        |                        |                       |
| <b>Name:</b>                       | K.MIZRA LLC            |                       |
| <b>Street Address:</b>             | 2160 CENTURY PARK EAST |                       |
| <b>Internal Address:</b>           | #707                   |                       |
| <b>City:</b>                       | LOS ANGELES            |                       |
| <b>State/Country:</b>              | CALIFORNIA             |                       |
| <b>Postal Code:</b>                | 90067                  |                       |
| <b>PROPERTY NUMBERS Total: 61</b>  |                        |                       |
| <b>Property Type</b>               | <b>Number</b>          |                       |
| Patent Number:                     | 7535895                |                       |
| Patent Number:                     | 7970009                |                       |
| Patent Number:                     | 7899916                |                       |
| Patent Number:                     | 8782282                |                       |
| Patent Number:                     | 8949381                |                       |
| Patent Number:                     | 7609621                |                       |
| Patent Number:                     | 7940652                |                       |
| Patent Number:                     | 8811392                |                       |
| Patent Number:                     | 9160658                |                       |
| Patent Number:                     | 8588061                |                       |
| Patent Number:                     | 8213311                |                       |
| Patent Number:                     | 8848711                |                       |
| Patent Number:                     | 8619784                |                       |
| Patent Number:                     | 8018880                |                       |
| Patent Number:                     | 8385355                |                       |
| Patent Number:                     | 8582427                |                       |
| Patent Number:                     | 8861545                |                       |
| Patent Number:                     | 9264354                |                       |
| Patent Number:                     | 9749249                |                       |

| Property Type       | Number   |
|---------------------|----------|
| Patent Number:      | 9197675  |
| Patent Number:      | 9282010  |
| Patent Number:      | 9413650  |
| Patent Number:      | 9143463  |
| Patent Number:      | 9172638  |
| Patent Number:      | 9413694  |
| Patent Number:      | 9444733  |
| Patent Number:      | 9485176  |
| Patent Number:      | 9843509  |
| Patent Number:      | 9832042  |
| Patent Number:      | 9680713  |
| Patent Number:      | 10411999 |
| Application Number: | 15687633 |
| Application Number: | 16536103 |
| Patent Number:      | 6965612  |
| Patent Number:      | 7020158  |
| Patent Number:      | 7613213  |
| Patent Number:      | 7558287  |
| Patent Number:      | 7630397  |
| Patent Number:      | 8929312  |
| Patent Number:      | 9219533  |
| Patent Number:      | 9161304  |
| Patent Number:      | 8958819  |
| Patent Number:      | 9161299  |
| Patent Number:      | 7395245  |
| Patent Number:      | 7715564  |
| Patent Number:      | 7359883  |
| Patent Number:      | 7290047  |
| Patent Number:      | 8521651  |
| Patent Number:      | 7680808  |
| Patent Number:      | 7451202  |
| Patent Number:      | 7571488  |
| Patent Number:      | 8073939  |
| Patent Number:      | 8745751  |
| Patent Number:      | 8639751  |
| Patent Number:      | 8068452  |
| Patent Number:      | 8483131  |
| Patent Number:      | 8438448  |

| Property Type  | Number  |
|----------------|---------|
| Patent Number: | 8548324 |
| Patent Number: | 8825797 |
| Patent Number: | 8731563 |
| Patent Number: | 8670331 |

#### CORRESPONDENCE DATA

Fax Number: (212)586-5095

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

Phone: 2125865800

Email: DFRIEDMAN@CTSWLAW.COM

Correspondent Name: DANIEL J. FRIEDMAN

Address Line 1: 420 LEXINGTON AVENUE

Address Line 2: SUITE 2400

Address Line 4: NEW YORK, NEW YORK 10170

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| NAME OF SUBMITTER: | DANIEL J. FRIEDMAN                                         |
| SIGNATURE:         | /Daniel J. Friedman/                                       |
| DATE SIGNED:       | 01/13/2020                                                 |
|                    | This document serves as an Oath/Declaration (37 CFR 1.63). |

#### Total Attachments: 4

source=Patent Assignment - Global Innovation to K.Mizra (00407808)#page1.tif

source=Patent Assignment - Global Innovation to K.Mizra (00407808)#page2.tif

source=Patent Assignment - Global Innovation to K.Mizra (00407808)#page3.tif

source=Patent Assignment - Global Innovation to K.Mizra (00407808)#page4.tif



**EXHIBIT 1**  
**Patents**

| <b>Owner</b>                       | <b>Country</b> | <b>Application No.</b> | <b>Patent No.</b> |
|------------------------------------|----------------|------------------------|-------------------|
| Global Innovation Aggregators, LLC | United States  | 10/447,825             | 7535895           |
| Global Innovation Aggregators, LLC | United States  | 10/646,340             | 7970009           |
| Global Innovation Aggregators, LLC | United States  | 10/677,090             | 7899916           |
| Global Innovation Aggregators, LLC | United States  | 10/742,573             | 8782282           |
| Global Innovation Aggregators, LLC | United States  | 10/749,922             | 8949381           |
| Global Innovation Aggregators, LLC | United States  | 10/776,460             | 7609621           |
| Global Innovation Aggregators, LLC | United States  | 11/354,569             | 7940652           |
| Global Innovation Aggregators, LLC | United States  | 11/486,389             | 8811392           |
| Global Innovation Aggregators, LLC | United States  | 11/486,432             | 9160658           |
| Global Innovation Aggregators, LLC | United States  | 11/543,727             | 8588061           |
| Global Innovation Aggregators, LLC | United States  | 11/580,530             | 8213311           |
| Global Innovation Aggregators, LLC | United States  | 11/890,308             | 8848711           |
| Global Innovation Aggregators, LLC | United States  | 12/009,833             | 8619784           |
| Global Innovation Aggregators, LLC | United States  | 12/079,413             | 8018880           |
| Global Innovation Aggregators, LLC | United States  | 12/290,463             | 8385355           |
| Global Innovation Aggregators, LLC | United States  | 13/038,282             | 8582427           |
| Global Innovation Aggregators, LLC | United States  | 13/117,768             | 8861545           |
| Global Innovation Aggregators, LLC | United States  | 14/050,067             | 9264354           |
| Global Innovation Aggregators, LLC | United States  | 14/050,078             | 9749249           |
| Global Innovation Aggregators, LLC | United States  | 14/055,721             | 9197675           |

|                                    |               |            |          |
|------------------------------------|---------------|------------|----------|
| Global Innovation Aggregators, LLC | United States | 14/269,039 | 9282010  |
| Global Innovation Aggregators, LLC | United States | 14/307,454 | 9413650  |
| Global Innovation Aggregators, LLC | United States | 14/308,436 | 9143463  |
| Global Innovation Aggregators, LLC | United States | 14/469,427 | 9172638  |
| Global Innovation Aggregators, LLC | United States | 14/835,517 | 9413694  |
| Global Innovation Aggregators, LLC | United States | 14/864,689 | 9444733  |
| Global Innovation Aggregators, LLC | United States | 14/864,843 | 9485176  |
| Global Innovation Aggregators, LLC | United States | 14/919,687 | 9843509  |
| Global Innovation Aggregators, LLC | United States | 14/991,862 | 9832042  |
| Global Innovation Aggregators, LLC | United States | 15/054,070 | 9680713  |
| Global Innovation Aggregators, LLC | United States | 15/838,014 | 10411999 |
| Global Innovation Aggregators, LLC | United States | 15/687,633 |          |
| Global Innovation Aggregators, LLC | United States | 16/536,103 |          |
| Global Innovation Aggregators, LLC | United States | 10/323,442 | 6965612  |
| Global Innovation Aggregators, LLC | United States | 10/900,737 | 7020158  |
| Global Innovation Aggregators, LLC | United States | 11/209,230 | 7613213  |
| Global Innovation Aggregators, LLC | United States | 11/210,135 | 7558287  |
| Global Innovation Aggregators, LLC | United States | 11/553,151 | 7630397  |
| Global Innovation Aggregators, LLC | United States | 13/396,453 | 8929312  |
| Global Innovation Aggregators, LLC | United States | 13/415,463 | 9219533  |
| Global Innovation Aggregators, LLC | United States | 13/447,864 | 9161304  |
| Global Innovation Aggregators, LLC | United States | 13/924,458 | 8958819  |

|                                    |               |            |         |
|------------------------------------|---------------|------------|---------|
| Global Innovation Aggregators, LLC | United States | 13/926,602 | 9161299 |
| Global Innovation Aggregators, LLC | United States | 10/161,673 | 7395245 |
| Global Innovation Aggregators, LLC | United States | 10/212,068 | 7715564 |
| Global Innovation Aggregators, LLC | United States | 10/257,353 | 7359883 |
| Global Innovation Aggregators, LLC | United States | 10/354,080 | 7290047 |
| Global Innovation Aggregators, LLC | United States | 10/542,362 | 8521651 |
| Global Innovation Aggregators, LLC | United States | 10/568,284 | 7680808 |
| Global Innovation Aggregators, LLC | United States | 10/738,302 | 7451202 |
| Global Innovation Aggregators, LLC | United States | 11/093,116 | 7571488 |
| Global Innovation Aggregators, LLC | United States | 11/892,105 | 8073939 |
| Global Innovation Aggregators, LLC | United States | 13/283,921 | 8745751 |
| Global Innovation Aggregators, LLC | United States | 13/283,939 | 8639751 |
| Global Innovation Aggregators, LLC | United States | 12/302,052 | 8068452 |
| Global Innovation Aggregators, LLC | United States | 12/666,237 | 8483131 |
| Global Innovation Aggregators, LLC | United States | 12/991,628 | 8438448 |
| Global Innovation Aggregators, LLC | United States | 13/140,085 | 8548324 |
| Global Innovation Aggregators, LLC | United States | 13/257,942 | 8825797 |
| Global Innovation Aggregators, LLC | United States | 13/375,887 | 8731563 |
| Global Innovation Aggregators, LLC | United States | 13/375,888 | 8670331 |

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**Courtesy Reminder for  
Application Serial No: 16/536,103**

Attorney Docket No: 5015-0003C1

Customer Number: 60533

Date of Electronic Notification: 12/11/2019

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:

docketinggroup@tlgiplaw.com  
lmarlow@tlgiplaw.com

To view your correspondence online or update your email addresses, please visit us anytime at **<https://ppair-my.uspto.gov/pair/PrivatePair>**.

If you have any questions, please email the Electronic Business Center (EBC) at [EBC@uspto.gov](mailto:EBC@uspto.gov) or call 1-866-217-9197.



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| APPLICATION NO.      | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------|-------------|----------------------|---------------------|------------------|
| 16/536,103           | 08/08/2019  | Ping Pan             | 5015-0003C1         | 6346             |
| 60533                | 7590        | 12/11/2019           | EXAMINER            |                  |
| TOLER LAW GROUP      |             |                      | RENNER, BRANDON M   |                  |
| TOLER LAW GROUP      |             |                      |                     |                  |
| 8500 BLUFFSTONE COVE |             |                      |                     |                  |
| SUITE A201           |             |                      |                     |                  |
| AUSTIN, TX 78759     |             |                      |                     |                  |
|                      |             |                      | ART UNIT            | PAPER NUMBER     |
|                      |             |                      | 2478                |                  |
|                      |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                      |             |                      | 12/11/2019          | ELECTRONIC       |

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

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

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

docketinggroup@tlgiplaw.com  
lmarlow@tlgiplaw.com



## **DETAILED ACTION**

### ***Notice of Pre-AIA or AIA Status***

The present application is being examined under the pre-AIA first to invent provisions.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See

MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit [www.uspto.gov/patent/patents-forms](http://www.uspto.gov/patent/patents-forms). The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to [www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp](http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp).

Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 10,411,999. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of patent 10,411,999 anticipate the claims of the instant application as shown in the table below.

| Claim 1 of the instant application                                                                    | Claim 1 of patent 10,411,999                                                                                   |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| A method comprising: at a node associated with a multiprotocol label switching system (MPLS) network, | A method comprising: at an ingress node associated with a multiprotocol label switching system (MPLS) network, |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>performing: identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow; in response to identifying the information, and based on stored data that maps application flows with pseudowires, determining a plurality of pseudowires corresponding to paths through the MPLS network, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and communicating data related to the sending device application via at least one of the plurality of pseudowires</p> | <p>performing: identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow; in response to identifying the information, and based on stored data mapping application flows with psuedowires, determining a plurality of pseudowires as paths through the MPLS network for the application flow, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of psuedowires; and communicating data associated with the application via at least one of the pseudowires.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The claims also stand rejected under double patenting over the following patent:

8,588,061

9,197,675

9,843,509

Appropriate correction required.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-20 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim(s) does/do not fall within at least one of the four categories of patent eligible subject matter because the claims recite a computer readable storage medium, however the specification does not define the medium to be limited to only non-transitory mediums. Therefore, the Examiner suggests adding “non-transitory” to the claim language to overcome the 101 rejection.

Appropriate correction required.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M RENNER whose telephone number is (571)270-3621. The examiner can normally be reached on Monday-Friday 7am-5pm EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick Ferris can be reached on (571)-272-3123. 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.

/BRANDON M RENNER/  
Primary Examiner, Art Unit 2478

|                                          |                                       |                                                          |             |
|------------------------------------------|---------------------------------------|----------------------------------------------------------|-------------|
| <b><i>Notice of References Cited</i></b> | Application/Control No.<br>16/536,103 | Applicant(s)/Patent Under<br>Reexamination<br>Pan et al. |             |
|                                          | Examiner<br>BRANDON M RENNER          | Art Unit<br>2478                                         | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name                | CPC Classification | US Classification |
|---|---|--------------------------------------------------|-----------------|---------------------|--------------------|-------------------|
| * | A | US-20050093770-A1                                | 05-2005         | de Bonet, Jeremy S. | G06F13/387         | 345/10            |
|   | B |                                                  |                 |                     |                    |                   |
|   | C |                                                  |                 |                     |                    |                   |
|   | D |                                                  |                 |                     |                    |                   |
|   | E |                                                  |                 |                     |                    |                   |
|   | F |                                                  |                 |                     |                    |                   |
|   | G |                                                  |                 |                     |                    |                   |
|   | H |                                                  |                 |                     |                    |                   |
|   | I |                                                  |                 |                     |                    |                   |
|   | J |                                                  |                 |                     |                    |                   |
|   | K |                                                  |                 |                     |                    |                   |
|   | L |                                                  |                 |                     |                    |                   |
|   | M |                                                  |                 |                     |                    |                   |

**FOREIGN PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | CPC 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.



|                                                                                                                 |                                              |                                                              |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------|
| <b><i>Search Notes</i></b><br> | <b>Application/Control No.</b><br>16/536,103 | <b>Applicant(s)/Patent Under Reexamination</b><br>Pan et al. |
|                                                                                                                 | <b>Examiner</b><br>BRANDON M RENNER          | <b>Art Unit</b><br>2478                                      |

|                           |             |                 |
|---------------------------|-------------|-----------------|
| <b>CPC - Searched*</b>    |             |                 |
| <b>Symbol</b>             | <b>Date</b> | <b>Examiner</b> |
| h04l12/465 - text limited | 12/06/2019  | BR              |

|                                         |             |                 |
|-----------------------------------------|-------------|-----------------|
| <b>CPC Combination Sets - Searched*</b> |             |                 |
| <b>Symbol</b>                           | <b>Date</b> | <b>Examiner</b> |
|                                         |             |                 |

|                                      |                 |             |                 |
|--------------------------------------|-----------------|-------------|-----------------|
| <b>US Classification - Searched*</b> |                 |             |                 |
| <b>Class</b>                         | <b>Subclass</b> | <b>Date</b> | <b>Examiner</b> |
|                                      |                 |             |                 |

\* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

|                                                                                                           |             |                 |
|-----------------------------------------------------------------------------------------------------------|-------------|-----------------|
| <b>Search Notes</b>                                                                                       |             |                 |
| <b>Search Notes</b>                                                                                       | <b>Date</b> | <b>Examiner</b> |
| EAST Class limited with text search; Inventor & assignee search and text search (as per attached history) | 12/06/2019  | BR              |

|                            |                              |             |                 |
|----------------------------|------------------------------|-------------|-----------------|
| <b>Interference Search</b> |                              |             |                 |
| <b>US Class/CPC Symbol</b> | <b>US Subclass/CPC Group</b> | <b>Date</b> | <b>Examiner</b> |
|                            |                              |             |                 |

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EAST Search History

EAST Search History (Prior Art)

| Ref # | Hits | Search Query                                                                                             | DBs             | Default Operator | Plurals | Time Stamp       |
|-------|------|----------------------------------------------------------------------------------------------------------|-----------------|------------------|---------|------------------|
| L1    | 1804 | ((virtual adj circuit) pseudowire) same map\$5                                                           | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:06 |
| L2    | 271  | ((virtual adj circuit) pseudowire) same map\$5 same flow                                                 | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:06 |
| L3    | 140  | (pseudowire PW ) same (rate) same (split\$5 divid\$4)                                                    | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:06 |
| L4    | 103  | (pan near ping).in.                                                                                      | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:06 |
| L5    | 135  | ((virtual adj circuit) pseudowire) same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007" | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L6    | 67   | (map\$4 split\$4 divid\$4) with (Stream data flow) and pseudo\$wire and @ad<="20051007"                  | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L7    | 0    | L5 and L6                                                                                                | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L8    | 210  | h04l12/465.cpc.                                                                                          | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L9    | 6289 | encapsulat\$4 with (first portion subset) near4 data                                                     | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L10   | 192  | encapsulat\$4 with (second another different) near4 (portion subset) near4 data                          | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L11   | 187  | L9 and L10                                                                                               | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L12   | 1    | "16536103"                                                                                               | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:07 |
| L13   | 9    | "11543727"                                                                                               | US-PGPUB; USPAT | OR               | ON      | 2019/12/06 15:08 |
| S1    | 1    | "11543727"                                                                                               | US-PGPUB; USPAT | OR               | ON      | 2011/07/13 11:46 |
| S2    | 1    | "2002014393" "20050220148"                                                                               | US-PGPUB; USPAT | OR               | ON      | 2011/07/13 11:58 |
| S3    | 2    | "20020014393" "20050220148"                                                                              | US-PGPUB;       | OR               | ON      | 2011/07/13 11:58 |

|     |      |                                                                                                                |                 |    |    |                  |
|-----|------|----------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
|     |      |                                                                                                                | USPAT           |    |    |                  |
| S4  | 3    | "20020141393" "20050220148"                                                                                    | US-PGPUB; USPAT | OR | ON | 2011/07/13 11:59 |
| S5  | 2    | "20040156313"                                                                                                  | US-PGPUB; USPAT | OR | ON | 2011/07/13 12:07 |
| S6  | 1090 | ((virtual adj circuit) pseudowire) same map\$5                                                                 | US-PGPUB; USPAT | OR | ON | 2011/07/13 12:40 |
| S7  | 133  | ((virtual adj circuit) pseudowire) same map\$5 same flow                                                       | US-PGPUB; USPAT | OR | ON | 2011/07/13 12:40 |
| S8  | 63   | ((virtual adj circuit) pseudowire) same map\$5 with flow                                                       | US-PGPUB; USPAT | OR | ON | 2011/07/13 12:40 |
| S9  | 46   | S8 and @ad<="20051007"                                                                                         | US-PGPUB; USPAT | OR | ON | 2011/07/13 12:42 |
| S10 | 1305 | ((virtual adj circuit) pseudowire) same map\$5                                                                 | US-PGPUB; USPAT | OR | ON | 2013/07/09 15:35 |
| S11 | 162  | ((virtual adj circuit) pseudowire) same map\$5 same flow                                                       | US-PGPUB; USPAT | OR | ON | 2013/07/09 15:35 |
| S12 | 78   | ((virtual adj circuit) pseudowire) same map\$5 with flow                                                       | US-PGPUB; USPAT | OR | ON | 2013/07/09 15:35 |
| S13 | 52   | S12 and @ad<="20051007"                                                                                        | US-PGPUB; USPAT | OR | ON | 2013/07/09 15:35 |
| S17 | 1    | "14055721"                                                                                                     | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:10 |
| S18 | 3    | "11543727"                                                                                                     | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:11 |
| S19 | 380  | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4)                                                 | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:29 |
| S20 | 189  | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4) and @ad<="20051007"                             | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:29 |
| S21 | 2    | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4) near4 (stream flow) and @ad<="20051007"         | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:29 |
| S22 | 6    | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4) near4 (stream flow packets) and @ad<="20051007" | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:29 |
| S23 | 39   | (pseudowire PW ) same (rate) same (split\$5 divid\$4) and @ad<="20051007"                                      | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:38 |
| S24 | 0    | (pseudowire ) same (rate) same (split\$5 divid\$4) and @ad<="20051007"                                         | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:42 |
| S25 | 8    | (pseudowire ) same (rate) and @ad<="20051007"                                                                  | US-PGPUB;       | OR | ON | 2015/01/05 09:43 |

|     |      |                                                                                                                                                   |                 |    |    |                  |
|-----|------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
|     |      |                                                                                                                                                   | USPAT           |    |    |                  |
| S26 | 39   | (pseudowire PW pseudo\$wire) same (rate) same (split\$5 divid\$4) and @ad<="20051007"                                                             | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:52 |
| S27 | 0    | (pseudowire pseudo\$wire) same (rate) same (split\$5 divid\$4) and @ad<="20051007"                                                                | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:52 |
| S28 | 1    | (pseudowire pseudo\$wire) same (split\$5 divid\$4) with (flow stream) and @ad<="20051007"                                                         | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:52 |
| S29 | 1434 | ((Pseudo near Wire near Emulation near Edge\$to\$Edge) PWe\$1) and @ad<="20051007"                                                                | US-PGPUB; USPAT | OR | ON | 2015/01/05 09:59 |
| S30 | 154  | ((Pseudo near Wire near Emulation near Edge\$to\$Edge) PWe\$1) and ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007"               | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:00 |
| S31 | 3    | ((Pseudo near Wire near Emulation near Edge\$to\$Edge) PWe\$1) same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007"              | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:00 |
| S32 | 0    | ((Pseudo near Wire near Emulation near Edge\$to\$Edge)) and (pseudowire pw) same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007" | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:01 |
| S33 | 148  | (pseudo\$wire pw) same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007"                                                           | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:01 |
| S34 | 0    | ((virtual adj circuit) pseudowire) same map\$5 with flow same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007"                    | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:16 |
| S35 | 21   | ((virtual adj circuit) pseudowire) same map\$5 with flow and ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007"                     | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:16 |
| S36 | 10   | (first second plurality) near3 pseudo\$wire same (map\$4 split\$4 divid\$4) with (flow data stream) and @ad<="20051007"                           | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:26 |
| S37 | 67   | (pan near ping).in.                                                                                                                               | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:28 |
| S38 | 9    | (pan near ping).in. and pseudowire.clm.                                                                                                           | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:28 |
| S39 | 12   | pseudo\$wire with (flow data stream) same (exceed\$4 rate threshold) and @ad<="20051007"                                                          | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:30 |
| S40 | 15   | pseudo\$wire same (exceed\$4 rate threshold) and @ad<="20051007"                                                                                  | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:32 |
| S41 | 5    | ((virtual adj circuit) pseudowire) same map\$5 with flow same exceed\$4                                                                           | US-PGPUB; USPAT | OR | ON | 2015/01/05 10:49 |
| S42 | 1    | "20050220148" and (exceed\$4 same (pipe pseudowire))                                                                                              | US-PGPUB; USPAT | OR | ON | 2015/01/05 11:00 |
|     |      |                                                                                                                                                   |                 |    |    |                  |

|     |         |                                                                                                                                                                                |                 |    |    |                  |
|-----|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
| S43 | 135     | ((virtual adj circuit) pseudowire) same ((exceed\$4 greater) near4 (rate threshold)) and @ad<="20051007"                                                                       | US-PGPUB; USPAT | OR | ON | 2015/01/05 11:06 |
| S44 | 65      | (map\$4 split\$4 divid\$4) with (Stream data flow) and pseudo\$wire and @ad<="20051007"                                                                                        | US-PGPUB; USPAT | OR | ON | 2015/01/05 11:06 |
| S45 | 0       | S43 and S44                                                                                                                                                                    | US-PGPUB; USPAT | OR | ON | 2015/01/05 11:07 |
| S46 | 12      | (map\$4 split\$4 divid\$4) with (Stream data flow) and pseudo\$wire and @ad<="20051007" and (exceed\$4 greater) near3 (rate threshold)                                         | US-PGPUB; USPAT | OR | ON | 2015/01/05 11:08 |
| S47 | 16      | (Stream data flow) with (plurality first second) near3 pseudo\$wire and @ad<="20051007"                                                                                        | US-PGPUB; USPAT | OR | ON | 2015/01/05 11:13 |
| S48 | 18      | pseudo\$wire same (exceed\$4 greater\$4) near3 (speed rate threshold)                                                                                                          | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:09 |
| S49 | 2       | pseudo\$wire same (exceed\$4 greater\$4) near3 (speed rate threshold) and @ad<="20051007"                                                                                      | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:11 |
| S50 | 5598736 | pseudo\$wire with (split\$4 divid\$4) near3 (data stream flow) @ad<="20051007"                                                                                                 | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:41 |
| S51 | 5598748 | pseudo\$wire same (split\$4 divid\$4) near3 (data stream flow) @ad<="20051007"                                                                                                 | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:41 |
| S52 | 1       | pseudo\$wire same (split\$4 divid\$4) near3 (data stream flow) and @ad<="20051007"                                                                                             | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:42 |
| S53 | 0       | pseudo\$wire with (split\$4 divid\$4) near3 (data stream flow) and @ad<="20051007"                                                                                             | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:42 |
| S54 | 1       | (pseudo\$wire tunnel) with (exceed\$4 greater\$4) near3 (speed rate threshold) same (divid\$4 split\$4) near3 (flow data packets stream)                                       | US-PGPUB; USPAT | OR | ON | 2015/01/07 10:43 |
| S55 | 1       | mpls and (exceed\$4 greater) near3 (rate threshold speed) same (split\$4 divid\$4 us\$4) near2 (mutple plurality second\$4) near3 (tunnel pseudo\$wire PW)                     | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:01 |
| S56 | 0       | mpls and (exceed\$4 greater) near3 (rate threshold speed) same (split\$4 divid\$4 us\$4) near2 (mutple plurality second\$4) near3 (tunnel pseudo\$wire PW) and @ad<="20051007" | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:02 |
| S57 | 1       | (exceed\$4 greater) near3 (rate threshold speed) same (split\$4 divid\$4 us\$4) near2 (mutple plurality second\$4) near3 (tunnel pseudo\$wire PW)                              | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:03 |
| S58 | 17      | available\$4 with (exceed\$4 greater) with (rate threshold speed) same (tunnel pseudo\$wire PW) and @aD<="20051007"                                                            | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:04 |
| S59 | 16      | available\$4 with (exceed\$4 greater) with (rate threshold speed) same (tunnel pseudo\$wire ) and @aD<="20051007"                                                              | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:04 |

|     |      |                                                                                                                                                                                                                                                  |                 |    |    |                  |
|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
| S60 | 73   | available\$4 with (exceed\$4 greater) with (rate threshold speed) and (tunnel pseudo\$wire ) and @aD<="20051007" and "370"/\$.ccls.                                                                                                              | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:05 |
| S61 | 95   | h04l12/465.cpc.                                                                                                                                                                                                                                  | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:05 |
| S62 | 0    | available\$4 with (exceed\$4 greater) with (rate threshold speed) same (multiple plurality more additional) near3 (tunnel pseudo\$wire ) and @aD<="20051007" and "370"/\$.ccls.                                                                  | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:08 |
| S63 | 7    | (exceed\$4 greater) with (rate threshold speed) same (multiple plurality more additional) near3 (tunnel pseudo\$wire ) and @aD<="20051007" and "370"/\$.ccls.                                                                                    | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:08 |
| S64 | 1813 | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire)                                                                                                  | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:16 |
| S65 | 313  | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls.                                                           | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:16 |
| S66 | 589  | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007"                                                                              | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:16 |
| S67 | 100  | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007" and (exceed\$4 greater) with (threshold limit rate speed)                    | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:17 |
| S68 | 0    | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007" same (exceed\$4 greater) with (threshold limit rate speed)                   | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:18 |
| S69 | 40   | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls. and (exceed\$4 greater) with (threshold limit rate speed) | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:18 |
| S70 | 27   | (Traffic flows streams data) with (exceed\$4 greater above) with (threshold limit rate speed) same (rout\$4 forward\$4 divid\$4 split\$4 shar\$4) with (tunnel pseudo\$wire) and @aD<="20051007"                                                 | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:23 |
| S71 | 256  | map\$4 with (data flow stream) with (tunnel pseudo\$wire) and @aD<="20051007"                                                                                                                                                                    | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:38 |
| S72 | 27   | map\$4 with (data flow stream) with (tunnel pseudo\$wire) with (plurality multiple) and @aD<="20051007"                                                                                                                                          | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:39 |
| S73 | 29   | map\$4 with (data flow stream) with                                                                                                                                                                                                              | US-             | OR | ON | 2015/01/07       |

|     |     |                                                                                                                                                                                                                                                                |                 |    |    |                  |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
|     |     | (tunnel pseudo\$wire) with (plurality multiple additional) and @aD<="20051007"                                                                                                                                                                                 | PGPUB; USPAT    |    |    | 11:39            |
| S74 | 317 | (creat\$4 provision add\$4) near3 (extra additional more plurality multiple) near3 (tunnel pseudo\$wire) and @aD<="20051007"                                                                                                                                   | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:40 |
| S75 | 0   | (creat\$4 provision add\$4) near3 (extra additional more plurality multiple) near3 (tunnel pseudo\$wire) same (rate speed threshold) near3 (exceed\$4 greater\$4 larg\$4) and @aD<="20051007"                                                                  | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:41 |
| S76 | 10  | (creat\$4 provision add\$4) near3 (extra additional more plurality multiple) near3 (tunnel pseudo\$wire) same (threshold limit bound capabilit\$4) and @aD<="20051007"                                                                                         | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:42 |
| S77 | 26  | (creat\$4 provision add\$4) near3 (extra additional more plurality multiple) near3 (tunnel pseudo\$wire) and (rate speed threshold) near3 (exceed\$4 greater\$4 larg\$4) and @aD<="20051007"                                                                   | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:43 |
| S78 | 34  | (split\$4 divid\$4 map\$4) with (flow data stream) with (plurality multiple additional) near3 (tunnel pseudo\$wire) and @aD<="20051007"                                                                                                                        | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:45 |
| S79 | 302 | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls. not S78                                                                 | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:48 |
| S80 | 27  | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls. not S78 and (rate speed threshold) near3 (exceed\$4 greater\$4 larg\$4) | US-PGPUB; USPAT | OR | ON | 2015/01/07 11:49 |
| S81 | 141 | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) near3 (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls. not S78                                                                | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:00 |
| S82 | 50  | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality) near3 (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls. not S78                                                                          | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:01 |
| S83 | 111 | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality additional creat\$4) near3 (tunnel pseudo\$wire) and @aD<="20051007" and "370"/\$.ccls. not S78                                                      | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:01 |
| S84 | 108 | (provider adj edge (pe)) same (threshold limit capacity rate) near3 (exceed\$4 greater max maximum) same (split\$4 divid\$4 map\$4)                                                                                                                            | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:12 |
| S85 | 1   | (provider adj edge (pe)) same (threshold                                                                                                                                                                                                                       | US-             | OR | ON | 2015/01/07       |

|     |      |                                                                                                                                                                                                                                                 |                 |    |    |                  |
|-----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
|     |      | limit capacity rate) near3 (exceed\$4 greater max maximum) same (split\$4 divid\$4 map\$4) same (tunnel pw pseudo\$wire)                                                                                                                        | PGPUB; USPAT    |    |    | 12:13            |
| S86 | 42   | (provider adj edge (pe)) same (threshold limit capacity rate) near3 (exceed\$4 greater max maximum) and (split\$4 divid\$4 portion map\$4) same (tunnel pw pseudo\$wire)                                                                        | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:13 |
| S87 | 14   | (provider adj edge (pe)) same (threshold limit capacity rate) near3 (exceed\$4 greater max maximum) and (split\$4 divid\$4 portion map\$4) same (tunnel pw pseudo\$wire) and @aD<="20051007"                                                    | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:14 |
| S88 | 105  | (send\$4 forward\$4 rout\$4 transmit\$4) with (split\$4 portion segment divid\$4) near3 (data stream flow packets) with (tunnel pseudo\$wire) and @aD<="20051007"                                                                               | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:27 |
| S89 | 0    | (send\$4 forward\$4 rout\$4 transmit\$4) with (split\$4 portion segment divid\$4) near3 (data stream flow packets) with (tunnel pseudo\$wire) same (threshold limit capacity) near3 (max maximum exceed\$4 greater) and @aD<="20051007"         | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:28 |
| S90 | 0    | (send\$4 forward\$4 rout\$4 transmit\$4) with (split\$4 portion segment divid\$4 part\$4) near3 (data stream flow packets) with (tunnel pseudo\$wire) same (threshold limit capacity) near3 (max maximum exceed\$4 greater) and @aD<="20051007" | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:28 |
| S91 | 18   | (send\$4 forward\$4 rout\$4 transmit\$4) with (split\$4 portion segment divid\$4 part\$4) near3 (data stream flow packets) with (tunnel pseudo\$wire) and (threshold limit capacity) near3 (max maximum exceed\$4 greater) and @aD<="20051007"  | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:29 |
| S92 | 4895 | (first near2 (tunnel pseudo\$wire pw)) same (second near2 (tunnel pseudo\$wire pw))                                                                                                                                                             | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:36 |
| S93 | 1926 | (first near2 (tunnel pseudo\$wire pw)) same (second near2 (tunnel pseudo\$wire pw)) and @aD<="20051007"                                                                                                                                         | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:36 |
| S94 | 11   | (first near2 (tunnel pseudo\$wire pw)) same (second near2 (tunnel pseudo\$wire pw)) same (split\$4 divid\$4 map\$4) near3 (data packet stream flow) and @aD<="20051007"                                                                         | US-PGPUB; USPAT | OR | ON | 2015/01/07 12:37 |
| S95 | 1    | "8588061".pn.                                                                                                                                                                                                                                   | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:04 |
| S96 | 18   | (threshold limit) with (greater exceed\$4 larg\$4) same pseudo\$wire                                                                                                                                                                            | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:26 |
| S97 | 2    | (threshold limit) with (greater exceed\$4 larg\$4) same pseudo\$wire and @aD<="20051007"                                                                                                                                                        | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:27 |

|      |      |                                                                                                                                                            |                 |    |    |                  |
|------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
| S98  | 2178 | (threshold limit) with (greater exceed\$4 larg\$4) same (pseudo\$wire tunnel)                                                                              | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:29 |
| S99  | 47   | (threshold limit) with (greater exceed\$4 larg\$4) same (pseudo\$wire tunnel) same (split\$4 divid\$4)                                                     | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:29 |
| S100 | 5    | (threshold limit) with (greater exceed\$4 larg\$4) same (pseudo\$wire tunnel) same (split\$4 divid\$4) near4 (data packet stream flow)                     | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:29 |
| S101 | 0    | (threshold limit) with (greater exceed\$4 larg\$4) same (pseudo\$wire tunnel) same (split\$4 divid\$4) near4 (data packet stream flow) and @aD<="20051007" | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:29 |
| S102 | 3    | "20080144632" "20060227767"                                                                                                                                | US-PGPUB; USPAT | OR | ON | 2015/04/07 07:49 |
| S103 | 1    | "13681118"                                                                                                                                                 | US-PGPUB; USPAT | OR | ON | 2015/04/07 12:58 |
| S104 | 2    | "20100091669"                                                                                                                                              | US-PGPUB; USPAT | OR | ON | 2015/04/07 13:06 |
| S105 | 428  | (threshold limit) with (greater exceed\$4 larg\$4) with (pseudo\$wire tunnel) and @aD<="20051007"                                                          | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:00 |
| S106 | 22   | (threshold limit) with (greater exceed\$4 larg\$4) with (rate speed throughput) with (pseudo\$wire tunnel) and @aD<="20051007"                             | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:01 |
| S107 | 0    | (threshold limit) with (greater exceed\$4 larg\$4) with (rate speed throughput) with (pseudo\$wire) and @aD<="20051007"                                    | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:01 |
| S108 | 0    | (threshold limit) with (greater exceed\$4 larg\$4) with (pseudo\$wire) and @aD<="20051007"                                                                 | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:01 |
| S109 | 0    | (threshold limit) with (greater exceed\$4 larg\$4) with (pseudo near wire) and @aD<="20051007"                                                             | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:01 |
| S110 | 0    | (threshold limit) with (greater exceed\$4 larg\$4) with (pseudo\$wire) and @aD<="20051007"                                                                 | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:01 |
| S111 | 6    | (threshold limit) with (pseudo\$wire) and @aD<="20051007"                                                                                                  | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:01 |
| S112 | 50   | (threshold limit) with (pseudo\$wire evc) and @aD<="20051007"                                                                                              | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:03 |
| S113 | 8    | (threshold limit) with (pseudo\$wire evc) with (Rate speed) and @aD<="20051007"                                                                            | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:03 |
| S114 | 60   | (threshold limit) with (pseudo\$wire (virtual adj circuit)) with (Rate speed) and @aD<="20051007"                                                          | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:04 |
| S115 | 5    | (threshold limit) with (pseudo\$wire (virtual adj circuit)) with (Rate speed) same (split\$4 divid\$4 map\$4) and                                          | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:04 |

|      |       |                                                                                                            |                 |    |    |                  |
|------|-------|------------------------------------------------------------------------------------------------------------|-----------------|----|----|------------------|
|      |       | @aD< = "20051007"                                                                                          |                 |    |    |                  |
| S116 | 45    | (threshold limit) with (pseudo\$wire (virtual adj circuit)) with (exceed\$4 greater) and @aD< = "20051007" | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:08 |
| S117 | 23998 | h04I29/06.cpc.                                                                                             | US-PGPUB; USPAT | OR | ON | 2015/04/07 15:37 |
| S118 | 97    | ((virtual adj circuit) pseudowire) same map\$5 with flow                                                   | US-PGPUB; USPAT | OR | ON | 2015/07/31 16:59 |
| S119 | 25    | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4) near4 (stream flow packets)                 | US-PGPUB; USPAT | OR | ON | 2015/07/31 16:59 |
| S120 | 67    | (map\$4 split\$4 divid\$4) with (Stream data flow) and pseudo\$wire and @ad< = "20051007"                  | US-PGPUB; USPAT | OR | ON | 2015/07/31 16:59 |
| S121 | 64588 | (h04I29/06 h04I12/66 h04I65/\$).cpc.                                                                       | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:00 |
| S122 | 6     | S118 and (h04I29/06 h04I12/66 h04I65/\$).cpc.                                                              | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:00 |
| S123 | 3     | S120 and (h04I29/06 h04I12/66 h04I65/\$).cpc.                                                              | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:00 |
| S124 | 64    | (threshold limit) with (pseudo\$wire (virtual adj circuit)) with (exceed\$4 greater)                       | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:00 |
| S125 | 391   | (pseudowire PW emulat\$4) same (rate) same (split\$5 divid\$4)                                             | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:10 |
| S126 | 1504  | ((virtual adj circuit) pseudowire) same map\$5                                                             | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:10 |
| S127 | 97    | ((virtual adj circuit) pseudowire) same map\$5 with flow                                                   | US-PGPUB; USPAT | OR | ON | 2015/07/31 17:10 |
| S131 | 1     | "14919687"                                                                                                 | US-PGPUB; USPAT | OR | ON | 2016/09/29 08:32 |
| S132 | 5     | "11543727"                                                                                                 | US-PGPUB; USPAT | OR | ON | 2016/09/29 08:35 |
| S133 | 4651  | encapsulat\$4 with (first portion subset) near4 data                                                       | US-PGPUB; USPAT | OR | ON | 2016/09/29 08:52 |
| S134 | 129   | encapsulat\$4 with (second another different) near4 (portion subset) near4 data                            | US-PGPUB; USPAT | OR | ON | 2016/09/29 08:53 |
| S135 | 126   | S133 and S134                                                                                              | US-PGPUB; USPAT | OR | ON | 2016/09/29 08:54 |
| S136 | 75229 | (h04I29/06 h04I12/66 h04I65/\$).cpc.                                                                       | US-PGPUB; USPAT | OR | ON | 2016/09/29 09:19 |
| S138 | 58    | S133 and S134 and (ethernet pseudowire psuedo\$wire)                                                       | US-PGPUB;       | OR | ON | 2016/09/29 09:23 |

|      |       |                                                                                                                                                                                   |                 |    |     |                  |
|------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|-----|------------------|
|      |       |                                                                                                                                                                                   | USPAT           |    |     |                  |
| S139 | 699   | (mpls (multi\$protocol near label near switching)) same (subset portion some) near3 (packet data traffic flow)                                                                    | US-PGPUB; USPAT | OR | ON  | 2017/08/05 13:07 |
| S140 | 24    | (mpls (multi\$protocol near label near switching)) same (subset portion some) near3 (packet data traffic flow) same (diffserv (differentiated near service))                      | US-PGPUB; USPAT | OR | ON  | 2017/08/05 13:08 |
| S141 | 9     | (mpls (multi\$protocol near label near switching)) same (subset portion some) near3 (packet data traffic flow) same (diffserv (differentiated near service)) and @aD<="20051007"  | US-PGPUB; USPAT | OR | ON  | 2017/08/05 13:09 |
| S142 | 1     | "15838014"                                                                                                                                                                        | US-PGPUB; USPAT | OR | ON  | 2018/08/29 10:39 |
| S143 | 3     | "9843509".pn. "9197675".pn. "8588061".pn.                                                                                                                                         | US-PGPUB; USPAT | OR | OFF | 2018/08/29 10:47 |
| S146 | 5576  | encapsulat\$4 with (first portion subset) near4 data                                                                                                                              | US-PGPUB; USPAT | OR | ON  | 2018/08/29 15:50 |
| S147 | 170   | encapsulat\$4 with (second another different) near4 (portion subset) near4 data                                                                                                   | US-PGPUB; USPAT | OR | ON  | 2018/08/29 15:50 |
| S148 | 166   | S146 and S147                                                                                                                                                                     | US-PGPUB; USPAT | OR | ON  | 2018/08/29 15:50 |
| S149 | 26660 | h04l29/06.cpc.                                                                                                                                                                    | US-PGPUB; USPAT | OR | ON  | 2018/08/29 15:50 |
| S150 | 699   | (label mpls lsp (multiprotocol near2 label)) with (pseudowire ethernet virtual) same (distribut\$4 balanc\$4) near4 (traffic data load)                                           | US-PGPUB; USPAT | OR | ON  | 2018/08/29 15:56 |
| S155 | 10    | (append\$4 attach\$4) near4 label with (pseudowire ethernet virtual) same (distribut\$4 balanc\$4) near4 (traffic data load)                                                      | US-PGPUB; USPAT | OR | ON  | 2018/08/29 16:18 |
| S156 | 19    | (append\$4 attach\$4) near4 label same (pseudowire ethernet virtual atm (frame near2 relay) layer\$3) same (distribut\$4 balanc\$4) near4 (traffic data load)                     | US-PGPUB; USPAT | OR | ON  | 2018/08/29 16:20 |
| S157 | 4     | (append\$4 attach\$4) near4 label same (pseudowire ethernet virtual atm (frame near2 relay) layer\$3) same (distribut\$4 balanc\$4) near4 (traffic data load) and @aD<="20051007" | US-PGPUB; USPAT | OR | ON  | 2018/08/29 16:24 |
| S158 | 364   | (balanc\$4 distribut\$4) with (pseudowire ethernet virtual atm (frame near2 relay) layer\$3) with exceed\$4 near4 (limit threshold)                                               | US-PGPUB; USPAT | OR | OFF | 2018/08/29 19:09 |
| S166 | 10    | (balanc\$4 distribut\$4) with (pseudowire link) with (exceed\$4 greater) near4 (limit threshold) and mpls                                                                         | US-PGPUB; USPAT | OR | OFF | 2018/08/29 19:21 |
| S167 | 5     | (balanc\$4 distribut\$4) with (pseudowire ethernet virtual atm (frame near2 relay) layer\$3) with rate near4 exceed\$4 near4                                                      | US-PGPUB; USPAT | OR | OFF | 2018/08/29 19:23 |

|      |        |                                                                                                                                                                             |                 |    |     |                  |
|------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|-----|------------------|
|      |        | (limit threshold)                                                                                                                                                           |                 |    |     |                  |
| S168 | 47     | (balanc\$4 distribut\$4) with (pseudowire ethernet virtual atm (frame near2 relay layer\$3) with rate near4 (greater exceed\$4) near4 (limit threshold)                     | US-PGPUB; USPAT | OR | OFF | 2018/08/29 19:23 |
| S169 | 35     | (balanc\$4 distribut\$4) with (pseudowire ethernet virtual atm (frame near2 relay layer\$3) with rate near4 (greater exceed\$4) near4 (limit threshold) and @aD<="20050710" | US-PGPUB; USPAT | OR | OFF | 2018/08/29 19:23 |
| S170 | 5902   | encapsulat\$4 with (first portion subset) near4 data                                                                                                                        | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:28 |
| S171 | 179    | encapsulat\$4 with (second another different) near4 (portion subset) near4 data                                                                                             | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:28 |
| S172 | 174    | S170 and S171                                                                                                                                                               | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:28 |
| S173 | 81     | S170 and S171 and (ethernet pseudowire psuedo\$wire)                                                                                                                        | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:28 |
| S174 | 1269   | (map\$4) with (application) same (ethernet pseudowire psuedo\$wire)                                                                                                         | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:30 |
| S175 | 1750   | ((virtual adj circuit) pseudowire) same map\$5                                                                                                                              | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:32 |
| S176 | 1750   | ((virtual adj circuit) pseudowire) same map\$5                                                                                                                              | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:32 |
| S177 | 17564  | (map\$4) with (application) same (ethernet pseudowire psuedo\$wire virtual)                                                                                                 | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:32 |
| S178 | 394    | (pseudo\$wire pw) same ((exceed\$4 greater) near4 (rate threshold))                                                                                                         | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:34 |
| S179 | 18468  | (ethernet pseudowire psuedo\$wire virtual) with (Traffic flow data application) near4 map\$4                                                                                | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:38 |
| S180 | 130692 | (ethernet pseudowire psuedo\$wire virtual) with (Traffic flow data application) near4 (map\$4 relat\$4 stor\$4)                                                             | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:38 |
| S181 | 1599   | (ethernet pseudowire psuedo\$wire virtual) with (Traffic flow data application) near4 (map\$4 relat\$4 stor\$4) same encapsulat\$4                                          | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:41 |
| S182 | 486    | (ethernet pseudowire psuedo\$wire virtual) with (Traffic flow data application) near4 (map\$4 relat\$4 stor\$4) same encapsulat\$4 and (mpls label)                         | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:45 |
| S183 | 394    | (pseudo\$wire pw) same ((exceed\$4 greater) near4 (rate threshold))                                                                                                         | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:47 |
| S184 | 3411   | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire)                             | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:47 |

|      |     |                                                                                                                                                                                                           |                 |    |     |                  |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|-----|------------------|
| S185 | 570 | (rout\$4 forward\$4 send\$4 split\$4 divid\$4) with (Traffic flows streams data) with (multiple plurality second\$4) with (tunnel pseudo\$wire) and (exceed\$4 greater) with (threshold limit rate speed) | US-PGPUB; USPAT | OR | ON  | 2019/04/25 09:47 |
| S186 | 388 | (balanc\$4 distribut\$4) with (pseudowire ethernet virtual atm (frame near2 relay) layer\$3) with exceed\$4 near4 (limit threshold)                                                                       | US-PGPUB; USPAT | OR | OFF | 2019/04/25 09:48 |

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| First Named Inventor   | Ping Pan        |
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| Examiner Name          | NGO, RICKY QUOC |
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|                   | 1       | 5920705       | A                      | 1999-07-06 | LYON et al.                                     |                                                                        |
|                   | 2       | 6167051       | A                      | 2000-12-26 | NAGAMI et al.                                   |                                                                        |
|                   | 3       | 6347088       | B1                     | 2002-02-12 | KATOU et al.                                    |                                                                        |
|                   | 4       | 6430184       | B1                     | 2002-08-06 | ROBINS et al.                                   |                                                                        |
|                   | 5       | 6477166       | B1                     | 2002-11-05 | SANZI et al.                                    |                                                                        |
|                   | 6       | 6546427       |                        | 2003-04-08 | EHRLICH ET AL.                                  |                                                                        |
|                   | 7       | 6574477       | B1                     | 2003-06-03 | RATHUNDE DALE FRANK                             |                                                                        |
|                   | 8       | 6621793       | B2                     | 2003-09-16 | WIDEGREN et al.                                 |                                                                        |

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|----|---------|----|------------|--------------------------|--|
| 9  | 6665273 | B1 | 2003-12-16 | GOGUEN et al.            |  |
| 10 | 6680943 | B1 | 2004-01-20 | GIBSON et al.            |  |
| 11 | 6751684 | B2 | 2004-06-15 | OWEN et al.              |  |
| 12 | 6813271 | B1 | 2004-11-02 | CABLE JULIAN FRANK BARRY |  |
| 13 | 6845389 | B1 | 2005-01-18 | SEN et al.               |  |
| 14 | 6985488 | B2 | 2006-01-10 | PAN et al.               |  |
| 15 | 7050396 | B1 | 2006-05-23 | COHEN et al.             |  |
| 16 | 7200104 | B2 | 2007-04-03 | SALEH et al.             |  |
| 17 | 7436782 | B2 | 2008-10-14 | NGO et al.               |  |
| 18 | 7590070 | B1 | 2009-09-15 | ASAWA et al.             |  |
| 19 | 7697528 | B2 | 2010-04-13 | PARRY et al.             |  |

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|----|---------|----|------------|------------|
| 20 | 9843509 | B2 | 2017-12-12 | PAN et al. |
|----|---------|----|------------|------------|

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|-------------------|---------|--------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|
|                   | 1       | 20010021175        | A1                     | 2001-09-13       | HAVERINEN HENRY                                 |                                                                          |
|                   | 2       | 20010023453        | A1                     | 2001-09-20       | SUNDQVIST JIM                                   |                                                                          |
|                   | 3       | 20010043603        | A1                     | 2001-11-22       | YU SHAOHUA                                      |                                                                          |
|                   | 4       | 20020112072        | A1                     | 2002-08-15       | JAIN SUDHANSHU                                  |                                                                          |
|                   | 5       | 20020141393        | A1                     | 2002-10-03       | ERIKSSON et al.                                 |                                                                          |
|                   | 6       | 20020146026        | A1                     | 2002-10-10       | UNITT et al.                                    |                                                                          |
|                   | 7       | 20030002482        | A1                     | 2003-01-02       | KUBLER et al.                                   |                                                                          |
|                   | 8       | 20030039237        | A1                     | 2003-02-27       | FORSLOW JAN E                                   |                                                                          |

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|    |             |    |            |                   |  |
|----|-------------|----|------------|-------------------|--|
| 9  | 20030117950 | A1 | 2003-06-26 | HUANG GAIL G      |  |
| 10 | 20040105459 | A1 | 2004-06-03 | MANNAM RAGHU      |  |
| 11 | 20040114595 | A1 | 2004-06-17 | DOUKAI MASAMI     |  |
| 12 | 20040133692 | A1 | 2004-07-08 | BLANCHET et al.   |  |
| 13 | 20040156313 | A1 | 2004-08-12 | HOFMEISTER et al. |  |
| 14 | 20040174865 | A1 | 2004-09-09 | O'NEILL ALAN      |  |
| 15 | 20040252717 | A1 | 2004-12-16 | SOLOMON et al.    |  |
| 16 | 20050018605 | A1 | 2005-01-27 | FOOTE et al.      |  |
| 17 | 20050044262 | A1 | 2005-02-24 | LUO WEI           |  |
| 18 | 20050080890 | A1 | 2005-04-14 | YANG et al.       |  |
| 19 | 20050080911 | A1 | 2005-04-14 | STIERS et al.     |  |

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|    |             |    |            |                   |
|----|-------------|----|------------|-------------------|
| 20 | 20050220148 | A1 | 2005-10-06 | DELREGNO et al.   |
| 21 | 20050237927 | A1 | 2005-10-27 | KANO et al.       |
| 22 | 20050259586 | A1 | 2005-11-24 | HAFID et al.      |
| 23 | 20060002423 | A1 | 2006-01-05 | REMBERT et al.    |
| 24 | 20060018252 | A1 | 2006-01-26 | SRIDHAR et al.    |
| 25 | 20060046658 | A1 | 2006-03-02 | CRUZ et al.       |
| 26 | 20060047851 | A1 | 2006-03-02 | VOIT et al.       |
| 27 | 20060090008 | A1 | 2006-04-27 | GUICHARD et al.   |
| 28 | 20060146832 | A1 | 2006-07-06 | RAMPAL et al.     |
| 29 | 20060227767 | A1 | 2006-10-12 | JOHNSON et al.    |
| 30 | 20060233167 | A1 | 2006-10-19 | MCALLISTER et al. |

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|    |             |    |            |                   |
|----|-------------|----|------------|-------------------|
| 31 | 20070038921 | A1 | 2007-02-15 | PEKONEN et al.    |
| 32 | 20070053366 | A1 | 2007-03-08 | BOOTH et al.      |
| 33 | 20070070893 | A1 | 2007-03-29 | BUTENWEG et al.   |
| 34 | 20070127479 | A1 | 2007-06-07 | SINICROPE et al.  |
| 35 | 20070206607 | A1 | 2007-09-06 | CHAPMAN et al.    |
| 36 | 20080031129 | A1 | 2008-02-07 | ARSENEAULT et al. |
| 37 | 20080144632 | A1 | 2008-06-19 | RABIE et al.      |

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|--------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                    | 1       | Afferton, Thomas S. et al., Ethernet Transport over Wide Area Networks,                                                                                                                                                                                         |                |
|                    | 2       | Afferton, Thomas S. et al., Ethernet Transport over Wide Area Networks, Packet-Aware Transport for Metro Networks, IEEE Communications Magazine, pp. 120-127, Mar. 2004.                                                                                        |                |
|                    | 3       | Anderson, L. et al., LDP Specification, Network Working Group, Jan. 2001.                                                                                                                                                                                       |                |
|                    | 4       | Blake et al. "An Architecture for Differentiated Services," Network Working Group, Dec. 1998.                                                                                                                                                                   |                |
|                    | 5       | Braden et al. "Integrated Services in the Internet Architecture: an overview," Network Working Group, Jun. 1994.                                                                                                                                                |                |
|                    | 6       | Bryant et al. "Pseudo wire Emulation Edge-to-Edge (PWE3) Architecture," Network Working Group, Mar. 2005.                                                                                                                                                       |                |
|                    | 7       | Harry Newton, "Newton's Telecom Dictionary", 23rd Updated and Expanded Edition, p. 825,p. 239, Flatiron Publishing, New York, Mar. 2007.                                                                                                                        |                |
|                    | 8       | International Search Report for PCT Application Serial No. PCT/US2006/039257, dated Apr. 18, 2007, 2 pgs. Final Office Action dated Mar. 9, 2010 for U.S. Appl. No. 11/543,727, 17 pages.                                                                       |                |
|                    | 9       | Martini, L. et al., Pseudowire Setup and Maintenance using the Label Distribution Protocol (LDP), Network Working Group, Apr. 2006.                                                                                                                             |                |
|                    | 10      | Martini, Luca et al., Dynamic Placement of Multi Segment Pseudo Wires, PWE3 Working Group, Jun. 2006.                                                                                                                                                           |                |

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|                        |                 |
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|    |                                                                                                                                                                                                 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | Martini, Luca et al., Encapsulation Methods for Transport of Ethernet over MPLS Networks, Network Working Group, Apr. 2006.                                                                     |
| 12 | Martini, Luca et al., Internet Draft, Segmented Pseudo Wire, Network Working Group, Jul. 2007.                                                                                                  |
| 13 | Martini, Luca et al., Pseudowire Setup and Maintenance using LDP, Network Working Group, Mar. 2005.                                                                                             |
| 14 | Martini, Luca, et al., Encapsulation Methods for Transport of Frame Relay Over Ethernet over MPLS Networks, Network Working Group, Feb. 2006.                                                   |
| 15 | McPherson et al., Pseudowire Emulation Edge to Edge (PWE3) Jun. 13, 2007, <a href="http://www.ietf.org/html.charters/pwe3-carter.html">http://www.ietf.org/html.charters/pwe3-carter.html</a> . |
| 16 | Metz, Chris et al., Pseudowire Attachment Identifiers for Aggregation and VPN Autodiscovery, PWE3 Working Group, Feb. 25, 2006.                                                                 |
| 17 | Pan, P. et al., Internet Draft, Pseudo Wire Protection, Jul. 2006.                                                                                                                              |
| 18 | Pan, Ping, Internet Draft, Dry-Martini: Supporting Pseudo-wires in Sub-IP Access Networks, Network Working Group, Jul. 2005.                                                                    |
| 19 | Rosen, E. et al., BGP-MPLS IP Virtual Private Networks (VPN), Network Working Group, Feb. 2006.                                                                                                 |
| 20 | Rosen, Eric C. et al., Internet Draft, PWE3 Congestion Control Framework, Network Working Group, Mar. 2004.                                                                                     |
| 21 | Shah, Himanshu et al., Internet Draft, ARP Mediation for IP Interworking of Layer 2 VPN, L2VPN Working Group, Jul. 2007.                                                                        |

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|    |                                                                                                                                                                                     |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | Theimer, T. et al, "Requirements for OAM Functionality in MPLS", Oct. 1999, Watersprings.                                                                                           |
| 23 | Vasseur, et al., Path Computation Element (pce), May 9, 2007, <a href="http://www.ietf.org/html.charters/pce.charter.html">http://www.ietf.org/html.charters/pce.charter.html</a> . |

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## Bibliographic Data

Application No: 16/536,103

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /BRANDON M RENNER/

Examiner's Signature

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Title: APPLICATION WIRE

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| FILING or 371(c) DATE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|-----------------------|-------|----------------|---------------------|
| 08/08/2019            | 370   | 2478           | 5015-0003C1         |
| RULE                  |       |                |                     |

### APPLICANTS

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### INVENTORS

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Richard D. Gitlin Little Silver, NJ, UNITED STATES

### CONTINUING DATA

This application is a CON of 15838014 12/11/2017 PAT 10411999

15838014 is a CON of 14919687 10/21/2015 PAT 9843509

14919687 is a CON of 14055721 10/16/2013 PAT 9197675

14055721 is a CON of 11543727 10/05/2006 PAT 8588061

11543727 has PRO of 60725038 10/07/2005

### FOREIGN APPLICATIONS

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|                                                                                                     | Filing Date            |                 | 2019-08-08 |
|                                                                                                     | First Named Inventor   | Ping Pan        |            |
|                                                                                                     | Art Unit               | 2464            |            |
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|                   | 1       | 5920705       | A                      | 1999-07-06 | LYON et al.                                     |                                                                        |
|                   | 2       | 6167051       | A                      | 2000-12-26 | NAGAMI et al.                                   |                                                                        |
|                   | 3       | 6347088       | B1                     | 2002-02-12 | KATOU et al.                                    |                                                                        |
|                   | 4       | 6430184       | B1                     | 2002-08-06 | ROBINS et al.                                   |                                                                        |
|                   | 5       | 6477166       | B1                     | 2002-11-05 | SANZI et al.                                    |                                                                        |
|                   | 6       | 6546427       |                        | 2003-04-08 | EHRlich ET AL.                                  |                                                                        |
|                   | 7       | 6574477       | B1                     | 2003-06-03 | RATHUNDE DALE FRANK                             |                                                                        |
|                   | 8       | 6621793       | B2                     | 2003-09-16 | WIDEGREN et al.                                 |                                                                        |

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|    |         |    |            |                          |  |
|----|---------|----|------------|--------------------------|--|
| 9  | 6665273 | B1 | 2003-12-16 | GOGUEN et al.            |  |
| 10 | 6680943 | B1 | 2004-01-20 | GIBSON et al.            |  |
| 11 | 6751684 | B2 | 2004-06-15 | OWEN et al.              |  |
| 12 | 6813271 | B1 | 2004-11-02 | CABLE JULIAN FRANK BARRY |  |
| 13 | 6845389 | B1 | 2005-01-18 | SEN et al.               |  |
| 14 | 6985488 | B2 | 2006-01-10 | PAN et al.               |  |
| 15 | 7050396 | B1 | 2006-05-23 | COHEN et al.             |  |
| 16 | 7200104 | B2 | 2007-04-03 | SALEH et al.             |  |
| 17 | 7436782 | B2 | 2008-10-14 | NGO et al.               |  |
| 18 | 7590070 | B1 | 2009-09-15 | ASAWA et al.             |  |
| 19 | 7697528 | B2 | 2010-04-13 | PARRY et al.             |  |

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| Attorney Docket Number | 5015-0003C1     |

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|----|---------|----|------------|------------|
| 20 | 9843509 | B2 | 2017-12-12 | PAN et al. |
|----|---------|----|------------|------------|

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|-------------------|---------|--------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|
|                   | 1       | 20010021175        | A1                     | 2001-09-13       | HAVERINEN HENRY                                 |                                                                          |
|                   | 2       | 20010023453        | A1                     | 2001-09-20       | SUNDQVIST JIM                                   |                                                                          |
|                   | 3       | 20010043603        | A1                     | 2001-11-22       | YU SHAOHUA                                      |                                                                          |
|                   | 4       | 20020112072        | A1                     | 2002-08-15       | JAIN SUDHANSHU                                  |                                                                          |
|                   | 5       | 20020141393        | A1                     | 2002-10-03       | ERIKSSON et al.                                 |                                                                          |
|                   | 6       | 20020146026        | A1                     | 2002-10-10       | UNITT et al.                                    |                                                                          |
|                   | 7       | 20030002482        | A1                     | 2003-01-02       | KUBLER et al.                                   |                                                                          |
|                   | 8       | 20030039237        | A1                     | 2003-02-27       | FORSLOW JAN E                                   |                                                                          |

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

|                        |                 |             |
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| Attorney Docket Number |                 | 5015-0003C1 |

|    |             |    |            |                   |  |
|----|-------------|----|------------|-------------------|--|
| 9  | 20030117950 | A1 | 2003-06-26 | HUANG GAIL G      |  |
| 10 | 20040105459 | A1 | 2004-06-03 | MANNAM RAGHU      |  |
| 11 | 20040114595 | A1 | 2004-06-17 | DOUKAI MASAMI     |  |
| 12 | 20040133692 | A1 | 2004-07-08 | BLANCHET et al.   |  |
| 13 | 20040156313 | A1 | 2004-08-12 | HOFMEISTER et al. |  |
| 14 | 20040174865 | A1 | 2004-09-09 | O'NEILL ALAN      |  |
| 15 | 20040252717 | A1 | 2004-12-16 | SOLOMON et al.    |  |
| 16 | 20050018605 | A1 | 2005-01-27 | FOOTE et al.      |  |
| 17 | 20050044262 | A1 | 2005-02-24 | LUO WEI           |  |
| 18 | 20050080890 | A1 | 2005-04-14 | YANG et al.       |  |
| 19 | 20050080911 | A1 | 2005-04-14 | STIERS et al.     |  |

**INFORMATION DISCLOSURE  
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| Attorney Docket Number |                 | 5015-0003C1 |

|    |             |    |            |                   |  |
|----|-------------|----|------------|-------------------|--|
| 20 | 20050220148 | A1 | 2005-10-06 | DELREGNO et al.   |  |
| 21 | 20050237927 | A1 | 2005-10-27 | KANO et al.       |  |
| 22 | 20050259586 | A1 | 2005-11-24 | HAFID et al.      |  |
| 23 | 20060002423 | A1 | 2006-01-05 | REMBERT et al.    |  |
| 24 | 20060018252 | A1 | 2006-01-26 | SRIDHAR et al.    |  |
| 25 | 20060046658 | A1 | 2006-03-02 | CRUZ et al.       |  |
| 26 | 20060047851 | A1 | 2006-03-02 | VOIT et al.       |  |
| 27 | 20060090008 | A1 | 2006-04-27 | GUICHARD et al.   |  |
| 28 | 20060146832 | A1 | 2006-07-06 | RAMPAL et al.     |  |
| 29 | 20060227767 | A1 | 2006-10-12 | JOHNSON et al.    |  |
| 30 | 20060233167 | A1 | 2006-10-19 | MCALLISTER et al. |  |

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
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|                        |                 |
|------------------------|-----------------|
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| Attorney Docket Number | 5015-0003C1     |

|    |             |    |            |                   |
|----|-------------|----|------------|-------------------|
| 31 | 20070038921 | A1 | 2007-02-15 | PEKONEN et al.    |
| 32 | 20070053366 | A1 | 2007-03-08 | BOOTH et al.      |
| 33 | 20070070893 | A1 | 2007-03-29 | BUTENWEG et al.   |
| 34 | 20070127479 | A1 | 2007-06-07 | SINICROPE et al.  |
| 35 | 20070206607 | A1 | 2007-09-06 | CHAPMAN et al.    |
| 36 | 20080031129 | A1 | 2008-02-07 | ARSENEAULT et al. |
| 37 | 20080144632 | A1 | 2008-06-19 | RABIE et al.      |

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|--------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                    | 1       | Afferton, Thomas S. et al., Ethernet Transport over Wide Area Networks,                                                                                                                                                                                         |                |
|                    | 2       | Afferton, Thomas S. et al., Ethernet Transport over Wide Area Networks, Packet-Aware Transport for Metro Networks, IEEE Communications Magazine, pp. 120-127, Mar. 2004.                                                                                        |                |
|                    | 3       | Anderson, L. et al., LDP Specification, Network Working Group, Jan. 2001.                                                                                                                                                                                       |                |
|                    | 4       | Blake et al. "An Architecture for Differentiated Services," Network Working Group, Dec. 1998.                                                                                                                                                                   |                |
|                    | 5       | Braden et al. "Integrated Services in the Internet Architecture: an overview," Network Working Group, Jun. 1994.                                                                                                                                                |                |
|                    | 6       | Bryant et al. "Pseudo wire Emulation Edge-to-Edge (PWE3) Architecture," Network Working Group, Mar. 2005.                                                                                                                                                       |                |
|                    | 7       | Harry Newton, "Newton's Telecom Dictionary", 23rd Updated and Expanded Edition, p. 825,p. 239, Flatiron Publishing, New York, Mar. 2007.                                                                                                                        |                |
|                    | 8       | International Search Report for PCT Application Serial No. PCT/US2006/039257, dated Apr. 18, 2007, 2 pgs. Final Office Action dated Mar. 9, 2010 for U.S. Appl. No. 11/543,727, 17 pages.                                                                       |                |
|                    | 9       | Martini, L. et al., Pseudowire Setup and Maintenance using the Label Distribution Protocol (LDP), Network Working Group, Apr. 2006.                                                                                                                             |                |
|                    | 10      | Martini, Luca et al., Dynamic Placement of Multi Segment Pseudo Wires, PWE3 Working Group, Jun. 2006.                                                                                                                                                           |                |

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

|                        |                 |
|------------------------|-----------------|
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| Examiner Name          | NGO, RICKY QUOC |
| Attorney Docket Number | 5015-0003C1     |

|    |                                                                                                                                                                                                 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | Martini, Luca et al., Encapsulation Methods for Transport of Ethernet over MPLS Networks, Network Working Group, Apr. 2006.                                                                     |
| 12 | Martini, Luca et al., Internet Draft, Segmented Pseudo Wire, Network Working Group, Jul. 2007.                                                                                                  |
| 13 | Martini, Luca et al., Pseudowire Setup and Maintenance using LDP, Network Working Group, Mar. 2005.                                                                                             |
| 14 | Martini, Luca, et al., Encapsulation Methods for Transport of Frame Relay Over Ethernet over MPLS Networks, Network Working Group, Feb. 2006.                                                   |
| 15 | McPherson et al., Pseudowire Emulation Edge to Edge (PWE3) Jun. 13, 2007, <a href="http://www.ietf.org/html.charters/pwe3-carter.html">http://www.ietf.org/html.charters/pwe3-carter.html</a> . |
| 16 | Metz, Chris et al., Pseudowire Attachment Identifiers for Aggregation and VPN Autodiscovery, PWE3 Working Group, Feb. 25, 2006.                                                                 |
| 17 | Pan, P. et al., Internet Draft, Pseudo Wire Protection, Jul. 2006.                                                                                                                              |
| 18 | Pan, Ping, Internet Draft, Dry-Martini: Supporting Pseudo-wires in Sub-IP Access Networks, Network Working Group, Jul. 2005.                                                                    |
| 19 | Rosen, E. et al., BGP-MPLS IP Virtual Private Networks (VPN), Network Working Group, Feb. 2006.                                                                                                 |
| 20 | Rosen, Eric C. et al., Internet Draft, PWE3 Congestion Control Framework, Network Working Group, Mar. 2004.                                                                                     |
| 21 | Shah, Himanshu et al., Internet Draft, ARP Mediation for IP Interworking of Layer 2 VPN, L2VPN Working Group, Jul. 2007.                                                                        |

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
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|                        |                 |
|------------------------|-----------------|
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| Attorney Docket Number | 5015-0003C1     |

|    |                                                                                                                                                                                     |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | Theimer, T. et al, "Requirements for OAM Functionality in MPLS", Oct. 1999, Watersprings.                                                                                           |
| 23 | Vasseur, et al., Path Computation Element (pce), May 9, 2007, <a href="http://www.ietf.org/html.charters/pce.charter.html">http://www.ietf.org/html.charters/pce.charter.html</a> . |

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| Signature  | /Jeffrey G. Toler/ | Date (YYYY-MM-DD)   | 2019-08-30 |
| Name/Print | Jeffrey G. Toler   | Registration Number | 38,342     |

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

## Privacy Act Statement

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

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

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

## Electronic Acknowledgement Receipt

|                                             |                               |
|---------------------------------------------|-------------------------------|
| <b>EFS ID:</b>                              | 37030267                      |
| <b>Application Number:</b>                  | 16536103                      |
| <b>International Application Number:</b>    |                               |
| <b>Confirmation Number:</b>                 | 6346                          |
| <b>Title of Invention:</b>                  | APPLICATION WIRE              |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                      |
| <b>Customer Number:</b>                     | 60533                         |
| <b>Filer:</b>                               | Jeffrey G. Toler/Angie Blazek |
| <b>Filer Authorized By:</b>                 | Jeffrey G. Toler              |
| <b>Attorney Docket Number:</b>              | 5015-0003C1                   |
| <b>Receipt Date:</b>                        | 30-AUG-2019                   |
| <b>Filing Date:</b>                         | 08-AUG-2019                   |
| <b>Time Stamp:</b>                          | 12:20:40                      |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)   |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description                               | File Name                   | File Size(Bytes)/<br>Message Digest               | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------------------------------------|-----------------------------|---------------------------------------------------|------------------|------------------|
| 1               | Information Disclosure Statement (IDS) Form (SB08) | 5015-0003C1_IDS_30AUG19.pdf | 633877<br>237fba1fc0e97f712ffc6d3c88640e4d650a971 | no               | 11               |

### Warnings:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 633877 |
| <p><b>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.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/>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.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/>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.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/>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.</p> |        |



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| APPLICATION<br>NUMBER | FILING or<br>371(c) DATE | GRP ART<br>UNIT | FIL FEE REC'D | ATTY. DOCKET NO | TOT CLAIMS | IND CLAIMS |
|-----------------------|--------------------------|-----------------|---------------|-----------------|------------|------------|
| 16/536,103            | 08/08/2019               | 2447            | 1720          | 5015-0003C1     | 20         | 3          |

**CONFIRMATION NO. 6346**

## FILING RECEIPT



0000000110518189

60533  
TOLER LAW GROUP  
TOLER LAW GROUP  
8500 BLUFFSTONE COVE  
SUITE A201  
AUSTIN, TX 78759

Date Mailed: 08/21/2019

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

### Inventor(s)

Ping Pan, San Jose, CA;  
Richard D. Gitlin, Little Silver, NJ;

### Applicant(s)

Global Innovation Aggregators LLC., Pasadena, CA;

**Power of Attorney:** The patent practitioners associated with Customer Number 60533

### Domestic Priority data as claimed by applicant

This application is a CON of 15/838,014 12/11/2017  
which is a CON of 14/919,687 10/21/2015 PAT 9843509  
which is a CON of 14/055,721 10/16/2013 PAT 9197675  
which is a CON of 11/543,727 10/05/2006 PAT 8588061  
which claims benefit of 60/725,038 10/07/2005

**Foreign Applications** for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

*Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.*

**Permission to Access Application via Priority Document Exchange:** Yes

**Permission to Access Search Results:** Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

**If Required, Foreign Filing License Granted:** 08/19/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/536,103**

**Projected Publication Date:** 11/28/2019

**Non-Publication Request:** No

**Early Publication Request:** No  
**Title**

APPLICATION WIRE

**Preliminary Class**

709

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:** No

## **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 (1-866-999-4258).

**LICENSE FOR FOREIGN FILING UNDER**  
**Title 35, United States Code, Section 184**  
**Title 37, Code of Federal Regulations, 5.11 & 5.15**

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

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| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                               |                                  |          |                                    |               | Application or Docket Number<br>16/536,103 |                    |                               |                    |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------|------------------------------------|---------------|--------------------------------------------|--------------------|-------------------------------|--------------------|--------------------|
| <b>APPLICATION AS FILED - PART I</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                               |                                  |          |                                    |               |                                            |                    |                               |                    |                    |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                               | (Column 2)                       |          | SMALL ENTITY                       |               | OR<br>OTHER THAN SMALL ENTITY              |                    |                               |                    |                    |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA                     | RATE(\$) | FEE(\$)                            |               | RATE(\$)                                   | FEE(\$)            |                               |                    |                    |
| BASIC FEE<br><small>(37 CFR 1.16(a), (b), or (c))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                                                                                                                                                                                                           | N/A                              | N/A      |                                    |               | N/A                                        | 300                |                               |                    |                    |
| SEARCH FEE<br><small>(37 CFR 1.16(k), (l), or (m))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | N/A                                                                                                                                                                                                                           | N/A                              | N/A      |                                    |               | N/A                                        | 660                |                               |                    |                    |
| EXAMINATION FEE<br><small>(37 CFR 1.16(o), (p), or (q))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                     | N/A                                                                                                                                                                                                                           | N/A                              | N/A      |                                    |               | N/A                                        | 760                |                               |                    |                    |
| TOTAL CLAIMS<br><small>(37 CFR 1.16(j))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 20                                                                                                                                                                                                                            | minus 20 = *                     |          |                                    | OR            | x 100 =                                    | 0.00               |                               |                    |                    |
| INDEPENDENT CLAIMS<br><small>(37 CFR 1.16(h))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3                                                                                                                                                                                                                             | minus 3 = *                      |          |                                    |               | x 460 =                                    | 0.00               |                               |                    |                    |
| APPLICATION SIZE FEE<br><small>(37 CFR 1.16(s))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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). |                                  |          |                                    |               |                                            | 0.00               |                               |                    |                    |
| MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                               |                                  |          |                                    |               |                                            | 0.00               |                               |                    |                    |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |                                  |          | TOTAL                              |               | TOTAL                                      | 1720               |                               |                    |                    |
| <b>APPLICATION AS AMENDED - PART II</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                               |                                  |          |                                    |               |                                            |                    |                               |                    |                    |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                               | (Column 2)                       |          | (Column 3)                         |               | SMALL ENTITY                               |                    | OR<br>OTHER THAN SMALL ENTITY |                    |                    |
| AMENDMENT A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                               | CLAIMS REMAINING AFTER AMENDMENT |          | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE(\$)                                   | ADDITIONAL FEE(\$) |                               | RATE(\$)           | ADDITIONAL FEE(\$) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Total<br><small>(37 CFR 1.16(i))</small>                                                                                                                                                                                      | *                                | Minus    | **                                 | =             | x                                          | =                  | OR                            | x                  | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Independent<br><small>(37 CFR 1.16(h))</small>                                                                                                                                                                                | *                                | Minus    | ***                                | =             | x                                          | =                  | OR                            | x                  | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Application Size Fee <small>(37 CFR 1.16(s))</small>                                                                                                                                                                          |                                  |          |                                    |               |                                            |                    | OR                            |                    |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>                                                                                                                                                |                                  |          |                                    |               |                                            |                    | OR                            |                    |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                               |                                  |          |                                    |               | TOTAL<br>ADD'L FEE                         |                    | OR                            | TOTAL<br>ADD'L FEE |                    |
| AMENDMENT B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                               | CLAIMS REMAINING AFTER AMENDMENT |          | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE(\$)                                   | ADDITIONAL FEE(\$) |                               | RATE(\$)           | ADDITIONAL FEE(\$) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Total<br><small>(37 CFR 1.16(i))</small>                                                                                                                                                                                      | *                                | Minus    | **                                 | =             | x                                          | =                  | OR                            | x                  | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Independent<br><small>(37 CFR 1.16(h))</small>                                                                                                                                                                                | *                                | Minus    | ***                                | =             | x                                          | =                  | OR                            | x                  | =                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Application Size Fee <small>(37 CFR 1.16(s))</small>                                                                                                                                                                          |                                  |          |                                    |               |                                            |                    | OR                            |                    |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>                                                                                                                                                |                                  |          |                                    |               |                                            |                    | OR                            |                    |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                               |                                  |          |                                    |               | TOTAL<br>ADD'L FEE                         |                    | OR                            | TOTAL<br>ADD'L FEE |                    |
| <div style="font-size: x-small;">             * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.<br/>             ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".<br/>             *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".<br/>             The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.           </div> |                                                                                                                                                                                                                               |                                  |          |                                    |               |                                            |                    |                               |                    |                    |

## TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

|                        |                  |
|------------------------|------------------|
| Application Number     |                  |
| Filing Date            |                  |
| First Named Inventor   | Ping Pan         |
| Title                  | APPLICATION WIRE |
| Art Unit               |                  |
| Examiner Name          |                  |
| Attorney Docket Number | 5015-0003C1      |

### SIGNATURE of Applicant or Patent Practitioner

|                                                    |                                    |                     |                |
|----------------------------------------------------|------------------------------------|---------------------|----------------|
| Signature                                          | /Jeffrey G. Toler/                 | Date (Optional)     | August 8, 2019 |
| Name                                               | Jeffrey G. Toler                   | Registration Number | 38,342         |
| Title (if Applicant is a juristic entity)          | Attorney of Record                 |                     |                |
| Applicant Name (if Applicant is a juristic entity) | GLOBAL INNOVATION AGGREGATORS LLC. |                     |                |

**NOTE:** This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐

\*Total of \_\_\_\_\_ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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.*

## POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

| Application Number | Filing Date |
|--------------------|-------------|
|                    |             |

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

60533

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

**Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:**

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

GLOBAL INNOVATION AGGREGATORS LLC.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

### SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

Name

Rasheed McWilliams

Title

President

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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.

## 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 the Freedom of Information Act requires disclosure of these records.
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.
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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

|                                                       |                             |                 |               |                             |
|-------------------------------------------------------|-----------------------------|-----------------|---------------|-----------------------------|
| <b>Application Number:</b>                            |                             |                 |               |                             |
| <b>Filing Date:</b>                                   |                             |                 |               |                             |
| <b>Title of Invention:</b>                            | APPLICATION WIRE            |                 |               |                             |
| <b>First Named Inventor/Applicant Name:</b>           | Ping Pan                    |                 |               |                             |
| <b>Filer:</b>                                         | Jeffrey G. Toler/David Wade |                 |               |                             |
| <b>Attorney Docket Number:</b>                        | 5015-0003C1                 |                 |               |                             |
| Filed as Large Entity                                 |                             |                 |               |                             |
| <b>Filing Fees for    Utility under 35 USC 111(a)</b> |                             |                 |               |                             |
| <b>Description</b>                                    | <b>Fee Code</b>             | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                                  |                             |                 |               |                             |
| UTILITY APPLICATION FILING                            | 1011                        | 1               | 300           | 300                         |
| UTILITY SEARCH FEE                                    | 1111                        | 1               | 660           | 660                         |
| UTILITY EXAMINATION FEE                               | 1311                        | 1               | 760           | 760                         |
| <b>Pages:</b>                                         |                             |                 |               |                             |
| <b>Claims:</b>                                        |                             |                 |               |                             |
| <b>Miscellaneous-Filing:</b>                          |                             |                 |               |                             |
| <b>Petition:</b>                                      |                             |                 |               |                             |
| <b>Patent-Appeals-and-Interference:</b>               |                             |                 |               |                             |

| Description                       | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-----------------------------------|----------|----------|--------|----------------------|
| Post-Allowance-and-Post-Issuance: |          |          |        |                      |
| Extension-of-Time:                |          |          |        |                      |
| Miscellaneous:                    |          |          |        |                      |
| Total in USD (\$)                 |          |          |        | 1720                 |

## Electronic Acknowledgement Receipt

|                                             |                             |
|---------------------------------------------|-----------------------------|
| <b>EFS ID:</b>                              | 36827490                    |
| <b>Application Number:</b>                  | 16536103                    |
| <b>International Application Number:</b>    |                             |
| <b>Confirmation Number:</b>                 | 6346                        |
| <b>Title of Invention:</b>                  | APPLICATION WIRE            |
| <b>First Named Inventor/Applicant Name:</b> | Ping Pan                    |
| <b>Customer Number:</b>                     | 60533                       |
| <b>Filer:</b>                               | Jeffrey G. Toler/David Wade |
| <b>Filer Authorized By:</b>                 | Jeffrey G. Toler            |
| <b>Attorney Docket Number:</b>              | 5015-0003C1                 |
| <b>Receipt Date:</b>                        | 08-AUG-2019                 |
| <b>Filing Date:</b>                         |                             |
| <b>Time Stamp:</b>                          | 18:43:56                    |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a) |

### Payment information:

|                                          |                  |
|------------------------------------------|------------------|
| Submitted with Payment                   | yes              |
| Payment Type                             | DA               |
| Payment was successfully received in RAM | \$ 1720          |
| RAM confirmation Number                  | E201988I44587056 |
| Deposit Account                          | 502469           |
| Authorized User                          | David Wade       |

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)  
 37 CFR 1.20 (Post Issuance fees)  
 37 CFR 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               | Transmittal of New Application                      | 5015-0003C1_ApplicationTransmittal_signed.pdf | 321780                                   | no               | 2                |
|                 |                                                     |                                               | 2329b8116320d44bfb9914342a51354a3b978948 |                  |                  |
| Warnings:       |                                                     |                                               |                                          |                  |                  |
| Information:    |                                                     |                                               |                                          |                  |                  |
| 2               | Application Data Sheet                              | 5015-0003C1_ADS_signed.pdf                    | 1256466                                  | no               | 9                |
|                 |                                                     |                                               | ab248a1fd66e3cc04929aa1c575700681a6e272e |                  |                  |
| Warnings:       |                                                     |                                               |                                          |                  |                  |
| Information:    |                                                     |                                               |                                          |                  |                  |
| 3               |                                                     | 5015-0003C1_Application_8-8-19_FINAL.pdf      | 136870                                   | yes              | 17               |
|                 |                                                     |                                               | e5d2f5808ef023eaf4a26aba13c9569bced02ee4 |                  |                  |
|                 | Multipart Description/PDF files in .zip description |                                               |                                          |                  |                  |
|                 | Document Description                                |                                               | Start                                    | End              |                  |
|                 | Specification                                       |                                               | 1                                        | 12               |                  |
|                 | Claims                                              |                                               | 13                                       | 16               |                  |
|                 | Abstract                                            |                                               | 17                                       | 17               |                  |
| Warnings:       |                                                     |                                               |                                          |                  |                  |
| Information:    |                                                     |                                               |                                          |                  |                  |
| 4               | Drawings-only black and white line drawings         | 5015-0003C1_Figures.pdf                       | 1326133                                  | no               | 9                |
|                 |                                                     |                                               | 2239a35c7c773d7b9223bdc95fc4fe7452bb05d3 |                  |                  |
| Warnings:       |                                                     |                                               |                                          |                  |                  |
| Information:    |                                                     |                                               |                                          |                  |                  |
| 5               | Oath or Declaration filed                           | 5015-0003_Declaration.pdf                     | 318370                                   | no               | 4                |
|                 |                                                     |                                               | a05d89945c167aa523f0c48c7138f9cbce482db6 |                  |                  |

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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                            |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                            |                                          |    |   |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Power of Attorney    | 5015-0003C1_POA_signed.pdf | 284728                                   | no | 3 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |                            | 71d3d1a484f6aaef479145f940479dd7210021b6 |    |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                            |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                            |                                          |    |   |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Fee Worksheet (SB06) | fee-info.pdf               | 34566                                    | no | 2 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |                            | dfbd6da74c053c44c052bb9750accbc2661e617e |    |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                            |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                            |                                          |    |   |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                            | 3678913                                  |    |   |
| <p><b>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.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> <b>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.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> <b>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.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> <b>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.</b></p> |                      |                            |                                          |    |   |

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|                                                                                                                                     |  |                                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|--|
| <b>UTILITY<br/>PATENT APPLICATION<br/>TRANSMITTAL</b><br><br><i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i> |  | Attorney Docket No. <b>5015-0003C1</b> |  |
|                                                                                                                                     |  | First Named Inventor <b>Ping Pan</b>   |  |
|                                                                                                                                     |  | Title <b>APPLICATION WIRE</b>          |  |
|                                                                                                                                     |  | Priority Mail Express® Label No.       |  |

|                                                                                                            |                                                                                                                   |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>APPLICATION ELEMENTS</b><br><i>See MPEP chapter 600 concerning utility patent application contents.</i> | <b>ADDRESS TO:</b><br><b>Commissioner for Patents</b><br><b>P.O. Box 1450</b><br><b>Alexandria, VA 22313-1450</b> |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> <b>Fee Transmittal Form</b><br/>(PTO/SB/17 or equivalent)</li> <li>2. <input type="checkbox"/> <b>Applicant asserts small entity status.</b><br/>See 37 CFR 1.27</li> <li>3. <input type="checkbox"/> <b>Applicant certifies micro entity status.</b> See 37 CFR 1.29.<br/>Applicant must attach form PTO/SB/15A or B or equivalent.</li> <li>4. <input checked="" type="checkbox"/> <b>Specification</b> [Total Pages <u>17</u>]<br/>Both the claims and abstract must start on a new page.<br/>(See MPEP § 608.01(a) for information on the preferred arrangement)</li> <li>5. <input checked="" type="checkbox"/> <b>Drawing(s)</b> (35 U.S.C. 113) [Total Sheets <u>9</u>]</li> <li>6. <b>Inventor's Oath or Declaration</b> [Total Pages <u>4</u>]<br/>(including substitute statements under 37 CFR 1.64 and assignments<br/>serving as an oath or declaration under 37 CFR 1.63(e))             <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> Newly executed (original or copy)</li> <li>b. <input checked="" type="checkbox"/> A copy from a prior application (37 CFR 1.63(d))</li> </ol> </li> <li>7. <input checked="" type="checkbox"/> <b>Application Data Sheet</b> * See note below.<br/>See 37 CFR 1.76 (PTO/AIA/14 or equivalent)</li> <li>8. <b>CD-ROM or CD-R</b><br/>in duplicate, large table, or Computer Program (Appendix)             <div style="margin-left: 20px;"> <input type="checkbox"/> Landscape Table on CD           </div> </li> <li>9. <b>Nucleotide and/or Amino Acid Sequence Submission</b><br/>(if applicable, items a. – c. are required)             <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> Computer Readable Form (CRF)</li> <li>b. <input type="checkbox"/> Specification Sequence Listing on:               <ol style="list-style-type: none"> <li>i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or</li> <li>ii. <input type="checkbox"/> Paper</li> </ol> </li> <li>c. <input type="checkbox"/> Statements verifying identity of above copies</li> </ol> </li> </ol> | <b>ACCOMPANYING APPLICATION PAPERS</b> <ol style="list-style-type: none"> <li>10. <input type="checkbox"/> <b>Assignment Papers</b><br/>(cover sheet &amp; document(s))<br/>Name of Assignee _____</li> <li>11. <input type="checkbox"/> <b>37 CFR 3.73(c) Statement</b> <input checked="" type="checkbox"/> <b>Power of Attorney</b><br/>(when there is an assignee)</li> <li>12. <input type="checkbox"/> <b>English Translation Document</b><br/>(if applicable)</li> <li>13. <input type="checkbox"/> <b>Information Disclosure Statement</b><br/>(PTO/SB/08 or PTO-1449)<br/><div style="margin-left: 20px;"><input type="checkbox"/> Copies of citations attached</div></li> <li>14. <input type="checkbox"/> <b>Preliminary Amendment</b></li> <li>15. <input type="checkbox"/> <b>Return Receipt Postcard</b><br/>(MPEP § 503) (Should be specifically itemized)</li> <li>16. <input type="checkbox"/> <b>Certified Copy of Priority Document(s)</b><br/>(if foreign priority is claimed)</li> <li>17. <input type="checkbox"/> <b>Nonpublication Request</b><br/>Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35<br/>or equivalent.</li> <li>18. <input type="checkbox"/> <b>Other:</b> _____<br/>_____<br/>_____<br/>_____</li> </ol> |
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**\*Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).  
 (2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

|                                                                                                                                                               |           |          |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|--|--|
| <b>19. CORRESPONDENCE ADDRESS</b>                                                                                                                             |           |          |  |  |
| <input checked="" type="checkbox"/> The address associated with Customer Number: <u>60533</u> <b>OR</b> <input type="checkbox"/> Correspondence address below |           |          |  |  |
| Name                                                                                                                                                          |           |          |  |  |
| Address                                                                                                                                                       |           |          |  |  |
| City                                                                                                                                                          | State     | Zip Code |  |  |
| Country                                                                                                                                                       | Telephone | Email    |  |  |

|                   |                    |                                   |                |
|-------------------|--------------------|-----------------------------------|----------------|
| Signature         | /Jeffrey G. Toler/ | Date                              | August 8, 2019 |
| Name (Print/Type) | Jeffrey G. Toler   | Registration No. (Attorney/Agent) | 38,342         |

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 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.

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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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)).
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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.

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.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                        |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  | Attorney Docket Number | 5015-0003C1 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  | Application Number     |             |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | APPLICATION WIRE |                        |             |
| <p>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.</p> <p>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.</p> |                  |                        |             |

**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.)

**Inventor Information:**

|                                                                                                                                                                          |            |                |             |                      |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|-------------|----------------------|--------|
| Inventor                                                                                                                                                                 | 1          |                |             |                      | Remove |
| Legal Name                                                                                                                                                               |            |                |             |                      |        |
| Prefix                                                                                                                                                                   | Given Name | Middle Name    | Family Name | Suffix               |        |
|                                                                                                                                                                          | Ping       |                | Pan         |                      |        |
| Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service |            |                |             |                      |        |
| City                                                                                                                                                                     | San Jose   | State/Province | CA          | Country of Residence | US     |

**Mailing Address of Inventor:**

|             |                 |                |    |  |  |
|-------------|-----------------|----------------|----|--|--|
| Address 1   | 640 Clyde Court |                |    |  |  |
| Address 2   |                 |                |    |  |  |
| City        | Mountain View   | State/Province | CA |  |  |
| Postal Code | 94043           | Country        | US |  |  |

|                                                                                                                                                                          |               |                |             |                      |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|-------------|----------------------|--------|
| Inventor                                                                                                                                                                 | 2             |                |             |                      | Remove |
| Legal Name                                                                                                                                                               |               |                |             |                      |        |
| Prefix                                                                                                                                                                   | Given Name    | Middle Name    | Family Name | Suffix               |        |
|                                                                                                                                                                          | Richard       | D.             | Gitlin      |                      |        |
| Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service |               |                |             |                      |        |
| City                                                                                                                                                                     | Little Silver | State/Province | NJ          | Country of Residence | US     |

**Mailing Address of Inventor:**

|             |                 |                |    |  |  |
|-------------|-----------------|----------------|----|--|--|
| Address 1   | 640 Clyde Court |                |    |  |  |
| Address 2   |                 |                |    |  |  |
| City        | Mountain View   | State/Province | CA |  |  |
| Postal Code | 94043           | Country        | US |  |  |

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).

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

☐ An Address is being provided for the correspondence information of this application.

|                 |                             |           |              |
|-----------------|-----------------------------|-----------|--------------|
| Customer Number | 60533                       |           |              |
| Email Address   | DocketingGroup@tlgiplaw.com | Add Email | Remove Email |

### Application Information:

|                                         |                  |                                           |                          |
|-----------------------------------------|------------------|-------------------------------------------|--------------------------|
| Title of the Invention                  | APPLICATION WIRE |                                           |                          |
| Attorney Docket Number                  | 5015-0003C1      | Small Entity Status Claimed               | <input type="checkbox"/> |
| Application Type                        | Nonprovisional   |                                           |                          |
| Subject Matter                          | Utility          |                                           |                          |
| Total Number of Drawing Sheets (if any) | 9                | Suggested Figure for Publication (if any) | 1                        |

### Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

|                                                        |                          |                                            |
|--------------------------------------------------------|--------------------------|--------------------------------------------|
| Application number of the previously filed application | Filing date (YYYY-MM-DD) | Intellectual Property Authority or Country |
|                                                        |                          |                                            |

### 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). Either enter 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: | <input checked="" type="radio"/> Customer Number | <input type="radio"/> US Patent Practitioner | <input type="radio"/> Limited Recognition (37 CFR 11.9) |
| Customer Number    | 60533                                            |                                              |                                                         |

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

## Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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.

When referring to the current application, please leave the "Application Number" field blank.

|                                                                                                                       |                               |                          |                                    |               |                         |
|-----------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------|------------------------------------|---------------|-------------------------|
| Prior Application Status                                                                                              | Pending                       | Remove                   |                                    |               |                         |
| Application Number                                                                                                    | Continuity Type               | Prior Application Number | Filing or 371(c) Date (YYYY-MM-DD) |               |                         |
|                                                                                                                       | Continuation of               | 15838014                 | 2017-12-11                         |               |                         |
| Prior Application Status                                                                                              | Patented                      | Remove                   |                                    |               |                         |
| Application Number                                                                                                    | Continuity Type               | Prior Application Number | Filing Date (YYYY-MM-DD)           | Patent Number | Issue Date (YYYY-MM-DD) |
| 15838014                                                                                                              | Continuation of               | 14919687                 | 2015-10-21                         | 9843509       | 2017-12-12              |
| Prior Application Status                                                                                              | Patented                      | Remove                   |                                    |               |                         |
| Application Number                                                                                                    | Continuity Type               | Prior Application Number | Filing Date (YYYY-MM-DD)           | Patent Number | Issue Date (YYYY-MM-DD) |
| 14919687                                                                                                              | Continuation of               | 14055721                 | 2013-10-16                         | 9197675       | 2015-11-24              |
| Prior Application Status                                                                                              | Patented                      | Remove                   |                                    |               |                         |
| Application Number                                                                                                    | Continuity Type               | Prior Application Number | Filing Date (YYYY-MM-DD)           | Patent Number | Issue Date (YYYY-MM-DD) |
| 14055721                                                                                                              | Continuation of               | 11543727                 | 2006-10-05                         | 8588061       | 2013-11-19              |
| Prior Application Status                                                                                              | Expired                       | Remove                   |                                    |               |                         |
| Application Number                                                                                                    | Continuity Type               | Prior Application Number | Filing or 371(c) Date (YYYY-MM-DD) |               |                         |
| 11543727                                                                                                              | Claims benefit of provisional | 60725038                 | 2005-10-07                         |               |                         |
| Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the <b>Add</b> button. |                               |                          |                                    |               | Add                     |

## Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. 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. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)<sup>i</sup> the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

|                    |                      |                          |                                          |
|--------------------|----------------------|--------------------------|------------------------------------------|
| Remove             |                      |                          |                                          |
| Application Number | Country <sup>i</sup> | Filing Date (YYYY-MM-DD) | Access Code <sup>j</sup> (if applicable) |
|                    |                      |                          |                                          |

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

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

Add

## Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

## Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

**NOTE:** This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

### 1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

**A. Priority Document Exchange (PDX)** - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

**B. Search Results from U.S. Application to EPO** - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

### 2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

**NOTE:** Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

## Applicant Information:

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                          |                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------|
| <b>Applicant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                        | <a href="#">Remove</a>                           |
| <p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p> <p style="text-align: right;"><a href="#">Clear</a></p> |                                          |                                                  |
| <input checked="" type="radio"/> Assignee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Legal Representative under 35 U.S.C. 117 | Joint Inventor                                   |
| Person to whom the inventor is obligated to assign.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          | Person who shows sufficient proprietary interest |
| If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                                  |
| <div style="border: 1px solid black; height: 20px; width: 100%;"></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                          |                                                  |
| Name of the Deceased or Legally Incapacitated Inventor: <div style="border: 1px solid black; height: 20px; width: 100%;"></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                          |                                                  |
| If the Applicant is an Organization check here. <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                                  |
| Organization Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Global Innovation Aggregators LLC.       |                                                  |
| <b>Mailing Address Information For Applicant:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                                  |
| Address 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1055 E. Colorado Boulevard               |                                                  |
| Address 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Fifth Floor                              |                                                  |
| City                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Pasadena                                 | State/Province CA                                |
| Country                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | US                                       | Postal Code 91106                                |
| Phone Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                          | Fax Number                                       |
| Email Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                          |                                                  |
| Additional Applicant Data may be generated within this form by selecting the Add button. <a href="#">Add</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                          |                                                  |

## Assignee Information including Non-Applicant Assignee Information:

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

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      |                      |                      |                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Assignee</b>   1                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                      |                      |                      |
| Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication. |                      |                      |                      |                      |
| <input type="button" value="Remove"/>                                                                                                                                                                                                                                                                                                                                                                                                                  |                      |                      |                      |                      |
| If the Assignee or Non-Applicant Assignee is an Organization check here. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                      |                      |                      |                      |                      |
| Prefix                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Given Name           | Middle Name          | Family Name          | Suffix               |
| <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <b>Mailing Address Information For Assignee including Non-Applicant Assignee:</b>                                                                                                                                                                                                                                                                                                                                                                      |                      |                      |                      |                      |
| Address 1                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      | <input type="text"/> |                      |                      |
| Address 2                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      | <input type="text"/> |                      |                      |
| City                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="text"/> | State/Province       | <input type="text"/> |                      |
| Country <sup>i</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="text"/> | Postal Code          | <input type="text"/> |                      |
| Phone Number                                                                                                                                                                                                                                                                                                                                                                                                                                           | <input type="text"/> | Fax Number           | <input type="text"/> |                      |
| Email Address                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="text"/> |                      |                      |                      |
| Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. <input type="button" value="Add"/>                                                                                                                                                                                                                                                                                                   |                      |                      |                      |                      |

**Signature:**

**NOTE:** This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

|                                                                                                                        |                 |           |                   |                     |
|------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|-------------------|---------------------|
| <b>Signature</b>                                                                                                       | /Jeffrey Toler/ |           | Date (YYYY-MM-DD) | 2019-08-08          |
| First Name                                                                                                             | Jeffrey         | Last Name | Toler             | Registration Number |
|                                                                                                                        |                 |           |                   | 38,342              |
| Additional Signature may be generated within this form by selecting the Add button. <input type="button" value="Add"/> |                 |           |                   |                     |

|                                           |                  |                        |             |
|-------------------------------------------|------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                  | Attorney Docket Number | 5015-0003C1 |
|                                           |                  | Application Number     |             |
| Title of Invention                        | APPLICATION WIRE |                        |             |

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.**

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

## **APPLICATION WIRE**

### **CROSS REFERENCE TO OTHER APPLICATIONS**

**[0001]** This application is a continuation of U.S. Patent Application No. 15/838,014, filed Dec. 11, 2017, and entitled "Application Wire," which is a continuation of U.S. Patent Application No. 14/919,687, filed Oct. 21, 2015, and entitled "Application Wire," which is a continuation of U.S. Patent Application No. 14/055,721, filed Oct. 16, 2013, and entitled "Application Wire," which is a continuation of U.S. Patent Application No. 11/543,727, filed Oct. 5, 2006, and entitled "Application Wire," which claims priority to U.S. Provisional Application No. 60/725,038, filed Oct. 7, 2005 and entitled "Application wire: mapping application streams to pseudo-wires." The entireties of these related applications are incorporated herein by reference.

### **BACKGROUND OF THE INVENTION**

**[0002]** In recent years, network service providers have been upgrading and managing networks based on Multi Protocol Label Switching (MPLS) technology. MPLS has been deployed in most backbone networks. MPLS provides capabilities such as Quality of Service (QoS), redundancy, Operations Administration and Maintenance (OAM), and Virtual Private Network (VPN). MPLS is typically used to provision and manage data streams at individual flow levels. Each flow is known as a Label Switched Path (LSP). Existing MPLS systems typically handle data traffic at the Layer-3 (IP) level and below.

**[0003]** Some MPLS networks use Pseudowires to map Open System Interconnections (OSI) Layer-1 or Layer-2 traffic flows into "virtual circuits." A Pseudowire refers to the emulation of a Layer-1 or Layer-2 native service over a network. Examples of native services include Asynchronous Transfer Mode (ATM), Frame Relay, Ethernet Virtual Local Area Network (VLAN), Time Division Multiplexing (TDM), Synchronous Optical Network (SONET), Synchronous Digital Hierarchy (SDH), etc. In the control plane, the Pseudowires are maintained and managed using a simplified version of Label Distribution Protocol (LDP), the Target LDP. Each Pseudowire is associated with an MPLS label for packet forwarding and a control word for flow management.

**[0004]** Since existing MPLS networks only allow Layer-1 or Layer-2 connections to be mapped to Pseudowires in a one-to-one mapping, the system typically cannot guarantee the QoS for individual applications that generate application data in Layer-3 or above. QoS behavior in the application layer is sometimes different from the behavior in Layer-1 or Layer-2. For example, packet video streams can generally tolerate out-of-sequence delivery, and packet voice traffic can sometimes tolerate packet loss but is sensitive to packet delay. Existing Layer-1 and Layer-2 systems, however, typically do not address network-level QoS for these voice and video applications.

**[0005]** Some proposed IP-based models have been developed to address the QoS requirement associated with applications, but some issues remain. For example, the IntServ/RSVP model identifies connections by applications based on the IP addresses of the source and destination, the protocol type, and the protocol's source and destination port number (together known as the 5-tuple). Each connection is required to comply with a number of service parameters such as bandwidth consumption and delay budget. As a result, the intermediate nodes (such as the core routers) are required to store the identity of all the connections, perform deep packet inspection, and implement extensive QoS mechanisms to satisfy the service parameters for each flow. Network service providers tend to find this model limiting because it is not very scalable as the number of users grow.

**[0006]** The DiffServ model addresses the scalability problems associated with the IntServ/RSVP model. Instead of handling QoS on a per flow basis, the user applications are classified into a small number of uniformly defined traffic classes. Each data packet stores its traffic class information in its IP header. At each intermediate node, the packet receives appropriate QoS treatment according to its traffic class. Since DiffServ provides relative QoS, in order to guarantee QoS to a particular flow, the model typically requires the network bandwidth to be over-provisioned. Further, the model only incorporates a subset of available QoS technology, such as priority queuing and Random Early Discard (RED) in dealing with temporary traffic congestion. The model is often not applicable in networks where physical links cannot be sufficiently over-provisioned.

- [0007] It would be useful to have a way to better manage application traffic over a carrier network without requiring changes to the intermediate nodes. It would also be desirable if QoS guarantee can be achieved at per-application flow level. Furthermore, the solution should to be scalable.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

- [0008] Various embodiments of the invention are disclosed in the following detailed description and the accompanying drawings.
- [0009] FIG. 1 is a system diagram illustrating an example of an MPLS based network supporting Pseudowires.
- [0010] FIG. 2 is a system diagram illustrating an example of a network supporting Application Wires.
- [0011] FIG. 3 is a flowchart illustrating an embodiment of a process for transferring data.
- [0012] FIG. 4 is a flowchart illustrating another embodiment of a process for handling ingress data streams.
- [0013] FIG. 5 is a diagram illustrating the format of a Real Time Protocol (RTP) packet example.
- [0014] FIG. 6 is a diagram illustrating an example of a Pseudowire encapsulated MPEG-4 packet.
- [0015] FIG. 7 is a flowchart illustrating an embodiment of a process for handling data traffic in the egress direction.
- [0016] FIG. 8 is a block diagram illustrating an embodiment of an application flow engine.
- [0017] FIG. 9 is a diagram illustrating an example of a multicast environment supporting Application Wires.

### **DETAILED DESCRIPTION**

**[0018]** The invention can be implemented in numerous ways, including as a process, an apparatus, a system, a composition of matter, a computer readable medium such as a computer readable storage medium or a computer network wherein program instructions are sent over optical or communication links. In this specification, these implementations, or any other form that the invention may take, may be referred to as techniques. A component such as a processor or a memory described as being configured to perform a task includes both a general component that is temporarily configured to perform the task at a given time or a specific component that is manufactured to perform the task. In general, the order of the steps of disclosed processes may be altered within the scope of the invention.

**[0019]** A detailed description of one or more embodiments of the invention is provided below along with accompanying figures that illustrate the principles of the invention. The invention is described in connection with such embodiments, but the invention is not limited to any embodiment. The scope of the invention is limited only by the claims and the invention encompasses numerous alternatives, modifications and equivalents. Numerous specific details are set forth in the following description in order to provide a thorough understanding of the invention. These details are provided for the purpose of example and the invention may be practiced according to the claims without some or all of these specific details. For the purpose of clarity, technical material that is known in the technical fields related to the invention has not been described in detail so that the invention is not unnecessarily obscured.

**[0020]** Transferring data over a network using Application Wires is disclosed. An Application Wire refers to the emulation of a virtual circuit or a transparent wire for transferring one or multiple application flows. An Application Wire maps one or more application flows into Pseudowires, and is at the same time aware of the application protocol and the protocol requirements associated with the application flows. As used herein, an application flow refers to a set of packets exchanged between two or more devices for accomplishing a specific function. Application flow data includes data associated with Layer-4 or above as defined by the OSI protocol stack. In some embodiments, an application flow includes data packets transmitted and received by an

application, such as a Voice over IP (VoIP) session, instant messaging, Video-on-Demand (VoD), etc. The application may be configured to operate on various wired, wireless, or hybrid devices. The interface between the application and the underlying network is provided by protocols such as the Session Initialization Protocol (SIP) and the Real-time Transport Protocol (RTP). From the perspective of the application, transferring data over an Application Wire has the same effect as transferring data over a dedicated wire. As will be shown in more detail below, in some embodiments, Application Wires are formed by mapping application flows to Pseudowires.

**[0021]** FIG. 1 is a system diagram illustrating an example of an MPLS based network supporting Pseudowires. In this example, client devices such as 102 and 104 reside on an edge network and transfer data to an edge device (also referred to as an edge node) 106. The edge node, for example an edge router, supports MPLS and is capable of mapping Layer-1 and Layer-2 data streams into Pseudowires. Each data stream is mapped to a single Pseudowire in a one-to-one mapping. Each packet in the Pseudowire is encapsulated with an MPLS label for forwarding, and includes a control word for flow management. The edge device forwards the packet to a core network that includes core routers such as 108. The core network is compatible with MPLS and IP. The end user traffic flows are mapped to Pseudowires and then fed to the core network. The Pseudowires are maintained throughout the core network. The Pseudowires terminate at edge node 109, which receives the Pseudowire traffic and forwards the packets to their appropriate destinations such as devices 110 and 112. Traffic from devices such as 110 and 112 to devices such as 102 and 104 is processed similarly.

**[0022]** Since the mapping of one data stream to one Pseudowire does not account for the bandwidth demand of individual applications generating traffic on the client devices, it is often difficult to guarantee the quality of service (QoS) for these individual applications. For example, assuming that Pseudowires A and B each support a data rate of 50 Mbps, and that the application executing on device 102 require 70 Mbps of bandwidth while the application on device 104 only requires 20 Mbps. Because of the one-to-one mapping, the bandwidth requirement of device 102 is not met by Pseudowire, even though there is excess capacity on the network overall.

**[0023]** Application Wires improve on the Pseudowire scheme described above. FIG. 2 is a system diagram illustrating an example of a network supporting Application Wires. In this example, client devices 202-206 are configured to communicate with client devices 208-218 in the following manner: device 202 communicates with devices 208, 210, and 212; device 204 with device 214; device 206 with devices 216 and 218. Specifically, one or more applications executing on each client device send data to and receive data from applications executing on other client devices. Application flows a-f are shown between devices 202-206 and 208-218.

**[0024]** At the edge of the core network, edge nodes 220 and 222 are configured to transfer the data streams between a core network (such as a backbone network of a service provider) and the client devices. As used herein, data traffic is said to be in the ingress direction if it is being transferred from client devices to the core network, and in the egress direction if it is being transferred from the core network to clients devices. A data connection that transfers data in the ingress direction is referred to as a network-bound connection. Depending on the direction of the data flow, an edge node may be referred to as an ingress node or an egress node.

**[0025]** As will be shown in more detail below, the edge nodes map the application flows into Pseudowires in the ingress direction. A number of mapping schemes are possible, such as a one-to-one mapping, a distributed mapping where an application flow is mapped to multiple Pseudowires, or an aggregated mapping where multiple flows are mapped to a single Pseudowire. In the example shown, application flows a and b are one-to-one mapped to a separate Pseudowire each, application flow d is distributed to Pseudowires d1 and d2, and application flows e and f are aggregated to a single Pseudowire (e+f). The mapping scheme for each application flow is selected based at least in part on the bandwidth and traffic requirement associated with the application. In the egress direction, packets transferred on the Pseudowires are reassembled to the corresponding application flows and sent to the appropriate destinations. Each Pseudowire may span a plurality of intermediate nodes such as core routers 230 and 232. Unlike data transfer schemes where deep packet inspection is required at each intermediate node, the intermediate nodes used in this example can be standard MPLS devices and no change is required to make them support the Application Wire scheme.

**[0026]** FIG. 3 is a flowchart illustrating an embodiment of a process for transferring data. Process 300 may be implemented on an edge node and can be used to process data streams in the ingress direction. In this example, the process initiates by identifying an application flow associated with a data stream being transferred over the network (302). Depending on the data stream, there may be one or more application flows within the same data stream. The identification may be achieved, for example, by inspecting the headers of the packets in the data stream. Further details of the identification process are discussed below. Once identified, the application flow is mapped to one or more network-bound connections such as Pseudowires (304) in accordance with the requirements of the application, forming one or more Application Wires.

**[0027]** FIG. 4 is a flowchart illustrating another embodiment of a process for handling ingress data streams. Process 400 may be implemented on an edge node. In this example, process 400 initiates when a data packet is received (402). The header information of the received packet is read (404). The header information is used to identify the application flow. For purposes of example, it is assumed that the data stream carries IP data and that the data packet is an IP packet. Other types of data can be processed similarly based on the corresponding header formats. In this example, the IP packet includes a Layer-2 MAC header having fields such as the Ethernet addresses of the source and the destination. The IP packet further includes higher layer headers such as Layer-4 application protocol headers. The combination of various headers is used to identify specific application flows.

**[0028]** It is useful to inspect an example of a packet to understand how the application flow identification is done. FIG. 5 is a diagram illustrating the format of a Real Time Protocol (RTP) packet example. Packet 500 shown in the example is an MPEG-4 packet. It includes a header portion 502 and a payload portion 504. The header portion includes a Layer-3 (IPv4) header 506, and Layer-4 headers which in this case include UDP header 508 and RTP header 510. Several fields from each of the headers are extracted to provide information useful for identifying the application flow, including the IP source address and IP destination address, protocol type (which is UDP in this example), UDP source port, UDP destination port, synchronization source (SSRC) identifier, and contributing source (CSRC) identifier. Some of the fields are optional in some embodiments. Other types of applications such as Voice over IP or instant

messaging can be identified using a similar technique, although different headers and fields may be used.

**[0029]** Returning to FIG. 4, the header information associated with the packet is looked up in a database of application flows (406). If the header information is not found in the database, it is determined whether a new application flow can be created based on the header information (407). If so, a new entry that includes information identifying the new application flow is created in the application flow database (408). If a new application flow cannot be created, the packet is discarded and appropriate error handling such as event logging is optionally performed. New application flows are disallowed in some embodiments where the system is configured to only allow pre-configured application flows.

**[0030]** If, however, the header information is found in the database, the packet is mapped to an application flow (410). Admission control is optionally performed on the flow (412). In various embodiments, admission control includes shaping traffic by changing the packets priority, applying a policy/rule, tagging, dropping the packet, etc. If the packet is not dropped by admission control, it is mapped to one or more Pseudowires configured to service the application flow (414). In some embodiments, a database of available Pseudowires is searched to find one or more suitable Pseudowires for carrying the application flow. The mapping is based on, among other things, IP routing or manual configuration.

**[0031]** As previously discussed, the mapping of application flow to Pseudowire may be one-to-one, N-to-one, or one-to-N. One-to-one mapping is the most straightforward. Sometimes multiple application flows are aggregated into a single flow (N-to-one). Aggregation is appropriate when, for example, the application flows are similar and have the same priority level. Sometimes, an application flow is distributed into multiple streams and transferred over the network via multiple Pseudowires (one-to-N). For example, a large flow exceeding a certain data rate threshold may be split into several Pseudowires to better utilize the available bandwidth. The division of the application flow into multiple streams is based at least in part on application-specific parameters. For example, a large RTP stream is sometimes split based on SSRC or pay-load frame type. In one example, an application flow involves a large RTP stream having a large

amount of MPEG traffic over a network without any per flow QoS guarantee. To reduce the impact of dropped packets, the more important packets such as M-frames in the application flow are separated from the rest. The important packets are mapped to a Pseudowire with a higher priority level. The rest of the packets are mapped to one or more lower priority Pseudowires.

**[0032]** Returning to FIG. 4, once the appropriate Pseudowire for sending the packet is determined, the packet is encapsulated with a Pseudowire header (416) and sent to the core MPLS/IP network (418). FIG. 6 is a diagram illustrating an example of a Pseudowire encapsulated MPEG-4 packet. In this example, a Pseudowire header 602 is pre-pended to packet 600. The Pseudowire header includes packet label information, which has the same format as the of an MPLS packet. In addition to the label information, several other fields are updated to provide information useful for the Application Wire. The sequence number field is used to keep packets in the application flow in the correct order. Ingress packets are assigned sequence numbers in the order they are received by the edge node. The EXP field is used to store service differentiation information such as priority level. The differentiation information is encoded according to the Internet Engineering Task Force (IETF)'s Request For Comments (RFC) 3270. The differentiation information, which is derived based on the service parameters associated with the application flow, gives service providers greater control over service quality for individual flows. In some embodiments, the reserved field in the control word is used for functions such as OAM (e.g. the VCCV function), service guarantee, protection, and flow control.

**[0033]** Since the resulting packet is an MPLS formatted packet, it can be processed by any intermediate nodes on the network (e.g. network routers and switches as) a regular MPLS packet. So long as the intermediate node is a standard MPLS enabled device, no modification is required of the device for processing an Application Wire related packet.

**[0034]** FIG. 7 is a flowchart illustrating an embodiment of a process for handling data traffic in the egress direction. Process 700 may be implemented on an edge node on the termination end of a Pseudowire. In this example, process 700 initiates when a packet is received on a Pseudowire (702). The application flow that corresponds to the Pseudowire is identified (704). In some embodiments, the identification is accomplished

by looking up in a database that maps Pseudowires to application flows. In the event that the Pseudowire is configured to carry more than one application flow, the packet header is further inspected to locate the matching application flow.

**[0035]** Since it is possible for packets sent on different Pseudowires to arrive out of order, the packets are re-sequenced as appropriate (706). In some embodiments, the re-sequencing includes re-sequencing at the Pseudowire level. The sequence number field in the Pseudowire header is examined and used to sort the packets in the appropriate sequence. In some embodiments, the re-sequencing includes an application flow level re-sequencing. Application header and/or payload information is used to sort packets belonging to the same application flow in the appropriate order. For example, the SSRC and the sequence numbers in the RTP header, as well as the payload data are used in some embodiments to re-sequence an RTP flow. Once re-sequenced, the Pseudowire header of the packet is removed and the packet is forwarded to its destination (708).

**[0036]** In some embodiments, processes 300, 400 and 700 are carried out by an application flow engine (AFE). FIG. 8 is a block diagram illustrating an embodiment of an application flow engine. In this example, AFE 800 is included in an edge node device. The components of the AFE may be implemented as software, firmware, hardware or a combination thereof. The AFE is configured to send data streams from the client devices to the core network as well as to receive data streams from the network designated for client devices on the edge network.

**[0037]** When handling ingress data streams, the AFE identifies and maps application flows in the data streams to a plurality of Pseudowires. The application flows are denoted as  $F=\{f.sub.1, f.sub.2, \dots f.sub.n\}$  and the Pseudowires are denoted as  $W=\{w.sub.1, w.sub.2, \dots w.sub.m\}$ . An application flow identifier 806 identifies new application flows in the data stream, and stores information associated with the application flows in a database labeled as an application flow table (AFT) 802. The AFT is also used to identify data packets that match application flows already stored in the AFT. Information stored in the AFT includes, among other things, flow identification information and service parameters. The flow identification information includes attributes used to identify the specific application flow and may vary depending on the application. For example, for an RTP-based application flow, the corresponding IP

source and destination addresses, UDP protocol type, UDP source and destination port number, SSRC and CSRC are recorded in the AFT. Examples of the service parameters include various measured or assigned characteristics, such as the average and peak bandwidth of the flow, the burst size, the importance level of the flow (for example, emergency 911 traffic is assigned the highest importance and can preempt other flows at runtime), sub-flow information such as the bandwidth and importance levels associated with different sources, as well as other application dependent information such as whether to allow out-of-sequence packets in the flow. In some embodiments, at least a part of the AFT is populated ahead of time by the service provider. For example, the service parameters may be manually configured or populated using a configuration file when the system is initialized. Having a pre-populated AFT allows the service providers to offer different levels of services, and/or provide QoS guarantee based on subscription.

**[0038]** In FIG. 8, a mapper 808 maps incoming data packets to appropriate application flows if possible, and optionally performs admission control functions on the data flows. The mapper also maps each application flow to one or more Pseudowires based on information stored in a Pseudowire table (PWT) 804. A Pseudowire filter 810 encapsulates the packets with Pseudowire headers. The encapsulated packets are sent to the core network.

**[0039]** In some embodiments, the PWT maintains the network-bound Pseudowires,  $W = \{w_{sub.1}, w_{sub.2}, \dots, w_{sub.m}\}$ . For each Pseudowire, the following attributes are stored in one example: MPLS label for in packet encapsulation, QoS information indicating the level of QoS to be applied to the Pseudowire, Protection Path information identifying one or more backup Pseudowires used to protect this Pseudowire, OAM capability information used for error detection and loop-back, Multicast grouping information such as group ID used to transport multicast traffic over the MPLS/IP network.

**[0040]** When handling egress data streams, a process similar to 700 is carried out by the AFE. The PWT is used to look up the application flows that correspond to the packets received on various Pseudowires. The mapper re-sequences the packets, removes the Pseudowire headers, and forwards the packets to the destination.

**[0041]** The Application Wire techniques described above are also applicable for environments in which multimedia streams are multicasted to multiple sites in the network. To support multicast over Application Wires, a fully-meshed Pseudowire network for each multicast group is set up. Various mechanisms for supporting Pseudowire based multicast can be used, including Virtual Private LAN Service (VPLS) and IP LAN Service (IPLS).

**[0042]** FIG. 9 is a diagram illustrating an example of a multicast environment supporting Application Wires. In the example shown, application flow mapping is performed at any given network edge node, and a copy of the data packet is forwarded to all the other edge nodes in the group. In some embodiments, a packet is transmitted following these steps: for an application flow,  $f.\text{sub}.i.\text{sup}.G$ , that belongs to a multicast group,  $G$ , the PWT is searched and the adjacencies (i.e., the other edge nodes of the group denoted as  $A.\text{sub}.k.\text{sup}.G$ ,  $A.\text{sub}.k+1.\text{sup}.G \dots$ ) are obtained. A copy of the data packet is sent to each adjacency. Between a pair of edge nodes (i.e., one adjacency), there may be multiple Pseudowires,  $A.\text{sub}.k.\text{sup}.G = \{w.\text{sub}.j.\text{sup}.G, w.\text{sub}.j+1.\text{sup}.G \dots\}$ . As described above, an application flow may be split among the Pseudowires, according to application-specific parameters.

**[0043]** On an egress network edge node, the Pseudowire headers of the packets are removed, the packets are reassembled and/or re-sequenced as necessary, and forwarded to the destination. Any IP or Layer-2 multicast scheme may be used to forward the packets to a destination beyond the network edge nodes.

**[0044]** An Application Wire based data transfer technique has been described. The technique gives service providers greater flexibility in providing services based on applications, without requiring changes to intermediate devices.

**[0045]** Although the foregoing embodiments have been described in some detail for purposes of clarity of understanding, the invention is not limited to the details provided. There are many alternative ways of implementing the invention. The disclosed embodiments are illustrative and not restrictive.

**WHAT IS CLAIMED IS:**

1. A method comprising:  
at a node associated with a multiprotocol label switching system (MPLS) network, performing:  
identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow;  
in response to identifying the information, and based on stored data that maps application flows with pseudowires, determining a plurality of pseudowires corresponding to paths through the MPLS network, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and  
communicating data related to the sending device application via at least one of the plurality of pseudowires.
2. The method of claim 1, wherein the stored data defines an application wire for use by the sending device application, the application wire configured to communicate particular data from a particular application flow of the sending device application to an edge node.
3. The method of claim 1, wherein the stored data further defines an application wire for use by the sending device application, the application wire configured to communicate particular data from an edge node through the MPLS network via the plurality of pseudowires.
4. The method of claim 1, wherein each of the plurality of pseudowires extends from the application flow in an ingress direction into the MPLS network.

5. The method of claim 1, wherein each of the plurality of pseudowires is virtually coupled between a particular device and a particular application being executed at a particular client device.

6. The method of claim 1, wherein the application flow includes data packets transmitted and received by the sending device application, wherein the data is communicated via the at least one of the plurality of pseudowires, and further comprising assigning, at an edge node, sequence numbers to ingress data packets in an order in which they are received by the node.

7. The method of claim 1, wherein the stored data maps the application flow to the plurality of pseudowires to create an application wire.

8. A device comprising:

a processor; and

a memory that stores instructions executable by the processor to:

identify information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow;

in response to identifying the information, and based on stored data mapping application flows to pseudowires, determine a plurality of pseudowires as paths through a multiprotocol label switching (MPLS) network for the application flow, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and

communicate data associated with the sending device application via at least one of the plurality of pseudowires.

9. The device of claim 8, wherein the stored data defines an application wire for use by the sending device application, the application wire configured to communicate

particular data from a particular application flow of the sending device application to an edge node.

10. The device of claim 8, wherein the stored data further defines an application wire for use by the sending device application, the application wire configured to communicate particular data from an edge node through the MPLS network via the plurality of pseudowires.

11. The device of claim 8, wherein each of the plurality of pseudowires extends from the application flow in an ingress direction into the MPLS network.

12. The device of claim 8, wherein each of the plurality of pseudowires is virtually coupled between a particular device and a particular application being executed at a particular client device.

13. The device of claim 8, wherein:  
the application flow includes data packets transmitted and received by the  
sending device application,  
the data is communicated via the at least one of the plurality of pseudowires, and  
the instructions are executable by the processor to cause assigning, at an edge  
node, of sequence numbers to ingress data packets in an order in which  
they are received by the node.

14. The device of claim 8, wherein the stored data maps the application flow to the plurality of pseudowires to create an application wire.

15. A computer-readable medium storing instructions that are executable by a processor to initiate or perform:  
identifying information associated with an application flow based on one or  
more unencapsulated packet headers of the application flow or based on  
an ingress data stream that includes the application flow;  
in response to identifying the information, and based on stored data that maps  
application flows with pseudowires, determining a plurality of  
pseudowires corresponding to paths through a multiprotocol label

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switching system (MPLS) network, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and communicating data related to the sending device application via at least one of the plurality of pseudowires.

16. The computer-readable medium of claim 15, wherein the instructions are executable to perform the identifying, the determining, and the communicating at a node associated with the MPLS network.

17. The computer-readable medium of claim 15, wherein the stored data defines an application wire for use by the sending device application, the application wire configured to communicate particular data from a particular application flow of the sending device application to an edge node.

18. The computer-readable medium of claim 15, wherein the stored data further defines an application wire for use by the sending device application, the application wire configured to communicate particular data from an edge node through the MPLS network via the plurality of pseudowires.

19. The computer-readable medium of claim 15, wherein each of the plurality of pseudowires extends from the application flow in an ingress direction into the MPLS network.

20. The computer-readable medium of claim 15, wherein each of the plurality of pseudowires is virtually coupled between a particular device and a particular application being executed at a particular client device.

**ABSTRACT**

A method includes, at a node associated with a multiprotocol label switching system (MPLS) network, identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow. The method further includes, in response to identifying the information, and based on stored data that maps application flows with pseudowires, determining a number of pseudowires corresponding to paths through the MPLS network, where the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the number of pseudowires, and communicating data related to the sending device application via at least one of the number of pseudowires.

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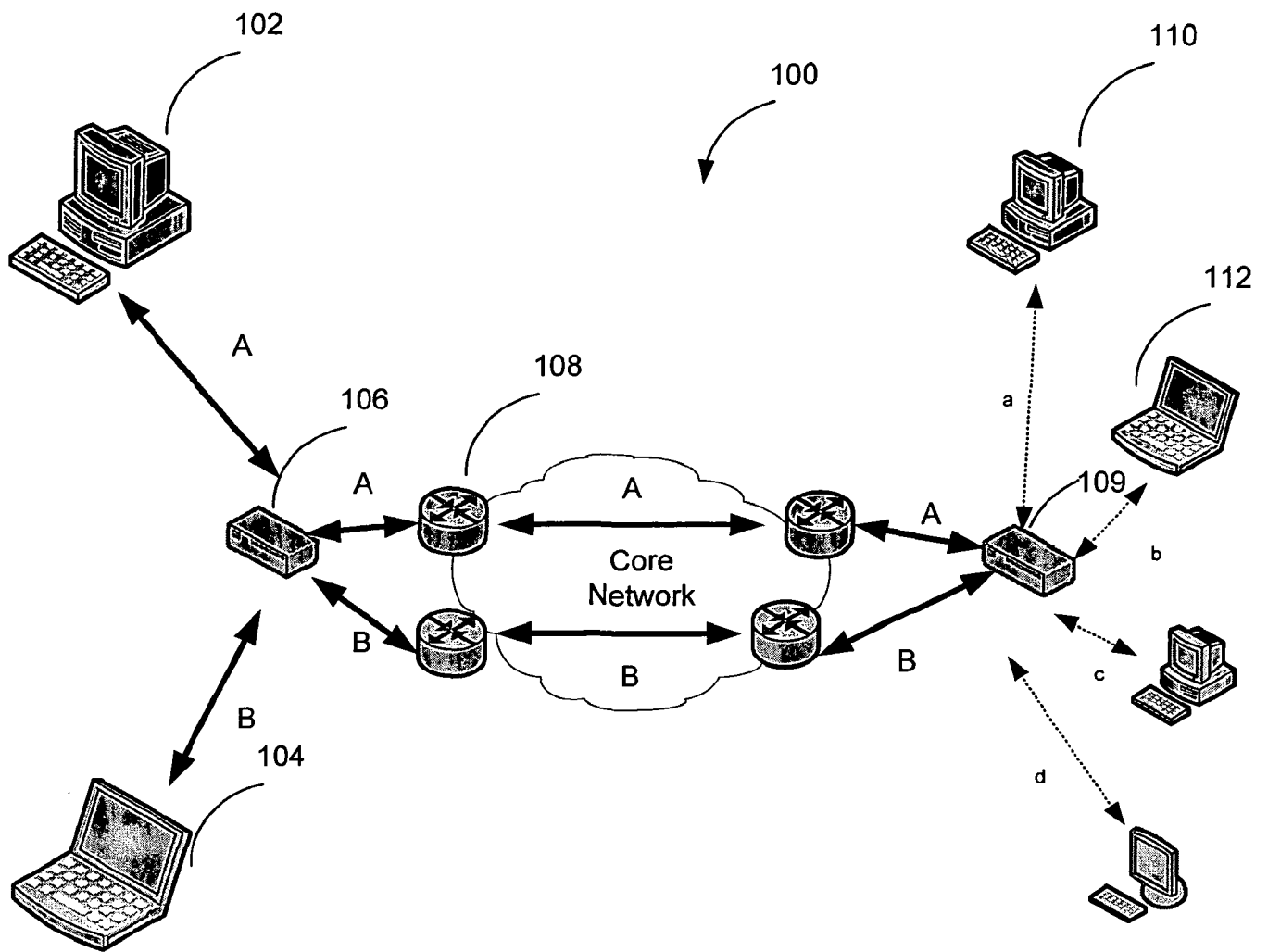


FIG. 1

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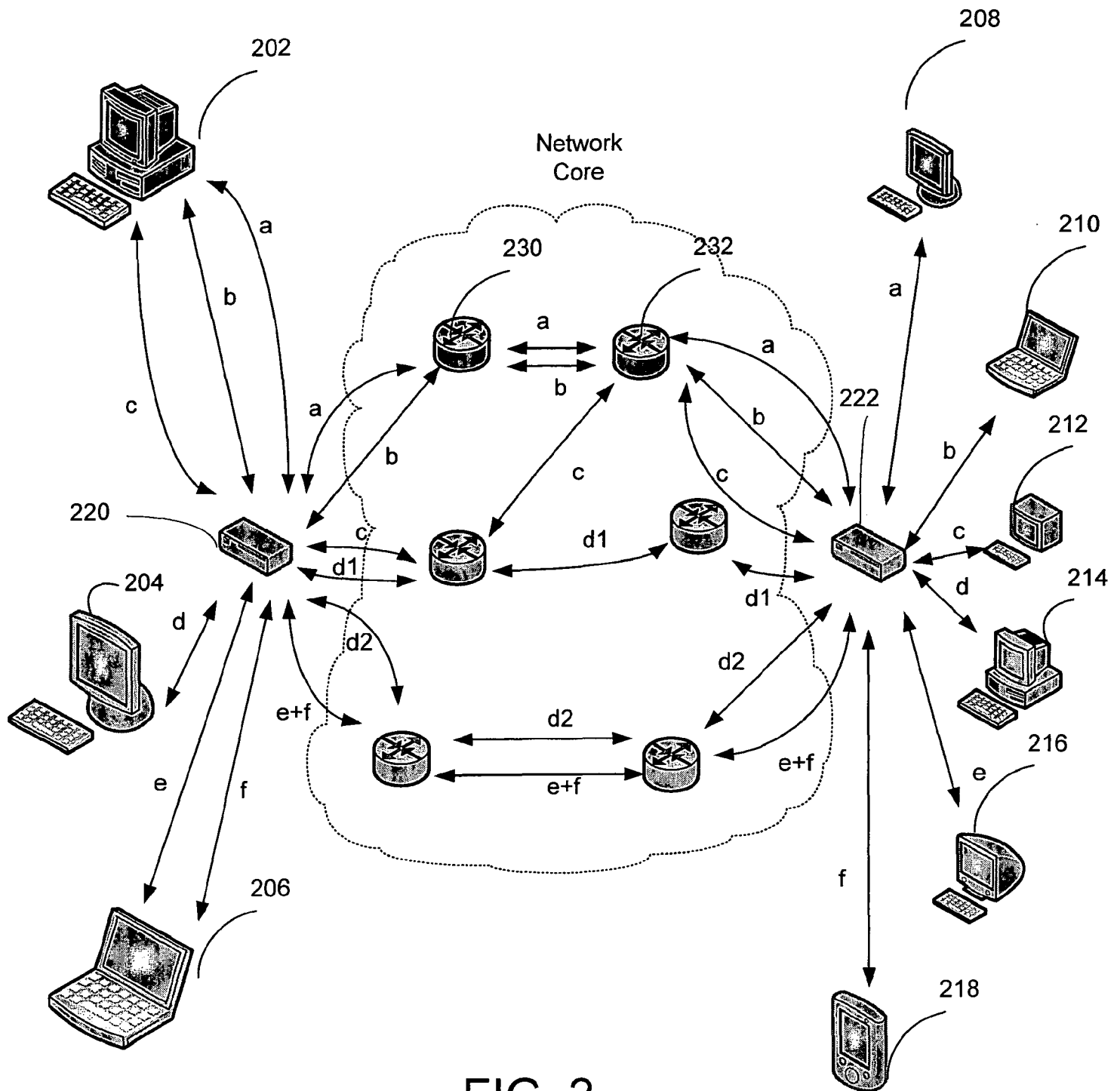


FIG. 2

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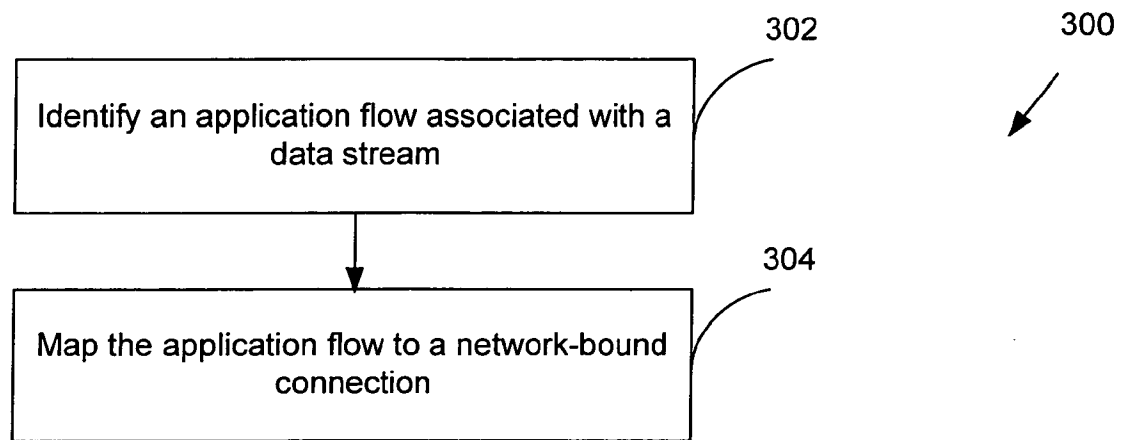


FIG. 3

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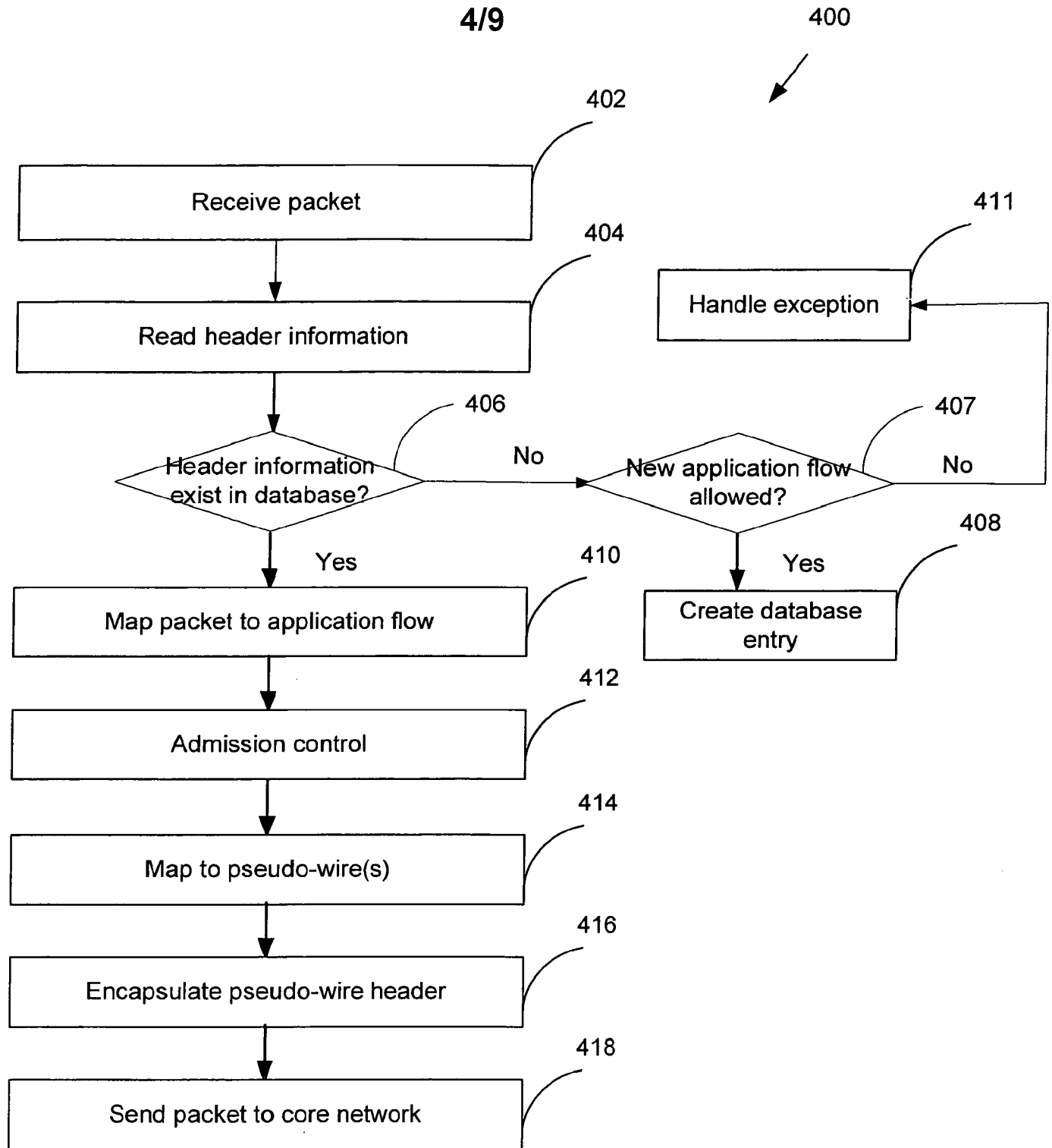


FIG. 4

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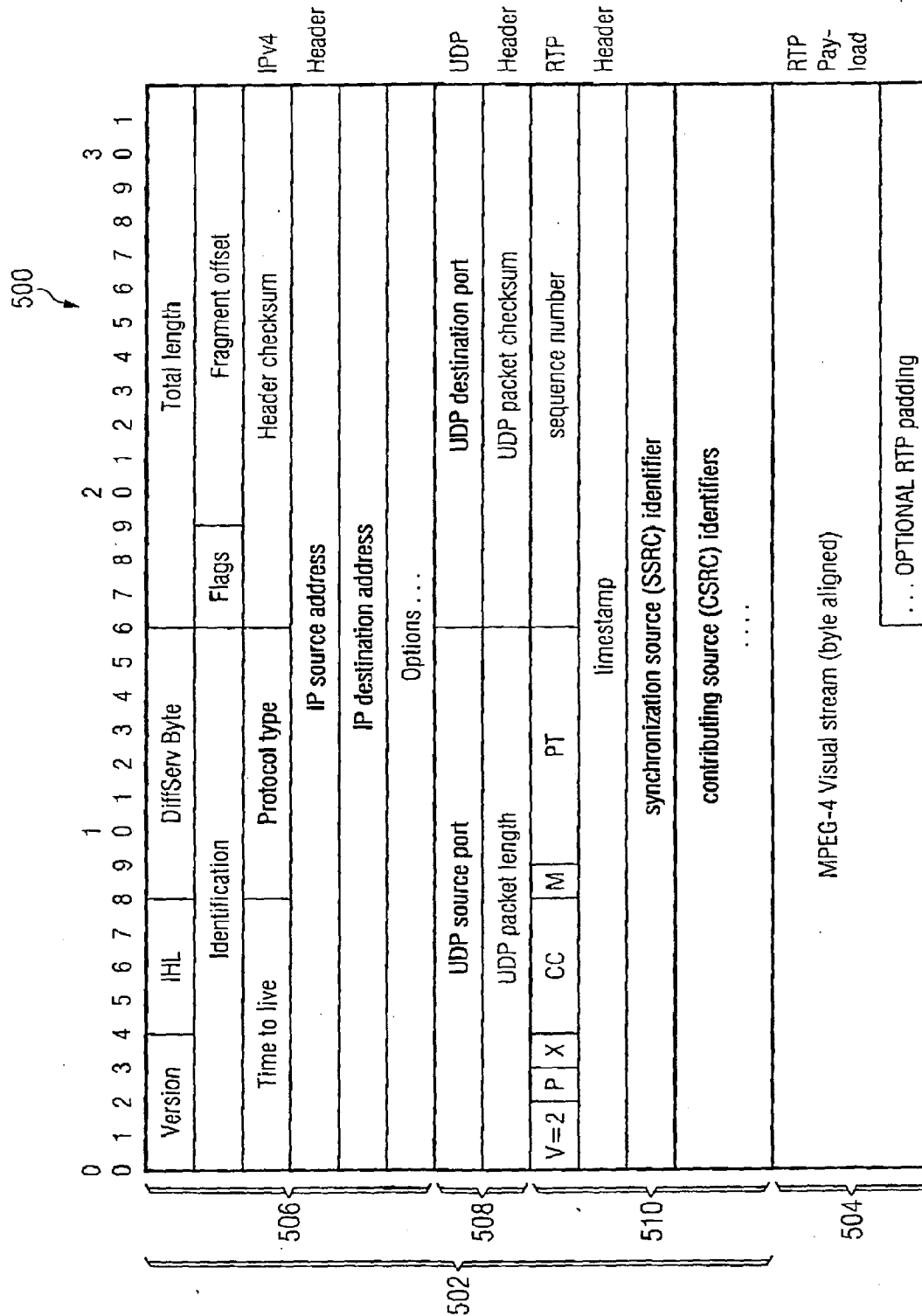


FIG. 5

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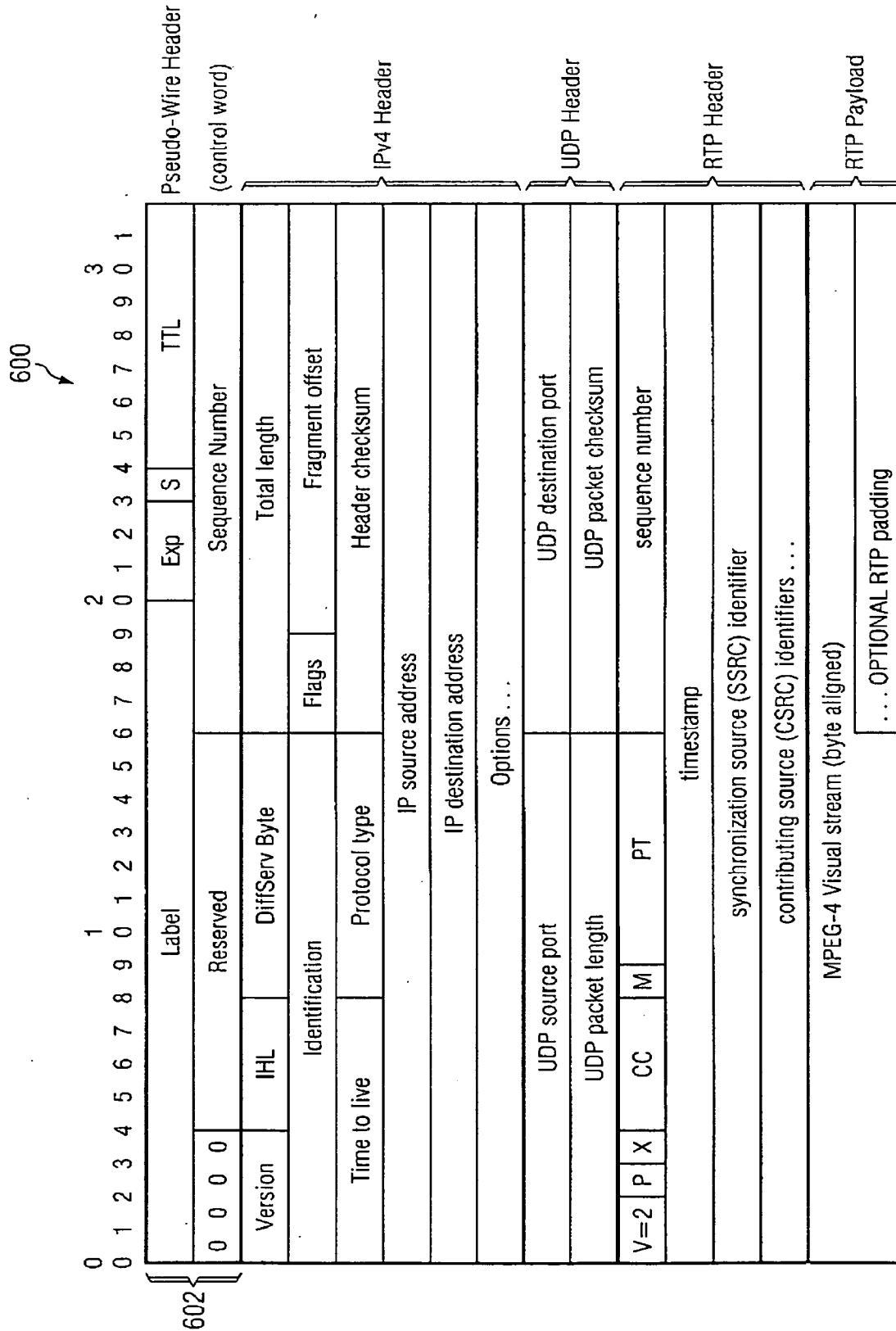


FIG. 6

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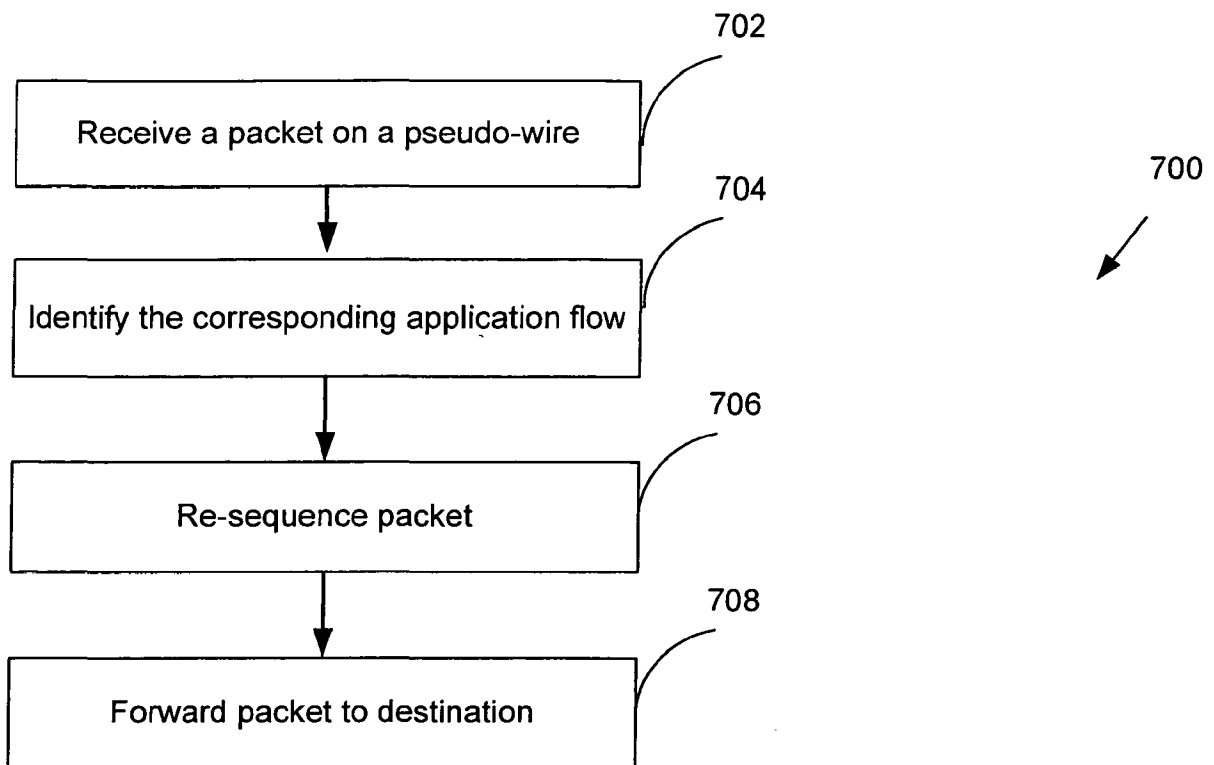


FIG. 7

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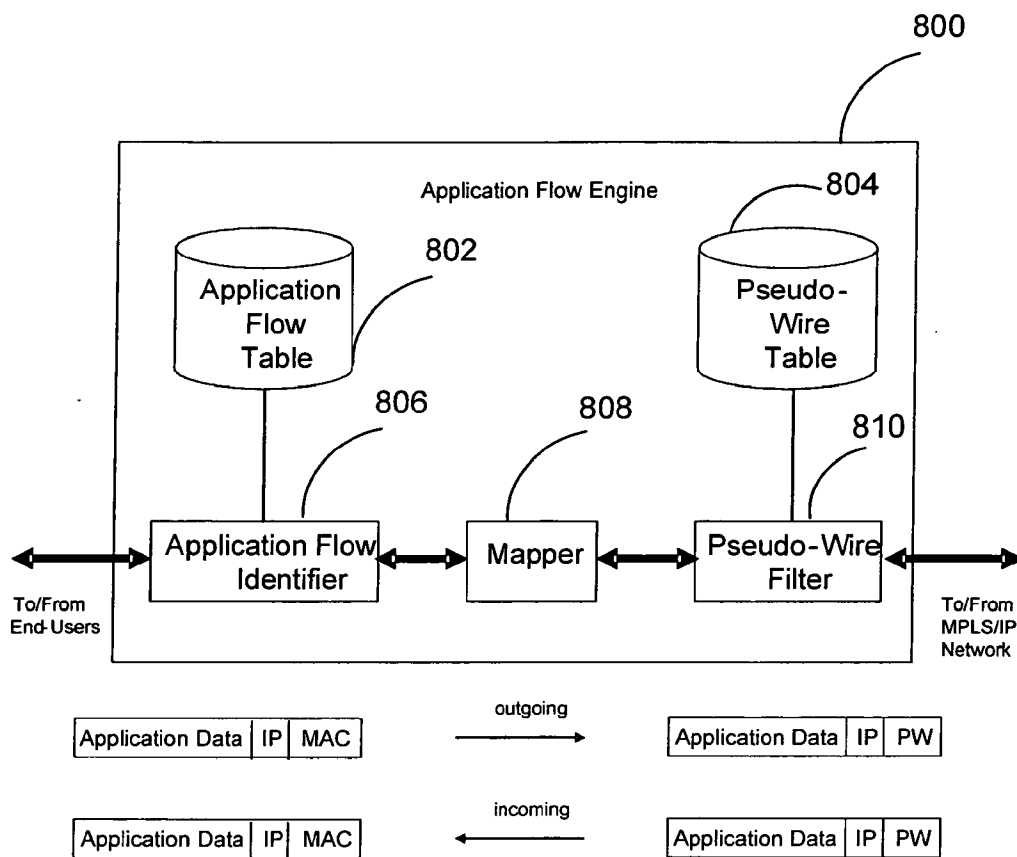


FIG. 8

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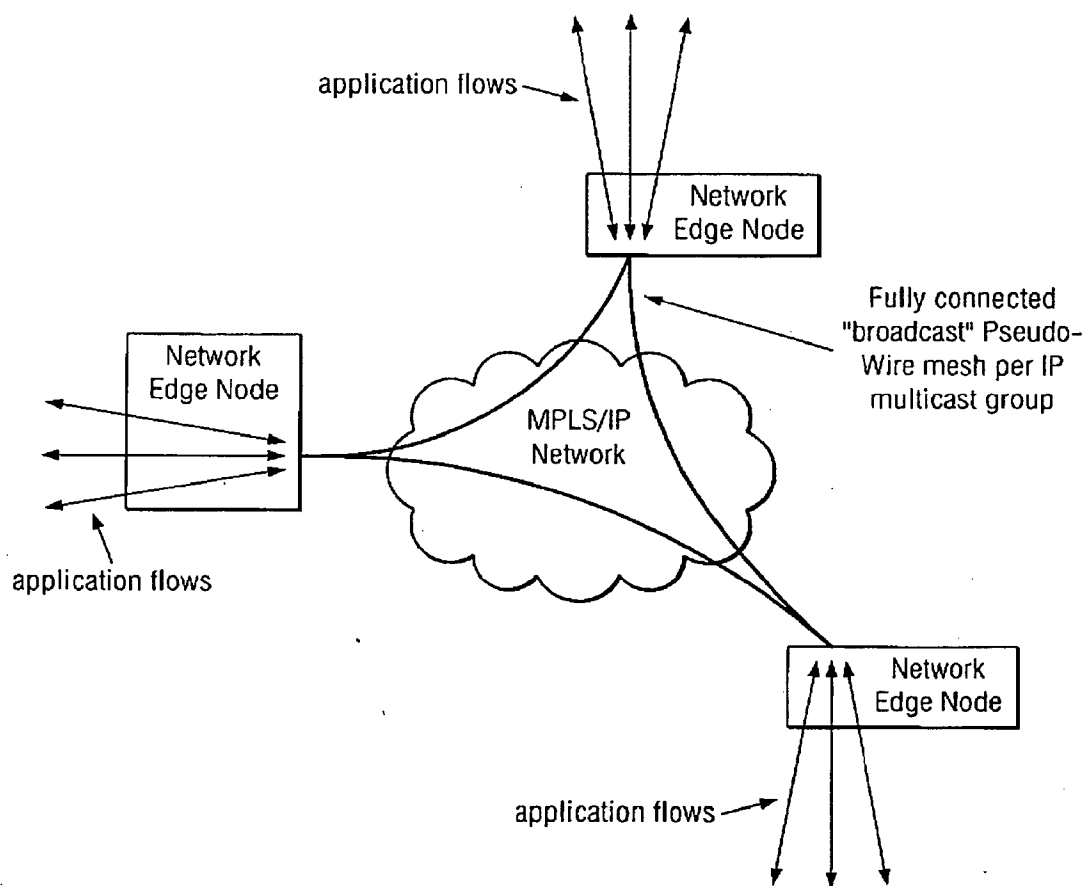


FIG. 9

# DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of  
Invention

APPLICATION WIRE

As the below named inventor, I hereby declare that:

This declaration  
is directed to:

☐

The attached application, or

☒

United States application or PCT international application number 14/055,721

filed on October 16, 2013

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

## WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

## LEGAL NAME OF INVENTOR

Inventor: Ping Pan

Date (Optional):

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/SB/AIA01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute 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.

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**SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY  
OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)**

|                                                                                                                                                                                   |                  |         |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------|----|
| <b>Title of<br/>Invention</b>                                                                                                                                                     | APPLICATION WIRE |         |    |
| This statement is directed to:                                                                                                                                                    |                  |         |    |
| <input checked="" type="checkbox"/> The attached application,                                                                                                                     |                  |         |    |
| OR                                                                                                                                                                                |                  |         |    |
| <input type="checkbox"/> United States application or PCT international application number _____ filed on _____.                                                                  |                  |         |    |
| <b>LEGAL NAME of inventor to whom this substitute statement applies:</b>                                                                                                          |                  |         |    |
| (E.g., Given Name (first and middle (if any)) and Family Name or Surname)                                                                                                         |                  |         |    |
| Richard D Gitlin                                                                                                                                                                  |                  |         |    |
| Residence (except for a deceased or legally incapacitated inventor):                                                                                                              |                  |         |    |
| City                                                                                                                                                                              | Little Silver    | State   | NJ |
| Country                                                                                                                                                                           | US               |         |    |
| Mailing Address (except for a deceased or legally incapacitated inventor):                                                                                                        |                  |         |    |
| 640 Clyde Court                                                                                                                                                                   |                  |         |    |
| City                                                                                                                                                                              | Mountain View    | State   | CA |
| Zip                                                                                                                                                                               | 91106            | Country | US |
| I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.                         |                  |         |    |
| The above-identified application was made or authorized to be made by me.                                                                                                         |                  |         |    |
| I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. |                  |         |    |
| Relationship to the inventor to whom this substitute statement applies:                                                                                                           |                  |         |    |
| <input type="checkbox"/> Legal Representative (for deceased or legally incapacitated inventor only),                                                                              |                  |         |    |
| <input checked="" type="checkbox"/> Assignee,                                                                                                                                     |                  |         |    |
| <input type="checkbox"/> Person to whom the inventor is under an obligation to assign,                                                                                            |                  |         |    |
| <input type="checkbox"/> Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or                                  |                  |         |    |
| <input type="checkbox"/> Joint Inventor.                                                                                                                                          |                  |         |    |

[Page 1 of 2]

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute 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.*

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.

**SUBSTITUTE STATEMENT**

Circumstances permitting execution of this substitute statement:

- ☐ Inventor is deceased,
- ☐ Inventor is under legal incapacity,
- ☐ Inventor cannot be found or reached after diligent effort, or
- ☒ Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- ☒ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- ☐ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

**WARNING:**

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

**PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**

Name: **Brian Yates** Date (Optional):

Signature:

**APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Global Innovation Aggregators LLC.

Applicant Name:

Title of Person Executing  
This Substitute Statement: **CEO of Global Innovation Aggregators LLC.**

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

**Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):**

City **Pasadena** State **CA** Country **US**

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

1055 E. Colorado Boulevard, Fifth Floor

City **Pasadena** State **CA** Zip **91106** Country **US**

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

## 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.