UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00

CONFIRMATION NO. 3908

POA ACCEPTANCE LETTER

27500
PILLSBURY WINTHROP SHAW PITTMAN LLP (CV)
ATTENTION: DOCKETING DEPARTMENT
P.O BOX 10500
McLean, VA 22102

OC000000084516400

Date Mailed: 07/22/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/11/2016.

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**.

/qtran/

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00

CONFIRMATION NO. 3908

POWER OF ATTORNEY NOTICE

97075
Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

OC000000084516329

Date Mailed: 07/22/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/11/2016.

- The withdrawal as attorney in this application has been accepted. 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**.

/qtran/

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 27500

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 27500

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: ZEPHYR PHOTONICS INC.
215 Elks Point Road
Zephyr Cove, CA 89448

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Duane Louderback	Date	3-28-16
Name	Duane Louderback	Telephone	775-857-3297
Title	President, Zephyr Photonics Inc.		

Electronic Acknowledgement Receipt

EFS ID:	26317260
Application Number:	13071377
International Application Number:	
Confirmation Number:	3908
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	Jason Blain Stark
Customer Number:	97075
Filer:	Ian Carl Schick/Jennifer Dolan
Filer Authorized By:	Ian Carl Schick
Attorney Docket Number:	089359-8004.US00
Receipt Date:	11-JUL-2016
Filing Date:	24-MAR-2011
Time Stamp:	19:10:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	039204-0445694_373C_Final.pdf	458030 dda523315e6b01b4e54e83905cf0dcbaf98fcc70	no	2

Warnings:

Information:					
2	Power of Attorney	039204_signed_POA.pdf	645064 3d5231cb182444f77011d04766c6193830764658e	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	1103094	

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: ZEPHYR PHOTONICS INC.

Application No./Patent No.: 9020344 Filed/Issue Date: April 28, 2015

Titled: UNIFIED SWITCHING FABRIC ARCHITECTURE

ZEPHYR PHOTONICS INC., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Inventors To: Defense Photonics Group, Inc.

   The document was recorded in the United States Patent and Trademark Office at

   Reel 026018, Frame 0858, or for which a copy thereof is attached.

2. From: Defense Photonics Group, Inc. To: Zephyr Photonics

   The document was recorded in the United States Patent and Trademark Office at

   Reel 033309, Frame 0076, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Ian C. Schick, Ph.D./	July 11, 2016
Signature	Date
Ian C. Schick, Ph.D.	63,293
Printed or Typed Name	Title or Registration Number

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	04/28/2015	9020344	089359-8004.US00	3908

97075 7590 04/08/2015

Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

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 332 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):

Jason Blain Stark, Holmdel, NJ;

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/D.G.D./ Change(s) applied to document, /B.G./ /D.G.D./ 2/12/2015	1	7362936	B2	2008-04-22	Stark, et al. ~~Defense Photonics Group, Inc.~~	
	2	7515797	B2	2009-04-07	Stark, et al. ~~Defense Photonics Group, Inc.~~	
/D.G.D./	3	7515798	B2	2009-04-07	Stark, et al. ~~Defense Photonics Group, Inc.~~	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

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

PART B - FEE(S) TRANSMITTAL

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

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

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

97075 01/16/2015
Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

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

Certificate of Mailing or Transmission

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	JASON BLAIN STARK	089359-8004.US00	3908

TITLE OF INVENTION: UNIFIED SWITCHING FABRIC ARCHITECTURE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	04/16/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
DOBSON, DANIEL G.	2636	398-045000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1)The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

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

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

(A) NAME OF ASSIGNEE: ZEPHYR PHOTONICS

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Zephyr Cove, Nevada

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

4a. The following fee(s) are submitted:
- [X] Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- [X] The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50-5252 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — 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.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — 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.
- ☐ Applicant changing to regular undiscounted fee 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 /Hwa C. Lee 59747/ Date March 26, 2015

Typed or printed name Hwa C. Lee Registration No. 59,747

Electronic Patent Application Fee Transmittal

Application Number:	13071377
Filing Date:	24-Mar-2011
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	Jason Blain Stark
Filer:	Hwa C. Lee/Sara Hare
Attorney Docket Number:	089359-8004.US00

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	21893893
Application Number:	13071377
International Application Number:	
Confirmation Number:	3908
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	Jason Blain Stark
Customer Number:	97075
Filer:	Hwa C. Lee/Sara Hare
Filer Authorized By:	Hwa C. Lee
Attorney Docket Number:	089359-8004.US00
Receipt Date:	26-MAR-2015
Filing Date:	24-MAR-2011
Time Stamp:	20:05:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$480
RAM confirmation Number	6511
Deposit Account	505252
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

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)	Issue-Fee.pdf	108514 d5fdedde62254fdd04f5059b99a017ea6b30f630	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30414 8736e1089b4186af379d2eda5351f93850db520e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	138928		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

97075 7590 01/16/2015

Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

EXAMINER
DOBSON, DANIEL G

ART UNIT	PAPER NUMBER
2636	

DATE MAILED: 01/16/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00	3908

TITLE OF INVENTION: UNIFIED SWITCHING FABRIC ARCHITECTURE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	04/16/2015

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

PART B - FEE(S) TRANSMITTAL

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

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

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

97075 7590 01/16/2015
Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

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

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00	3908

TITLE OF INVENTION: UNIFIED SWITCHING FABRIC ARCHITECTURE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	04/16/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
DOBSON, DANIEL G	2636	398-045000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

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

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

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

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

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — 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.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — 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.
- ❑ Applicant changing to regular undiscounted fee 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. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00	3908

97075 7590 01/16/2015

Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

EXAMINER	
DOBSON, DANIEL G	

ART UNIT	PAPER NUMBER
2636	

DATE MAILED: 01/16/2015

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 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 13/071,377	Applicant(s) STARK, JASON BLAIN	
	Examiner DANIEL DOBSON	Art Unit 2636	AIA (First Inventor to File) Status 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 07/25/2014*.
   ☐ 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 *4-19 and 23-28*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   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. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/DANIEL DOBSON/
Primary Examiner, Art Unit 2636

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/D.G.D./	1	7362936	B2	2008-04-22	Defense Photonics Group, Inc.	
/D.G.D./	2	7515797	B2	2009-04-07	Defense Photonics Group, Inc.	
/D.G.D./	3	7515798	B2	2009-04-07	Defense Photonics Group, Inc.	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

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

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/D.G.D./	1	Georgios I. Papadimitriou et al., "Optical Switching: Switch Fabrics, Techniques, and Architectures," Journal of Lightwave Technology, Vol. 21, No. 2, pp. 384-405, February 2003, 22 pages.	☐
/D.G.D./	2	Harry J.R. Dutton, "Understanding Optical Communications," IBM, International Technical Support Organization, Retrieved from http://www.redbooks.ibm.com, 638 pages. Sept. 1998	☐
/D.G.D./	3	Benjamin A. Small et al., "The Current and Future State of Optical Switching Technologies as Related to the Data Vortex Photonic Switching Architecture," 6 pages. Feb. 2004	☐
/D.G.D./	4	Qimin Yang et al., "New Switch Fabric Architecture for Bursty Traffic," pp. 43-44, ©2002 IEEE, 2 pages.	☐

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

EXAMINER SIGNATURE

Examiner Signature	/Daniel Dobson/	Date Considered	01/06/2015

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

CERTIFICATION STATEMENT

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

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

OR

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

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/John P. Maldjian/	Date (YYYY-MM-DD)	2011-11-26
Name/Print	John P. Maldjian	Registration Number	41967

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.**

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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 record s.

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.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13071377	STARK, JASON BLAIN
	Examiner	**Art Unit**
	DANIEL DOBSON	2636

CPC						
Symbol					**Type**	**Version**
H04Q		11	/	0005	F	2013-01-01
H04L		49	/	10	I	2013-01-01
H04L		49	/	357	A	2013-01-01
H04L		2012	/	4028	A	2013-01-01
H04Q		11	/	0062	I	2013-01-01
H04Q		11	/	0071	A	2013-01-01
H04Q		2011	/	0052	A	2013-01-01
H04Q		2011	/	0064	A	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/DANIEL DOBSON/ Primary Examiner.Art Unit 2636	12/29/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	Orig. 4	1A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13071377	STARK, JASON BLAIN
	Examiner	**Art Unit**
	DANIEL DOBSON	2636

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
398	45	H	0	4	J	14 / 00 (2006.01.01)	H	0	4	B	10 / 20

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
398	48	52	55		

NONE	Total Claims Allowed:	
(Assistant Examiner) (Date)	22	
/DANIEL DOBSON/ Primary Examiner.Art Unit 2636 12/29/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner) (Date)	Orig. 4	1A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13071377	STARK, JASON BLAIN
	Examiner	**Art Unit**
	DANIEL DOBSON	2636

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	14	17												
	2	15	18												
	3	16	19												
1	4		20												
2	5		21												
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8	11	21	27												
9	12	22	28												
10	13														
11	14														
12	15														
13	16														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 22	
/DANIEL DOBSON/ Primary Examiner.Art Unit 2636 (Primary Examiner)	12/29/2014 (Date)	O.G. Print Claim(s) Orig. 4	O.G. Print Figure 1A

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BIB DATA SHEET

CONFIRMATION NO. 3908

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/071,377	03/24/2011	398	2636	089359-8004.US00

APPLICANTS

INVENTORS

Jason Blain Stark, Holmdel, NJ;

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

This appln claims benefit of 61/317,249 03/24/2010

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

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

04/04/2011

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /DANIEL G DOBSON/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		NJ	10	28	3

ADDRESS

Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247
UNITED STATES

TITLE

UNIFIED SWITCHING FABRIC ARCHITECTURE

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

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13071377	STARK, JASON BLAIN
	Examiner	Art Unit
	DANIEL DOBSON	2636

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
398	39-64, 83	5/19/2013	dgd
398	45-87	12/29/2014	dgd

SEARCH NOTES		
Search Notes	Date	Examiner
Text Search	5/19/2013	dgd
Inventor Search	5/19/2013	dgd
Text Search EAST	12/29/2014	dgd
Inventor Search EAST	12/29/2014	dgd
Update Class Search EAST	12/29/2014	dgd
Interference Search EAST	12/29/2014	dgd

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
398	45-57	12/29/2014	dgd

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	71	stark-jason-$10.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/29 08:52
L2	12	stark-jason.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/29 08:52
L3	83	L1 L2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/12/29 08:52
L6	4156	(398/45-57).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/12/29 08:55

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	3328	(398/45-57).CCLS.	US-PGPUB; USPAT; UPAD	OR	OFF	2014/12/29 08:56

12/29/2014 9:08:18 AM
C:\Users\ddobson\Documents\EAST\Workspaces\13-071377.wsp

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00	3908

97075 7590 11/03/2014

Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

EXAMINER	
DOBSON, DANIEL G	
ART UNIT	PAPER NUMBER
2636	

NOTIFICATION DATE	DELIVERY MODE
11/03/2014	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):

patentprocurement@perkinscoie.com

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

This application has been withdraw from abandoned.

Thank you,

JOHN EPPS
SUPERVISORY LEGAL INSTRUMENTS EXMR.
TECHNOLOGY CENTER 2600

Office of Petitions: Routing Sheet

Application No. 13/071,377

This application is being forwarded to your office for further processing. A decision has been rendered on a petition filed in this application.

- [X] **GRANTED**
- [ ] **DISMISSED**
- [ ] **DENIED**

Office of Petitions: Decision Count Sheet

Mailing Month

Application No. 13071377

13071377

For US serial numbers: enter number only, no slashes or commas. Ex: 10123456

For PCT: enter "51+single digit of year of filing+last 5 numbers", Ex. for PCT/US05/12345, enter 51512345

Deciding Official: JOHNSON, NANCY

Count (1) - Palm Credit 13/071,377

Decision: GRANT

FINANCE WORK NEEDED

☐ Select Check Box for YES

GRANT

Decision Type: 502 - 37 CFR 1.137(b) - REVIVAL BASED ON UNINTEN

502

Notes:

Count (2)

Decision: n/a

FINANCE WORK NEEDED

☐ Select Check Box for YES

Decision Type: NONE

Notes:

Count (3)

Decision: n/a

FINANCE WORK NEEDED

☐ Select Check Box for YES

Decision Type: NONE

Notes:

Initials of Approving Official (if required)

If more than 3 decisions, attach 2nd count sheet & mark this box

Printed on: *10/28/2014*

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	089359-8004.US00	3908

97075 7590 10/31/2014

Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

EXAMINER	
DOBSON, DANIEL G	

ART UNIT	PAPER NUMBER
2636	

NOTIFICATION DATE	DELIVERY MODE
10/31/2014	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):

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UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Application of :
Stark : DECISION ON PETITION
Application No. 13/071,377 :
Filed: March 24, 2011 :
Atty Docket No. 089359-8004.US00:

This is a decision on the PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b) filed July 25, 2014, which is properly treated under the provisions of new 37 CFR 1.137(a).

The petition is **GRANTED**.

The above-identified application became abandoned for failure to file a reply to the non-final Office action mailed May 23, 2013. This Office action set a shortened statutory period for reply of three (3) months, with extensions of time obtainable under § 1.136(a). No reply filed and no extension of time obtained, the application became abandoned effective August 24, 2013. A courtesy Notice of Abandonment was mailed on December 5, 2013.

The petition includes the required reply, the statement of unintentional delay and payment of the petition fee. No terminal disclaimer is required.

Given the revocation of power of attorney filed in this application in 2014, it is not apparent whether the person signing the statement of unintentional delay was in a position to have firsthand or direct knowledge of the facts and circumstances of the delay at issue. Nevertheless, such statement is being treated as having been made as the result of a reasonable inquiry into the facts and circumstances of such delay. See 37 CFR 10.18(b) and Changes to Patent Practice and Procedure; Final Rule Notice, 62 Fed. Reg. 53131, 53178 (October 10, 1997), 1203 Off. Gaz. Pat. Office 63, 103 (October 21, 1997). In the event that such an inquiry has not been made, petitioner must make such an inquiry. If such inquiry results in the discovery that it is not correct that the entire delay in filing the required reply from the due date for the reply until

the filing of a grantable petition pursuant to 37 CFR 1.137(a) was unintentional, petitioner must notify the Office.

An extension of time under 37 CFR 1.136 must be filed prior to the expiration of the maximum extendable period for reply. See In re Application of S., 8 USPQ2d 1630, 1631 (Comm'r Pats. 1988). Since the $700 extension of time fee submitted with the petition on July 25, 2014 was submitted subsequent to the maximum extendable period for reply, this fee is unnecessary and is being refunded to petitioner's Deposit Account, as authorized.

Technology Center AU 2636 has been advised of this decision. The application is, thereby, forwarded to the examiner for consideration of the reply submitted on petition filed July 25, 2014.

Telephone inquiries specific to this matter should be directed to the undersigned at (571) 272-3219.

/Nancy Johnson/

Nancy Johnson
Attorney Advisor
Office of Petitions

UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/071,377	03/24/2011	Jason Blain Stark	

CONFIRMATION NO. 3908

POA ACCEPTANCE LETTER

97075
Perkins Coie LLP - SDO General
PO Box 1247
Seattle, WA 98111-1247

OC000000070267768

Date Mailed: 08/20/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/25/2014.

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.

/rmturner myles/

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/071,377	03/24/2011	Jason Blain Stark	DPG003

CONFIRMATION NO. 3908

POWER OF ATTORNEY NOTICE

71136
Maldjian Law Group LLC
788 Shrewsbury Avenue
Suite 2220
Tinton Falls, NJ 07724

OC000000070267737

Date Mailed: 08/20/2014

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/25/2014.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/rmturner myles/

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

Doc Code: PET.OP
Document Description: Petition for Review by the Office of Petitions

USED IN LIEU OF PTO/SB/64 (12-13)

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b) Page 1 of 2	Docket Number (Optional) 089359-8004.US00

First named inventor: Jason Blain Stark

Application No.: 13/071,377 Art Unit: 2636

Filed: September 7, 2010 Examiner: Dobson, Daniel G.

Title: UNIFIED SWITCHING FABRIC ARCHITECTURE

Attention: Office of Petitions
Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration date of the period set for reply in the Office notice or action plus any extensions of time actually obtained.

APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION.

NOTE: A grantable petition requires the following items:

(1) Petition fee;
(2) Reply and/or issue fee;
(3) Terminal disclaimer with disclaimer fee – required for all utility and plant applications filed before June 8, 1995, and for all design applications; and
(4) Statement that the entire delay was unintentional.

1. **Petition fee**

[x] Small entity fee $ 850.00 (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.

[ ] Undiscounted fee $ _____ (37.CFR.1.17(m)).

2. **Reply and/or fee**

A The reply and/or fee to the above-noted Office notice or action in the form of Response to Office Action mailed May 23, 2013 (identify the type of reply):

[ ] has been filed previously on _____.

[x] is enclosed herewith.

B The issue fee and publication fee (if applicable) of $ _____

[ ] has been paid previously on _____.

[ ] is enclosed herewith.

Doc Code: PET.OP
Document Description: Petition for Review by the Office of Petitions

USED IN LIEU OF PTO/SB/64 (12-13)

PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)

3. **Terminal disclaimer with disclaimer fee**

☒ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.

☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of $ _____) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. **STATEMENT:** The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(a) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(a) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

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.

/John Maldjian/	July 9, 2014
Signature	Date
John Maldjian	41,967
Typed or Printed Name	Registration Number, if applicable

Maldjian Law Group LLC
788 Shrewsbury Avenue
Suite 2220
Tinton Falls, NJ 07724

Address

732-369-8314
Telephone Number

Enclosures:

☒ Fee Payment

☒ Reply

☐ Terminal Disclaimer Form

☐ Additional sheet(s) containing statements establishing unintentional delay

☒ Other: Petition for Extension of Time Under 37 CFR 1.136(a)

PTO/SB/80 (11-08)
OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

[X] Practitioners associated with the Customer Number: 97075

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

[X] The address associated with Customer Number: 97075

OR

[ ] Firm or Individual Name

Address					
City		State		Zip	
Country		Telephone		Email	

Assignee Name and Address:

Zephyr Photonics
215 Elks Point Road
Zephyr Cove, NV 89448

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Duane Lauderback	Date	7-15-14
Name	Duane Lauderback	Telephone	775-857-8397
Title	President		775-588-4176

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Jason Blain Stark

Application No./Patent No.: 13/071,377 Filed/Issue Date: March 24, 2011

Titled:

ZEPHYR PHOTONICS (Name of Assignee), a Corporation (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. [X] the assignee of the entire right, title, and interest in;

2. [ ] an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or

3. [ ] an assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made) the patent application/patent identified above by virtue of either:

A. [ ] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

B. [X] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Inventors To: Defense Photonics Group, Inc.
The document was recorded in the United States Patent and Trademark Office at
Reel 026018, Frame 0858, or for which a copy thereof is attached.

2. From: Defense Photonics Group, Inc. To: Zephyr Photonics
The document was recorded in the United States Patent and Trademark Office at
Reel 033309, Frame 0076, or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

[ ] Additional documents in the chain of title are listed on a supplemental sheet(s).

[X] As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Duane Lauderback — Signature
7-15-14 — Date
Duane Lauderback — Printed or Typed Name
President — Title

Electronic Patent Application Fee Transmittal

Application Number:	13071377
Filing Date:	24-Mar-2011
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	Jason Blain Stark
Filer:	Hwa C. Lee/Sara Hare
Attorney Docket Number:	DPG003

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Pet. Revive Abandon App, Delay Pymt-Resp	2453	1	850	850
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	700	700
Miscellaneous:				
			Total in USD ($)	**1550**

Electronic Acknowledgement Receipt

EFS ID:	19687030
Application Number:	13071377
International Application Number:	
Confirmation Number:	3908
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	Jason Blain Stark
Customer Number:	71136
Filer:	Hwa C. Lee/Sara Hare
Filer Authorized By:	Hwa C. Lee
Attorney Docket Number:	DPG003
Receipt Date:	25-JUL-2014
Filing Date:	24-MAR-2011
Time Stamp:	15:03:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1550
RAM confirmation Number	1332
Deposit Account	505252
Authorized User	

File Listing:

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

1		Response.pdf	113597 21f3940ac1b161eb06990da7d7a2cb9d7879ef4c	yes	14

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	9
Drawings-only black and white line drawings	10	11
Specification	12	12
Applicant Arguments/Remarks Made in an Amendment	13	14

Warnings:					
Information:					
2	Drawings-only black and white line drawings	Replacement_Figures.pdf	457310 0b819b2925d2713dad09de0bc536b17bf42f1237	no	7
Warnings:					
Information:					
3	Extension of Time	Petition_EOT.pdf	76911 46cc02d16adea99b50afa042bcbb031b7cb32456	no	1
Warnings:					
Information:					
4	Petition for review by the Office of Petitions.	Petition_Revival.pdf	81914 372d14928daa960b18be105817c74eb22025006a	no	2
Warnings:					
Information:					
5	Power of Attorney	PoA.PDF	1833901 a4532e868192b8242783081a97042d9c141327be	no	2
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	31972 35a61db7202c5a6af29ebe3afd41aa1a814d8cbe	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	2595605

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Jason Blain Stark

Application No.: 13/071,377 | Confirmation No.: 3908

Filed: September 7, 2010 | Art Unit: 2636

For: UNIFIED SWITCHING FABRIC ARCHITECTURE | Examiner: Dobson, Daniel G.

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

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION

In response to the Office Action dated May 23, 2013, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page **2** of this paper.

Amendments to the Drawings begin on page **10** of this paper and include attached replacement sheets.

Amendments to the Specification begin on page **12** of this paper and include attached replacement sheets.

Remarks/Arguments begin on page **13** of this paper.

An **Appendix** including amended drawing figures is attached following page **14** of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Currently Amended) A switch fabric comprising: a plurality of transport elements adapted to communicatively couple and to communicate, via a first signal-communication medium, a first signal adapted for communication among any of the plurality of transport elements, wherein at least one transport element of the plurality of transport elements is adapted to communicate, via a second signal-communication medium, any of a second signal originating from a first network node and a third signal for termination to a second network node, wherein the second and third signals are formatted in accordance with a protocol for electrical signals, and wherein the first signal comprises an adapted form of any of the second and third signals ~~The switch fabric of claim 1,~~ wherein:

the at least one transport element comprises a switch,

the switch comprises: first, second and third ports;

the first port is adapted to: receive the second signal; and adapt the second signal so as to form a first adapted signal for communication to any of the second and third ports;

the switch is adapted to: communicatively couple any of the first, second and third ports;

and mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports;

the second port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form the third signal;

and the third port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a third adapted signal for communication to at least one other transport element via at least one link formed in the signal-communication medium communicatively coupling the third port and the at least one other transport element.

5. (Original) The switch fabric of claim 4, wherein the third port is further adapted to communicate the third adapted signal via the link.

6. (Original) The switch fabric of claim 4, wherein the first and third adapted signals are formatted in accordance with the same protocol.

7. (Original) The switch fabric of claim 4, wherein the second adapted signal is formatted in accordance with the protocol for electrical signals.

8. (Original) The switch fabric of claim 4, wherein:

the switch further comprises: a fourth port;

the fourth port is adapted to: receive a fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the second and third ports; and

the switch is further adapted to: aggregate the first and fourth adapted signals into the first adapted signal.

9. (Original) The switch fabric of claim 4, wherein at least one other transport element comprises any of a core switch, Fibre-Channel switch and wavelength-division-multiplexing switch.

10. (Original) The switch fabric of claim 4, wherein:

the second element comprises a second switch;

the second switch comprises: fifth and sixth ports;

the fifth port is adapted to: receive the third adapted signal; and adapt the third adapted signal so as to form a fifth adapted signal for communication to the sixth port;

the second switch is adapted to: communicatively couple any of the fifth and sixth ports via the first signal-communication medium; and mediate, in accordance with an access protocol for shared media, switching of the fifth adapted signal to the sixth port; and

the sixth port is adapted to: receive the fifth adapted signal; and adapt the fifth adapted signal so as to form a sixth adapted signal for communication to a third node of the unified network.

11. (Original) The switch fabric of claim 10, wherein the third and fifth adapted signals are formatted in accordance with the same protocol.

12. (Original) The switch fabric of claim 10, wherein the sixth adapted signal is formatted in accordance with the protocol for electrical signals.

13. (Original) The switch fabric of claim 4, wherein:

the at least one second transport element comprises at least one second switch;

the at least one second switch comprises: fourth, fifth and sixth ports;

the fifth port is adapted to: receive fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the fourth and sixth ports;

the at least one second switch is adapted to: communicatively couple any of the fourth, fifth and sixth ports via the signal-communication medium; and mediate, in accordance with the access protocol for shared media, switching of the fourth adapted signal to any of the fourth and sixth ports;

the sixth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a fifth adapted signal for communication to a fifth network node; and

the fourth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a sixth adapted signal for communication to the third port via at least one link formed in the signal-communication medium communicatively coupling the third and fourth ports.

14. (Original) The switch fabric of claim 13, wherein the third port is further adapted to communicate the third adapted signal via the link.

15. (Original) The switch fabric of claim 13, wherein the first, third, fourth and sixth adapted signals are formatted in accordance with the same protocol.

16. (Original) The switch fabric of claim 4, wherein at least one other transport element of the plurality of transport elements is adapted to exchange any of the second and third signals formatted in accordance with a protocol for digital communications.

17. (Original) The switch fabric of claim 16, wherein the at least one other transport element is any of a core switch, a Fibre-Channel switch and a wavelength-division-multiplexing switch.

18. (Original) A switch of a first transport element of switch fabric comprising a plurality of transport elements, the switch comprising: first, second and third ports, wherein:

the first port is adapted to: receive an electrical signal formatted in accordance with a protocol for electrical signals, the electrical signal originating from a first network node; and adapt the electrical signal so as to form a first adapted signal for communication to any of the second and third ports;

the first switch is adapted to: communicatively couple any of the first, second and third ports via a signal-communication medium; and mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports;

the second port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a second adapted signal for communication to a second network node; and

the third port is adapted to: receive the first adapted signal; and adapt the first adapted

signal so as to form a third adapted signal for communication to at least one second transport element via at least one link formed in the signal-communication medium communicatively coupling the third port and the at least one second transport element.

19. (Original) The switch of claim 18, wherein:

the switch further comprises: a fourth port;

the fourth port is adapted to: receive a fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the second and third ports; and

the switch is further adapted to: aggregate the first and fourth adapted signals into the first adapted signal.

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Currently Amended) A unified network comprising: a switch fabric, a plurality of network nodes, wherein:

the switch fabric comprises: a plurality of transport elements adapted to communicatively couple and to communicate, via a first signal-communication medium, a first signal adapted for communication among any of the plurality of transport elements, wherein at least one transport element of the plurality of transport elements is adapted to communicate, via a second signal-communication medium, any of a second signal originating from a first network node of the plurality of nodes and a third signal for termination to a second network node of the plurality of network nodes, wherein the second and third signals are formatted in accordance with a protocol for electrical signals, and wherein the first signal comprises an adapted form of any of the second

and third signals ~~The unified network of claim 20~~, wherein the switch fabric comprises: first and second switch fabrics; and

the first switch fabric comprises: a first transport element adapted to communicate a first signal formatted in accordance with a protocol for digital communications;

the second switch fabric comprises: a second transport element;

the second transport element comprises a switch;

the switch comprises: first, second and third ports;

the first port is adapted to: receive the second signal; and adapt the second signal so as to form a first adapted signal for communication to any of the second and third ports;

the switch is adapted to: communicatively couple any of the first, second and third ports; and mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports;

the second port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form the third signal; and

the third port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a third adapted signal for communication to at least one other transport element via at least one link formed in the signal-communication medium communicatively coupling the third port and first transport element.

24. (Original) The unified network of claim 23, wherein the first transport element is any of a core switch, a Fibre-Channel switch and a wavelength-division-multiplexing switch.

25. (Original) The unified network of claim 23, wherein the first and third adapted signals are formatted in accordance with the same protocol.

26. (Original) The unified network of claim 23, wherein:

the switch further comprises: a fourth port;

the fourth port is adapted to: receive a fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third node of the unified network; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the second and third ports; and

the switch is further adapted to: aggregate the first and fourth adapted signals into the first adapted signal.

27. (Original) The unified network of claim 23, wherein:

the switch is a first switch; the first transport element comprises a second switch;

the second switch comprises: fifth and sixth ports;

the fifth port is adapted to: receive the third adapted signal; and adapt the third adapted signal so as to form a fifth adapted signal for communication to the sixth port;

the second switch is adapted to: communicatively couple any of the fifth and sixth ports via the first signal-communication medium; and mediate, in accordance with an access protocol for shared media, switching of the fifth adapted signal to the sixth port; and

the sixth port is adapted to: receive the fifth adapted signal; and adapt the fifth adapted signal so as to form a sixth adapted signal for communication to a third node of the unified network.

28. (Original) The unified network of claim 23, wherein:

the first transport element comprises at least one second switch;

the at least one second switch comprises: fourth, fifth and sixth ports;

the fifth port is adapted to: receive fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the fourth and sixth ports;

the at least one second switch is adapted to: communicatively couple any of the fourth, fifth and sixth ports via the signal-communication medium; and mediate, in accordance with the

access protocol for shared media, switching of the fourth adapted signal to any of the fourth and sixth ports;

the sixth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a fifth adapted signal for communication to a fifth network node; and

the fourth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a sixth adapted signal for communication to the third port via at least one link formed in the signal-communication medium communicatively coupling the third and fourth ports.

AMENDMENTS TO THE DRAWINGS

The attached replacement sheets of drawings includes changes to FIG. 1A, 1D, 2A, 2B, 3 and 4 and replace the original sheets of FIG. 1A, 1D, 2A, 2B, 3 and 4.

In FIG. 1A: The intra-fabric link number 110_2 in the upper right corner has been corrected to read 110_5.

In FIG. 1D: The intra-fabric link number 110_2 in the upper right corner has been corrected to read 110_5.

In FIG. 2A: The intra-fabric link number 110_2 in the upper right corner has been corrected to read 110_5. Added switch fabric 204 (112, 114 and 116 combined) with reference lines to 112, 114 and 116. Added signal communication media 108 ($110_{1\text{-}18}$ combined) with reference lines to $110_{1\text{-}18}$. Core switches 203_4 has been corrected to read 203_1. Core switches 203_5 has been corrected to read 203_2. Core switches 203_6 has been corrected to read 203_3. Core switches 203_7 has been corrected to read 203_4. Core switches 203_5 has been corrected to read 203_5. WDM switch 205_9 has been corrected to read 205_1. WDM switch 205_{10} has been corrected to read 205_2. WDM switch 205_{11} has been corrected to read 205_3. WDM fabric switch 116 has been corrected to read 216. Core switch fabric 114 has been corrected to read 214. Switch fabric 112 has been corrected to read 212.

In FIG. 2B: The switch 209 has been corrected to read 205_1.

In FIG. 3: The optical-communication media 308 ($310_{1\text{-}7}$ combined) has been added. Intra-fabric link 310_3 and 310_7 have been added.

In FIG. 4: The signal-communication media 408 ($410_{1\text{-}3}$) combined has been added.

The attached new sheet of drawing include new FIG. 2C to be placed between FIG. 2B and FIG. 3.

In FIG. 2C: Added signal coupling switch 215_1, intra-switch medium $213_{1\text{-}2}$, and E-port 211_1 as described in paragraphs [0066]-[0086].

Attachments following last page of this Amendment:

Replacement Sheets (6 pages)

New Sheet (1 page)

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [0035] with the following amended paragraph.

[0035] Figures 2B and 2C [[is a]]are block diagrams illustrating [[an]] examples of [[a]] signal-coupling edge devices;

Please replace paragraph [0066] with the following amended paragraph.

[0066] Referring now to Figures 2B and 2C, [[a]] block diagrams illustrating [[an]] example of [[the]] signal coupling edge devices 201_1 and 215_1 are [[is]] shown.

Please replace paragraph [0091] with the following amended paragraph.

[0091] The core switches $306_{4\text{-}6}$ may communicatively couple via the intra-fabric links $310_{4\text{-}6}$ to form a core switch fabric 314. The signal-coupling edge devices $306_{1\text{-}3}$ may communicatively couple via the intra-fabric links $310_{1\text{-}[[3]]7}$ and core switch fabric 314. The inter-coupling of the signal-coupling edge devices $306_{1\text{-}3}$, intra-fabric links $310_{1\text{-}[[3]]7}$ and core switch fabric 314 form the switch fabric 312, and in turn, the composite switch fabric 300. Like the composite switch fabric 200 of Figure 2, the composite switch fabric 300 of Figure 3 defines multiple, interconnected switch fabrics that allow communication among one or indirectly connected signal-coupling edge devices $306_{1\text{-}3}$.

REMARKS

Claims 4 and 23 have been amended. Claims 1-3 and 20-22 have been canceled without disclaimer or prejudice. Claims 4-19 and 23-28 remain pending.

Reconsideration and allowance of the application are respectfully requested.

Objections to the Drawings

The drawings stand objected for issues raised in paragraph 3a-h of the pending office action. With this response, new FIG. 2C and amended FIG. 1A, 1D, 2A, 2B, 3 and 4 are presented. In addition, paragraphs [0034], [0066] and [0091] have been amended. It is believed all issues raised with respect to the drawings have been addressed.

Allowable Subject Matter

Applicant appreciates that claims 18 and 19 are allowed and the indication of allowability of claims 4-17 and 23-28 if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims have been amended as recommended. It is believed that all pending claims are now in condition for allowance.

Rejections under 35 U.S.C. § 103

Claims 1-3 and 20-22 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Battou (2005/0259571) and Barbarossa et al. (2010/0061726).

Applicant respectfully disagrees with the Examiner's rejections. However, to expedite the prosecution of the present application, allowable claims 4 and 23 have been amended to include the subject matter of base claims 1 and 20 and are rewritten in independent form. Claims 1-3 and 20-22 are requested to be canceled without disclaimer or prejudice.

Accordingly, claims 4-19 and 23-28 are in condition for allowance.

CONCLUSION

It is believed that the present application is in condition for allowance. Therefore, reconsideration and allowance of the present application are respectfully requested.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

This response is filed with an extension of time for three months pursuant to 37 CFR §1.136(a). Please apply all applicable fees, and any other charges or credits, to Deposit Account No. 50-5252.

Respectfully submitted,

Date: July 25, 2014

/Hwa C. Lee/
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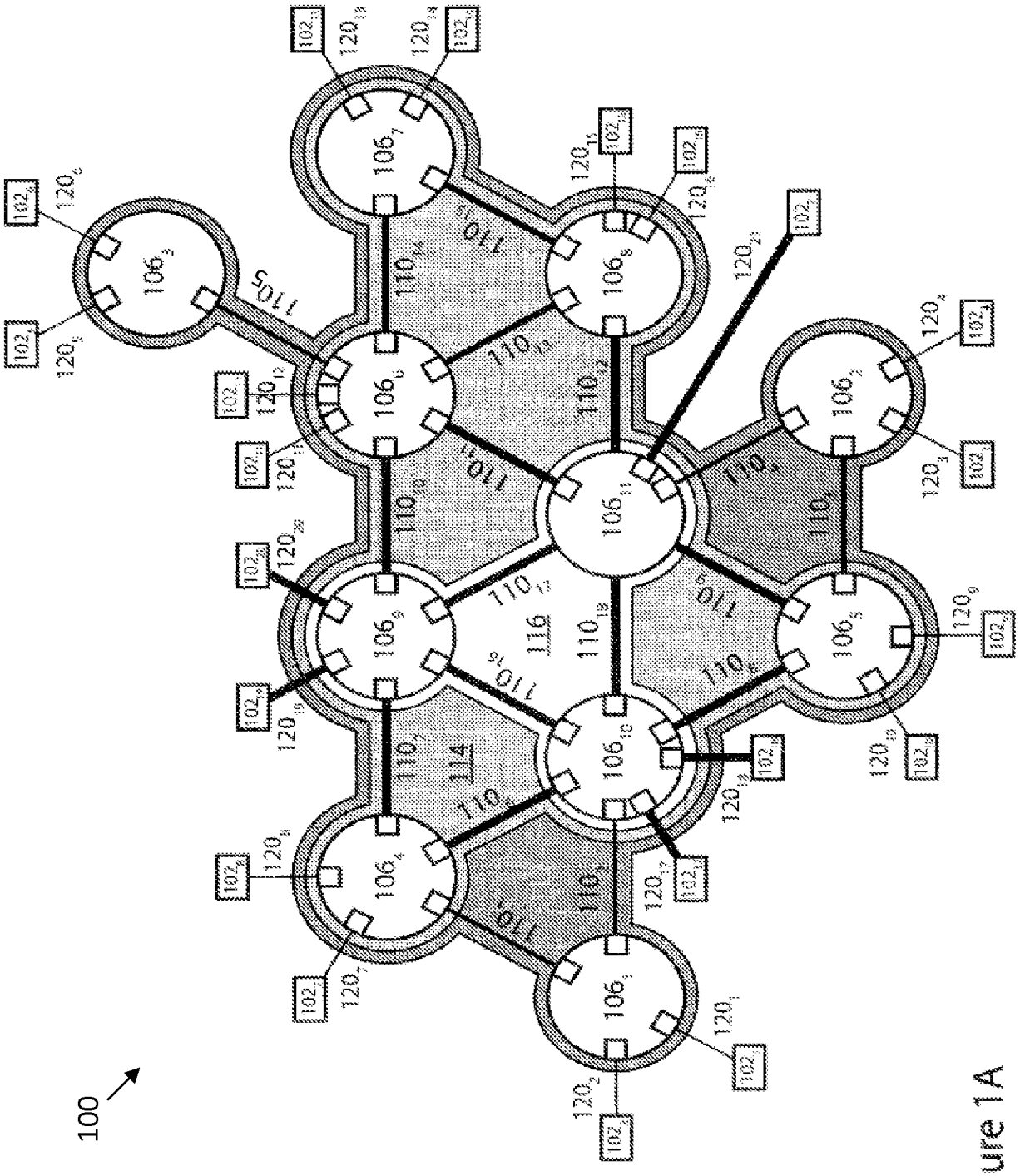
100
106_1
106_2
106_3
106_4
106_5
106_6
106_7
106_8
106_9
106_{10}
106_{11}
110_1
110_2
110_3
110_4
110_5
110_6
110_7
110_8
110_9
110_{10}
110_{11}
110_{12}
110_{13}
110_{14}
110_{15}
110_{16}
110_{17}
110_{18}
110_{19}
110_{20}
110_{21}
114
116
120_1
120_2
120_3
120_4
120_5
120_6
120_7
120_8
120_9
120_{10}
120_{11}
120_{12}
120_{13}
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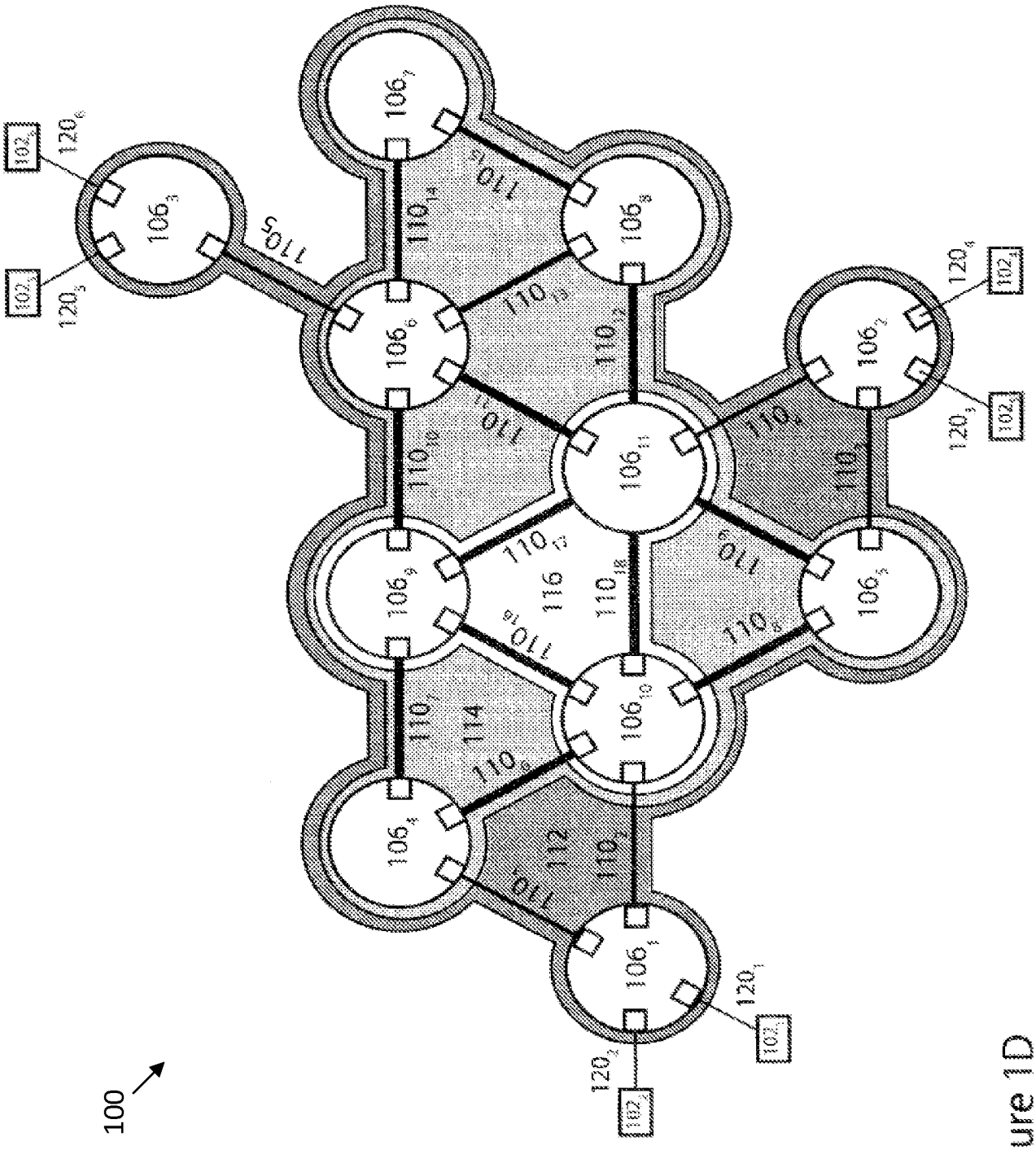
120_{17}
120_{18}
120_{19}
120_{20}
120_{21}
102

Figure 1A


100
106_1
106_2
106_3
106_4
106_5
106_6
106_7
106_8
106_9
106_{10}
106_{11}
102_1
102_2
102_3
102_4
120_1
120_2
120_3
120_4
120_5
120_6
110_1
110_2
110_3
110_4
110_5
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110_8
110_9
110_{10}
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110_{16}
110_{17}
110_{18}
112
114
116

Figure 1D

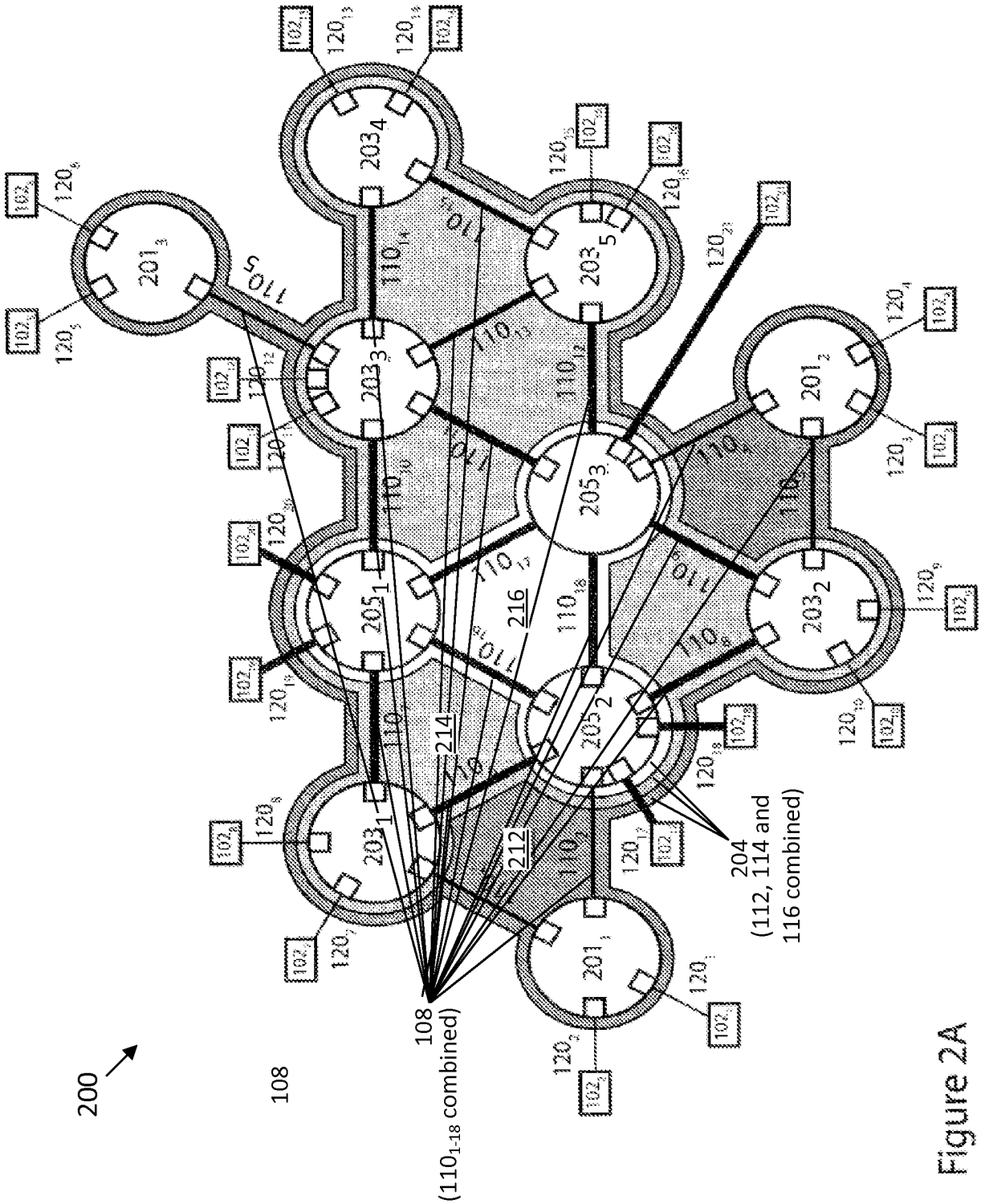
200
108
108
(110$_{1-18}$ combined)
204
(112, 114 and
116 combined)
214
216
212

Figure 2A

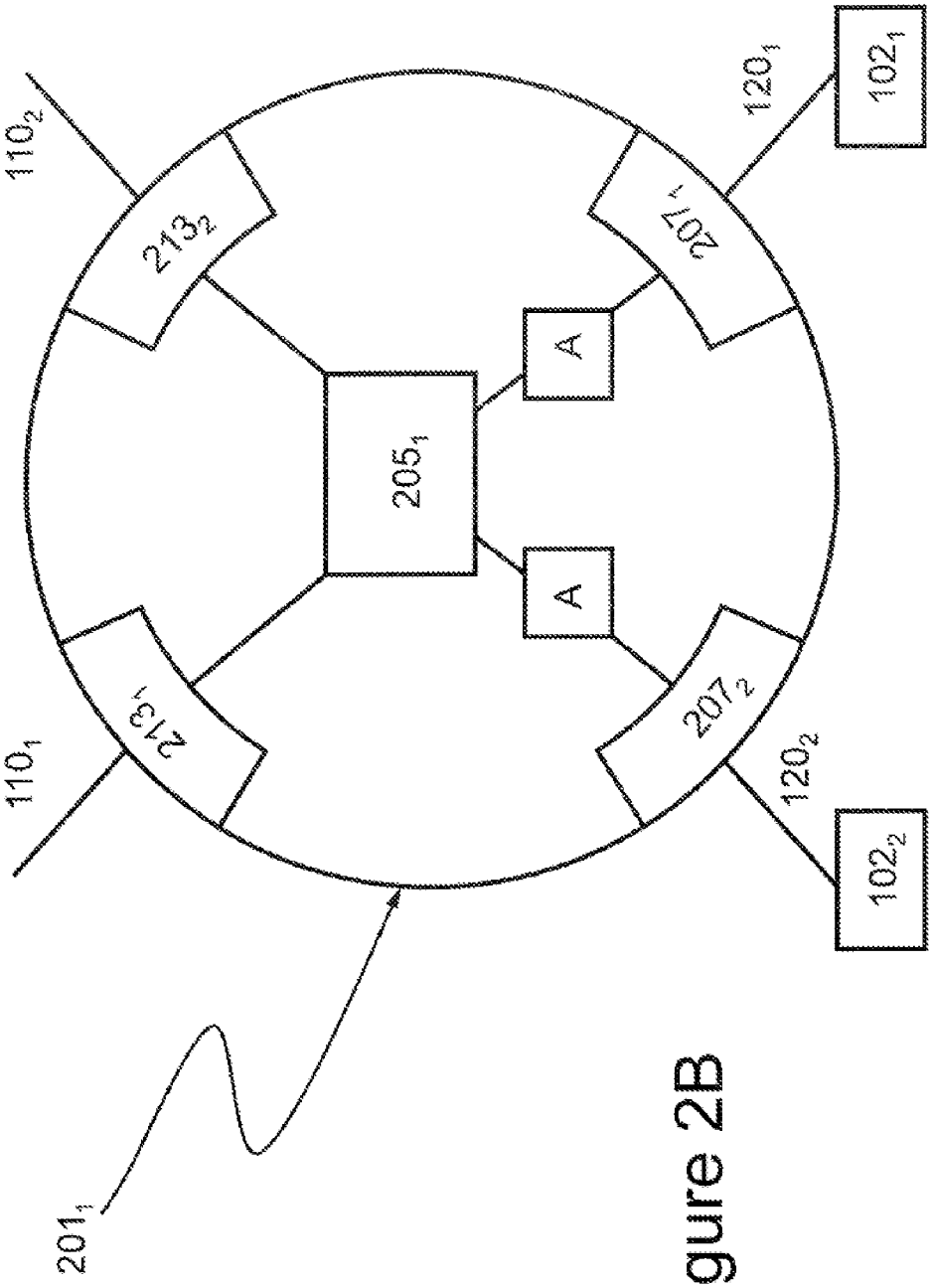
110_2
213_2
120_1
102_1
207_1
A
205_1
A
110_1
213_1
207_2
120_2
102_2
201_1

Figure 2B

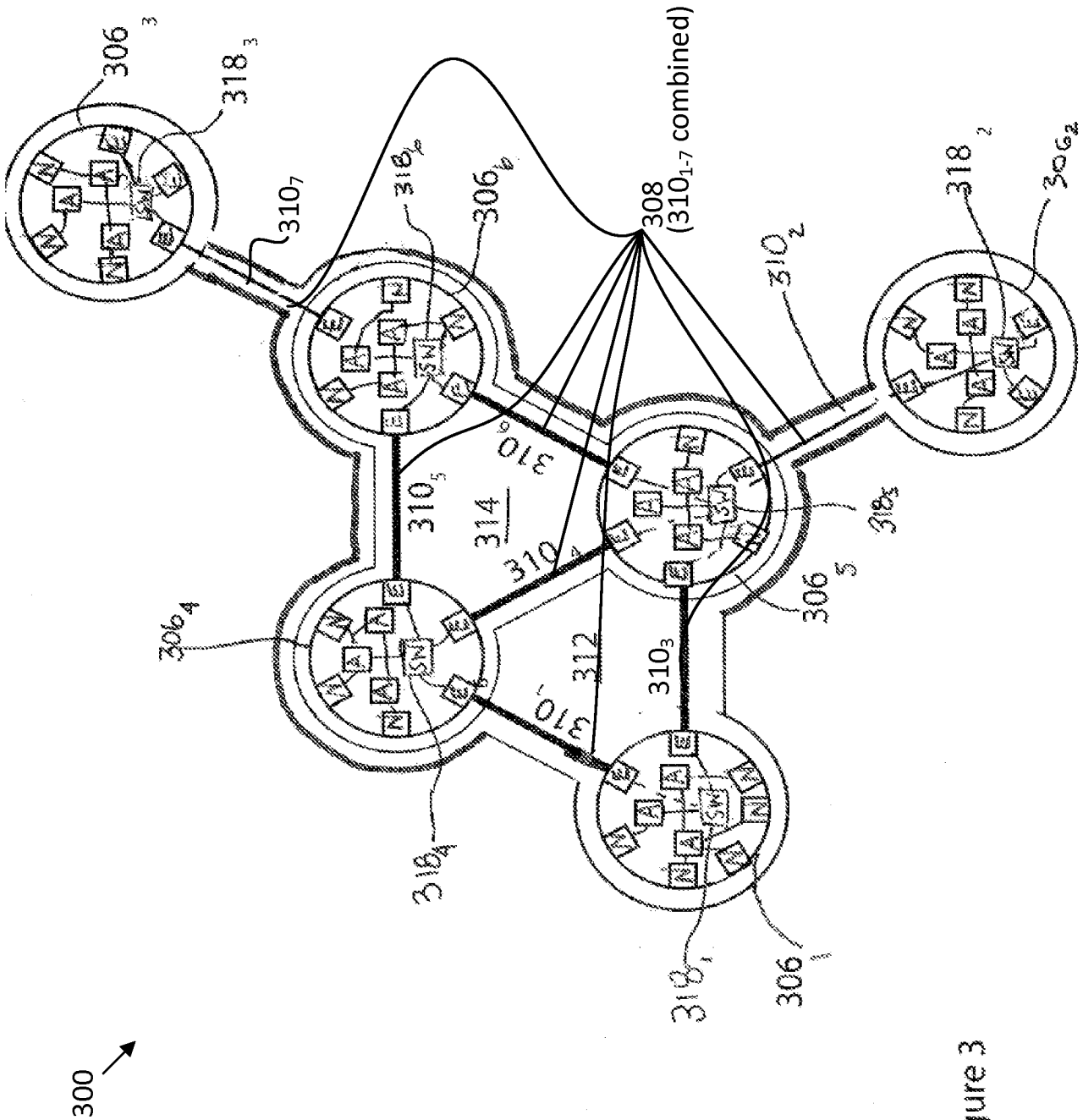
300
306 3
318 3
310 7
318 6
306 6
308
(310 1-7 combined)
310 2
318 2
306 2
310 6
310 5
314
310 4
318 5
306 5
306 4
312
310 3
310 1
318 4
318 1
306 1

Figure 3

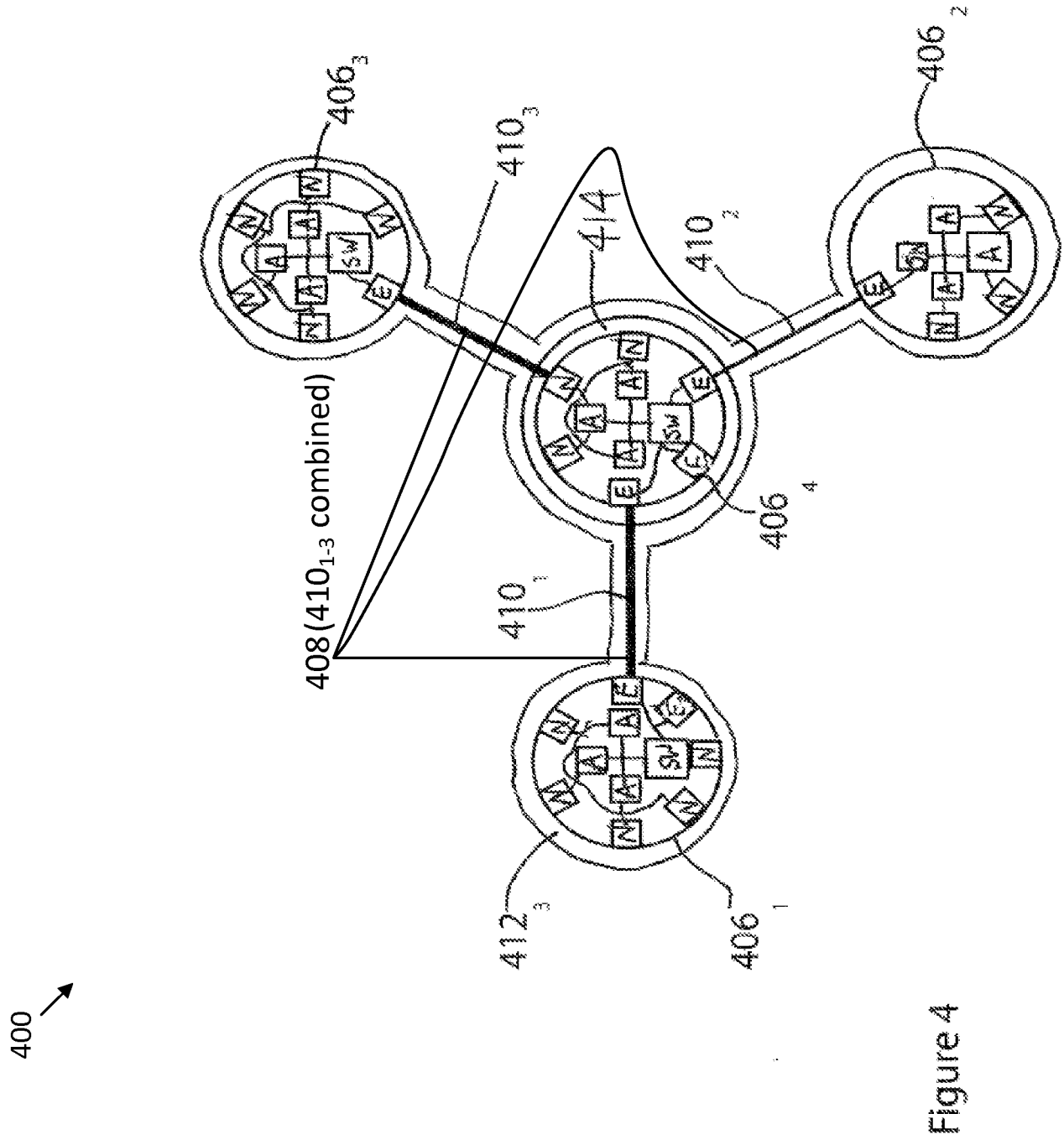
400
406 3
410 3
414
410 2
406 2
408(410 1-3 combined)
410 1
406 4
412 3
406 1

Figure 4

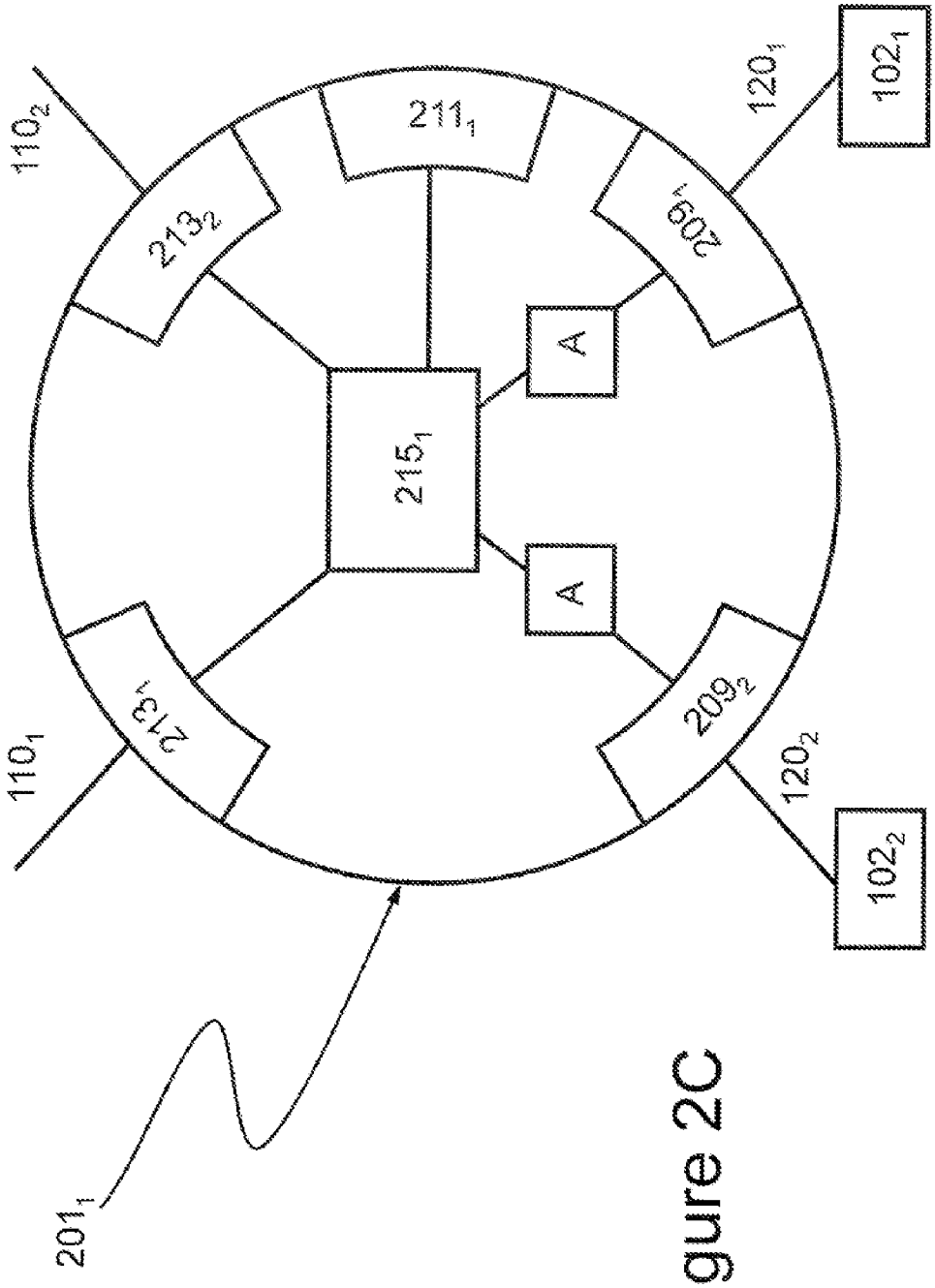
110_2
211_1
120_1
102_1
213_2
209_1
A
215_1
A
213_1
209_2
110_1
120_2
102_2
201_1

Figure 2C

PTO/SB/22 (03-13)
Approved for use through 03/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Docket Number (Optional) 089359-8004.US00
Application Number 13/071,377	Filed September 7, 2010
For UNIFIED SWITCHING FABRIC ARCHITECTURE	
Art Unit 2636	Examiner Dobson, Daniel G.

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$
☐ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☒ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$ 700
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☒ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

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

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-5252 .

☒ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).

☒ attorney or agent of record. Registration number 59747 .

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____ .

/Hwa C. Lee/	July 25, 2014
Signature	Date
Hwa. C. Lee	858-720-5700
Typed or printed name	Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

Document code: WFEE

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PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/071,377	03/24/2011	

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $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).			
☐ 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	

APPLICATION AS AMENDED – PART II

AMENDMENT **07/25/2014**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 22	Minus	** 28	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ 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.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/LASHAWN MARKS/

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	DPG003	3908

71136 7590 12/05/2013

KACVINSKY DAISAK PLLC
3120 Princeton Pike
Suite 303
Lawrenceville, NJ 08648

EXAMINER	
DOBSON, DANIEL G	

ART UNIT	PAPER NUMBER
2636	

NOTIFICATION DATE	DELIVERY MODE
12/05/2013	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):

KDdocketing@cpaglobal.com
cseaton@kdfirm.com

Notice of Abandonment	Application No.	Applicant(s)
	13/071,377	STARK, JASON BLAIN
	Examiner	Art Unit
	DANIEL DOBSON	2636

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

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on *23 May 2013*.
   (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
   (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection.
   (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
   (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
   (d) ☒ No reply has been received.

2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
   (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
   (b) ☐ The submitted fee of $_____ is insufficient. A balance of $_____ is due.
   The issue fee required by 37 CFR 1.18 is $_____. The publication fee, if required by 37 CFR 1.18(d), is $_____.
   (c) ☐ The issue fee and publication fee, if applicable, has not been received.

3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
   (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
   (b) ☐ No corrected drawings have been received.

4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33(b). See 37 CFR 1.138(b).

5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.

6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.

7. ☐ The reason(s) below:

/DANIEL DOBSON/
Examiner, Art Unit 2636

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

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/071,377	03/24/2011	Jason Blain Stark	DPG003	3908

71136 7590 05/23/2013

MALDJIAN LAW GROUP LLC
36 BINGHAM AVENUE
RUMSON, NJ 07760

EXAMINER	
DOBSON, DANIEL G	

ART UNIT	PAPER NUMBER
2636	

NOTIFICATION DATE	DELIVERY MODE
05/23/2013	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):

PATENT@MLGIPLAW.COM

Office Action Summary	Application No. 13/071,377	Applicant(s) STARK, JASON BLAIN	
	Examiner DANIEL DOBSON	Art Unit 2636	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *24 March 2011*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

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

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-24* is/are pending in the application.

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

6)☒ Claim(s) *18, 19* is/are allowed.

7)☒ Claim(s) *1-3 and 20-22* is/are rejected.

8)☒ Claim(s) *4-17 and 23-28* is/are objected to.

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

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

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

11)☒ The drawing(s) filed on *24 March 2011* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

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)).

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

Interim copies:

a)☐ All b)☐ Some c)☐ None of the: Interim copies of the priority documents have been received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-28 are pending.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/26/2011 is considered by the examiner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

a. Paragraph 53 (Fig. 2A) mentions composite switch fabric (204), signal communication media (108), core switches ($203_{1\text{-}5}$), and WDM switches ($205_{1\text{-}3}$.)

b. Paragraph 55 mentions WDM switch fabric (216), core switch fabric (214),

c. Paragraph 67 mentions a switch (205_1),

d. Paragraph 69 mentions a signal coupling switch (215),

e. Paragraph 70 mentions a first and second A-port (209), and an E-port (211),

f. Paragraph 90 mentions signal-communication media (308),

g. Paragraph 91 mentions intra-fabric link (310_3),

h. Paragraph 94 mentions media (408),

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

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

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

5. Claims 1-3, 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2005/0259571 A1 to Battou and U.S. Patent Application Publication 2010/0061726 A1 to Barbarossa et al.

As to **Claim 1**, **Battou** discloses a switch fabric (*Fig. 1, optical network (105))* comprising:

a plurality of transport elements (*Fig. 1, OADMSs (106, 108, 110, 112) shown in more detail in Fig. 2),* adapted to communicatively couple and to communicate, via a first signal-communication medium, a first signal adapted for communication among any of the plurality of transport elements (*Fig. 1, OADMs, are coupled together and communicate over the optical fiber medium (105) first signals are adapted to the SONET standard, ¶ 80*)

wherein at least one transport element of the plurality of transport elements is adapted to communicate, via a second signal-communication medium, any of a second signal originating from a first network node and a third signal for termination to a second network node (*Fig. 1, OADMs 106, 110, and 108, receive Gigabit Ethernet (GbE) via a second medium (Fig. 2, access network (205), the GbE signals originate from node (132), and terminate at node (136)*),

wherein the second and third signals are formatted in accordance with a protocol (*Fig. 1, the second and third signals are GbE signals*), and wherein the first signal comprises an adapted form of any of the second and third signals (*Fig. 2, ALI (220) adapts the GbE signals to SONET, shown in more detail in Fig. 15.*)

Battou discloses that the GbE signals are formatted in accordance with a protocol for optical signals, but does not expressly disclose that the GbE signals are formatted in accordance with a protocol for electrical signals.

Barbarossa discloses that GbE signals may also formatted in accordance with a protocol for electrical signals (*¶ 22, GbE signals may arrive as optical signals or electrical signals on a networking cable or unshielded twisted pair.*)

At the time of the invention it would have been obvious for a person of ordinary skill in the art to use GbE signals formatted in accordance with a protocol for electrical signals (as disclosed by **Barbarossa**) in the system

disclosed by **Battou**. The suggestion/motivation would have been to accept all types (electrical or optical) GbE signals from clients.

Battou and **Barbarossa** are from the same art with respect to optical communication, and are therefore analogous art.

As to **Claim 2**, **Battou** discloses wherein at least one transport element of the plurality of transport elements is adapted to perform a signal aggregation function (*Fig. 2, the OADMs aggregate ingress signals in to WDM egress signals*.)

As to **Claim 3**, **Battou** discloses wherein the plurality of transport elements comprises any of core, Fibre-Channel and wavelength-division-multiplexing switches (*Fig. 2, OADMs are WDM switches*.)

As to **Claim 20**, **Battou** discloses a unified network comprising: a switch fabric (*Fig. 1, optical network (105))*, a plurality of network nodes (*Fig. 1, GbE nodes (123, 136, and 140*) wherein:

the switch fabric comprises: a plurality of transport elements (*Fig. 1, OADMSs (106, 108, 110, 112) shown in more detail in Fig. 2),* adapted to communicatively couple and to communicate, via a first signal-communication medium, a first signal adapted for communication among any of the plurality of transport elements (*Fig. 1, OADMs, are coupled together and communicate over the optical fiber medium (105) first signals are adapted to the SONET standard, ¶ 80*)

wherein at least one transport element of the plurality of transport elements is adapted to communicate, via a second signal-communication medium, any of a second signal originating from a first network node and a third signal for termination to a second network node (*Fig. 1, OADMs 106, 110, and 108, receive Gigabit Ethernet (GbE) via a second medium (Fig. 2, access network (205), the GbE signals originate from node (132), and terminate at node (136)*),

wherein the second and third signals are formatted in accordance with a protocol (*Fig. 1, the second and third signals are GbE signals*), and wherein the first signal comprises an adapted form of any of the second and third signals (*Fig. 2, ALI (220) adapts the GbE signals to SONET, shown in more detail in Fig. 15.*)

Battou discloses that the GbE signals are formatted in accordance with a protocol for optical signals, but does not expressly disclose that the GbE signals are formatted in accordance with a protocol for electrical signals.

Barbarossa discloses that GbE signals may also formatted in accordance with a protocol for electrical signals (*¶ 22, GbE signals may arrive as optical signals or electrical signals on a networking cable or unshielded twisted pair.*)

At the time of the invention it would have been obvious for a person of ordinary skill in the art to use GbE signals formatted in accordance with a protocol for electrical signals (as disclosed by **Barbarossa**) in the system

disclosed by **Battou**. The suggestion/motivation would have been to accept all types (electrical or optical) GbE signals from clients.

Battou and **Barbarossa** are from the same art with respect to optical communication, and are therefore analogous art.

As to **Claim 21**, **Battou** discloses wherein at least one transport element of the plurality of transport elements is adapted to perform a signal aggregation function (*Fig. 2, the OADMs aggregate ingress signals in to WDM egress signals*.)

As to **Claim 22**, **Battou** discloses wherein the plurality of transport elements comprises any of core, Fibre-Channel and wavelength-division-multiplexing switches (*Fig. 2, OADMs are WDM switches*.)

Allowable Subject Matter

6. Claims 18-19 are allowed.

7. Claims 4-17 and 23-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL DOBSON whose telephone number is (571)272-9781. The examiner can normally be reached on 7-4 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571-272-3078. 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.

/DANIEL G DOBSON/
Examiner, Art Unit 2636
05/19/2013

Notice of References Cited	Application/Control No. 13/071,377	Applicant(s)/Patent Under Reexamination STARK, JASON BLAIN	
	Examiner DANIEL DOBSON	Art Unit 2636	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2005/0259571 A1	11-2005	Battou, Abdella	370/217
*	B	US-2010/0061726 A1	03-2010	Barbarossa et al.	398/48
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13071377	STARK, JASON BLAIN
	Examiner	Art Unit
	DANIEL DOBSON	2636

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
398	39-64, 83	5/19/2013	dgd

SEARCH NOTES		
Search Notes	Date	Examiner
Text Search	5/19/2013	dgd
Inventor Search	5/19/2013	dgd

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613 13071377 - GAU: 2636
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/D.G.D./	1	7362936	B2	2008-04-22	Defense Photonics Group, Inc.	
/D.G.D./	2	7515797	B2	2009-04-07	Defense Photonics Group, Inc.	
/D.G.D./	3	7515798	B2	2009-04-07	Defense Photonics Group, Inc.	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	13071377 13071377 - GAU: 2636
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

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

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/D.G.D./	1	Georgios I. Papadimitriou et al., "Optical Switching: Switch Fabrics, Techniques, and Architectures," Journal of Lightwave Technology, Vol. 21, No. 2, pp. 384-405, February 2003, 22 pages.	☐
/D.G.D./	2	Harry J.R. Dutton, "Understanding Optical Communications," IBM, International Technical Support Organization, Retrieved from http://www.redbooks.ibm.com, 638 pages.	☐
/D.G.D./	3	Benjamin A. Small et al., "The Current and Future State of Optical Switching Technologies as Related to the Data Vortex Photonic Switching Architecture," 6 pages.	☐
/D.G.D./	4	Qimin Yang et al., "New Switch Fabric Architecture for Bursty Traffic," pp. 43-44, ©2002 IEEE, 2 pages.	☐

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

EXAMINER SIGNATURE

Examiner Signature	/Daniel Dobson/	Date Considered	05/19/2013

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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

Application Number	13071377 13071377 - GAU: 2636
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

CERTIFICATION STATEMENT

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

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

OR

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

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/John P. Maldjian/	Date (YYYY-MM-DD)	2011-11-26
Name/Print	John P. Maldjian	Registration Number	41967

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 record s.

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.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	("20110236019").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/05/19 20:17
L2	29	stark-jason-$10.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/05/19 20:22
L3	3	stark-jason.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/05/19 20:22
L4	32	2 3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/05/19 20:23
L5	5652	(398/39-64,83).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/05/19 21:22
L6	14	battou.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/05/19 21:22
L7	35	(gigabit adj ethernet gbe) same twisted adj pair and "398".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/05/19 21:32

EAST Search History (Interference)

<This search history is empty>

5/19/2013 11:14:09 PM
C:\Users\ddobson\Documents\EAST\Workspaces\13-071377.wsp

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13071377	STARK, JASON BLAIN
	Examiner	Art Unit
	DANIEL DOBSON	2636

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

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

CLAIM		DATE								
Final	Original	05/19/2013								
	1	✓								
	2	✓								
	3	✓								
	4	O								
	5	O								
	6	O								
	7	O								
	8	O								
	9	O								
	10	O								
	11	O								
	12	O								
	13	O								
	14	O								
	15	O								
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PTO/SB/08a (01-10)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7362936	B2	2008-04-22	Defense Photonics Group, Inc.	
	2	7515797	B2	2009-04-07	Defense Photonics Group, Inc.	
	3	7515798	B2	2009-04-07	Defense Photonics Group, Inc.	

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U.S.PATENT APPLICATION PUBLICATIONS

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	13071377
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Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Georgios I. Papadimitriou et al., "Optical Switching: Switch Fabrics, Techniques, and Architectures," Journal of Lightwave Technology, Vol. 21, No. 2, pp. 384-405, February 2003, 22 pages.	☐
	2	Harry J.R. Dutton, "Understanding Optical Communications," IBM, International Technical Support Organization, Retrieved from http://www.redbooks.ibm.com, 638 pages.	☐
	3	Benjamin A. Small et al., "The Current and Future State of Optical Switching Technologies as Related to the Data Vortex Photonic Switching Architecture," 6 pages.	☐
	4	Qimin Yang et al., "New Switch Fabric Architecture for Bursty Traffic," pp. 43-44, ©2002 IEEE, 2 pages.	☐

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Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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

Application Number	13071377
Filing Date	2011-03-24
First Named Inventor	Jason Blain Stark
Art Unit	2613
Examiner Name	VANDERPUYE, KENNETH N
Attorney Docket Number	DPG003

CERTIFICATION STATEMENT

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

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

OR

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

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/John P. Maldjian/	Date (YYYY-MM-DD)	2011-11-26
Name/Print	John P. Maldjian	Registration Number	41967

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Electronic Acknowledgement Receipt

EFS ID:	11483069
Application Number:	13071377
International Application Number:	
Confirmation Number:	3908
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	Jason Blain Stark
Customer Number:	71136
Filer:	John P. Maldjian/Melissa Schrader
Filer Authorized By:	John P. Maldjian
Attorney Docket Number:	DPG003
Receipt Date:	26-NOV-2011
Filing Date:	24-MAR-2011
Time Stamp:	13:59:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	DPG003_IDS.pdf	32761 e8b1de891a729fde91476c316e46adf3b74f7d0e	no	4

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Warnings:					
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4	Non Patent Literature	DPG003_Yang_Article.pdf	231562 5d62fa1b7779795ba8e02db66b02e9f81c85ebcf	no	2
Warnings:					
Information:					
5	Non Patent Literature	DPG003_Small_Article1.pdf	98899 ac6b617f2de84346dd660671e430cd63bf402741	no	6
Warnings:					
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			Total Files Size (in bytes):	6846827	

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/071,377	03/24/2011	Jason Blain Stark	DPG003

CONFIRMATION NO. 3908

71136
MALDJIAN LAW GROUP LLC
36 BINGHAM AVENUE
RUMSON, NJ 07760

PUBLICATION NOTICE

OC000000050104515

Title:UNIFIED SWITCHING FABRIC ARCHITECTURE

Publication No.US-2011-0236019-A1
Publication Date:09/29/2011

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/071,377	03/24/2011		670	DPG003	28	3

CONFIRMATION NO. 3908

71136
MALDJIAN LAW GROUP LLC
36 BINGHAM AVENUE
RUMSON, NJ 07760

FILING RECEIPT

Date Mailed: 04/06/2011

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

Applicant(s)

Jason Blain Stark, Holmdel, NJ;

Assignment For Published Patent Application

DEFENSE PHOTONICS GROUP, INC., South Plainfield, NJ

Power of Attorney: The patent practitioners associated with Customer Number 71136

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/317,249 03/24/2010

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If Required, Foreign Filing License Granted: 04/04/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/071,377**

Projected Publication Date: 09/29/2011

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****

Title

UNIFIED SWITCHING FABRIC ARCHITECTURE

Preliminary Class

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/071,377

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	82		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	270		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	28 minus 20 =	* 8	x 26 =	208	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 110 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	670		TOTAL	

APPLICATION AS AMENDED - PART II

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

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

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

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The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNIFIED SWITCHING FABRIC ARCHITECTURE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of United States Provisional Application Serial No. 61/317,249, filed March 24, 2010, entitled "Unified Switching Fabric Architecture," which is incorporated herein by reference in its entirety.

BACKGROUND

[0002] **Field**

[0003] The following generally relates to networking architecutures. More particularly, the following relates to unified networks, and elements thereof, for vehicles, such as aircrafts, artificail satellites, spacecrafts watercrafts and the like. The following further relates to networking architecutures and/or unified networks for other (i.e., non-vehicular) applications.

[0004] **Related Art**

[0005] Aircraft avionics architectures have evolved over the past fifty years or so in response to developments in electrical, electronic and optical communication and communication media technologies. First generation avionic architectures were distributed analog systems. In these systems, signals were generated by sensors on the aircraft. These signals were passed as modulated electrical signals in analog format to user interfaces that presented the processed signals in an intelligible manner.

[0006] Second generation avionics architectures replaced the analog signals with digitally formatted signals, with an associated increase in signal robustness, immunity to interference, and reliability. The organizational principle, however, was unchanged, representing distributed digital systems. That is, individual digital signals were routed on electrical wires to individual user interface elements.

[0007] As the electronics technologies continued to improve, multiplexed databuses were introduced, allowing many independent digital signals to utilize a common wiring infrastructure. This was achieved mostly by electronically multiplexing the digital signals onto databus wiring, using protocols defined to ensure orderly utilization of the shared medium – the databus wiring.

[0008] Third generation avionic architectures are referred to as federated architectures to signify all elements of a specific aircraft system, such as the navigational system. Third generation avionic architectures share a common digital interconnect infrastructure. Elements of a separate aircraft system, such as the communications system, also share a common digital databus, separate from the databus supporting the navigation system.

[0009] Fourth generation avionic architectures evolved in response to advances in digital signal processing technologies. As the electronics used to switch digital signals progressed, it became feasible to process signals from multiple distinct aircraft systems within a single high-throughput switch. Digital signals from the navigation system, as well as signals from communications and other systems, are brought to a central facility for processing and distribution. The centralized processing and switching that defines fourth generation avionic architectures create opportunities for the integration of information that were previously unattainable.

[0010] In military aricraft, for instance, information from multiple systems may be integrated by way of the central facility to support a pilot during a mission. For example, the central facility may integrate information from radar systems, indicating, for example, presence of an aircraft with a specific threat signature (e.g., friend or foe), with a digital map of the terrain and mission profile, to create a comprehensive situational awareness for the pilot. Other information pertinent to the mission, such as the location and activities of other mission participants, could be integrated within the same situational awareness.

[0011] Other opportunities borne out of adoption of the central facility included wholesale changes to development, and in turn, manfacturing of processing equipments. For example, most, if not all, of the processing equipments have identical or substantially identical modular hardware elements. Initially, the modular hardware elements are not configured for any specfic processing functions. The specific processing functions implemented are determined through software design and application of the software design to the modular hardware elements. In effect, what previously had been a dedicated hardware element with associated dedicated software, has evolved into multi-functional hardware elements with dedicated software. By developing software for a known, common hardware platform, development time and cost were reduced substantially, and upgrading system capabilities became a software development task.

[0012] In advanced tactical fighter aircraft, such as the E2-D, F/A-18 and F-35, integrated switching is provided by core switches and switching. In other advanced aircraft, integrated switching is provided by core switches and switching fabrics that are based upon the Ethernet standard promulgated by the Institute for Electrical and Electronics Engineers ("IEEE") under IEEE 802.3; derivatives of the Ethernet protocol, such as Aircraft Full Duplex ("AFDX"); or Aeronautical Radio, Incorporated ("ARINC") standard 644P7 ("ARINC 664P7"). In these tactical aircraft, digital signals from the navigation, communications, radar, electronic warfare and electro-optic systems are brought to the core switch, which routes and forwards the digital signals to their destinations for subsequent processing. Switched signals are carried in electronic format using electrical wiring or in optical format using optical fiber.

[0013] The above generations of avionics architecture may not be sufficient for the data capacity requirements in that, for example, anticipated data capacity requirements may overwhelm the capabilities of core switches. Specifically, projections for aggregated data throughput on typical tactical or transport aircraft are expected to exceed 1 Tb/s in the near future. At the same time, a single optical fiber has the capacity to carry more than 10 Tb/s (10,000 Gb/s) of information. This may exceed the switching capacity a core switch fabric on an aircraft. The resulting disparity between switching requirements and the capabilities of an electronic core switch fabric indicate a need for a high capacity switching technology that is compatible with operation on aircraft platforms.

[0014] Thus, there is a need for supporting legacy aircraft, having distributed or unified avionics architectures, as well as the need to support the next generation aircrafts, to anticipate the new generation data capacity requirements.

SUMMARY

[0015] Provided herein are examples of a networking architecuture and a unified network for vehicles, such as aircrafts, satellites, watercrafts and the like, as well as for other (i.e., non-vehicular) applications. Also provided herein are examples of (i) various switch fabrics of the unified network; (ii) a composite switch fabric formed from the various switch fabrics; (iii) transport elements of the various switch fabrics and/or composite switch fabric ("switch-fabric transport elements"); (iv) switches of respective switch-fabric transport elements; and (v) a method of communicating in the unified network.

[0016] By way of example, a switch fabric is provided. The switch fabric may be part of a unified network that also includes a plurality of network nodes. The switch fabric may include a plurality of transport elements and one or more first signal-communication media. The transport elements may be adapted to communicatively couple and to communicate, via the first signal-communication media, one or more signals ("transport signals") adapted for communication among any of the plurality of transport elements. At least one transport element of the plurality of transport elements may be further adapted to communicate, via a second signal-communication media, one or more signals and/or one or more sets of electrical (collectively "electrical signals") originating from and/or terminating to one or more network nodes. Each of the electrical signals may be formatted in accordance with a protocol for electrical signals. And one or more of the transport signals may include the electrical signals in adapted form. Additionally and/or alternatively, one or more of the transport signals may be formed from, or as a function of, the electrical signals.

[0017] The first and second signal-communication media may be, and links therein may be formed in, any number of various physical media. Such physical media may include, for example, any of optical transmission media (e.g., optical fibers), electrical transmission lines and wireless media.

[0018] In some instances, one or more of the transport elements may be adapted to perform a signal aggregation function. These transport elements may be adapted to aggregate the electrical signals. Additionally, any of the transport elements may be any of core, Fibre-Channel and wavelength-division-multiplexing ("WDM") switches. Any of the transport elements may be a signal-coupling edge device, as well.

[0019] The signal-coupling edge device may include a switch ("signal-coupling switch"). The signal-coupling switch may include first, second and third ports. The first port may be adapted to (i) receive the electrical signalsoriginated from a first network node of the unified network; and (ii) adapt the electrical signal so as to form a first adapted signal for communication to any of the second and third ports. The signal-coupling switch may be adapted to (i) communicatively couple any of the first, second and third ports via the first signal-communication medium; and (ii) mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports. The second port may be adapted to (i) receive the first adapted signal; and (ii) adapt the first

adapted signal so as to form a second adapted signal for communication to a second network node of the unified network. The third port may be adapted to (i) receive the first adapted signal; and adapt the first adapted signal so as to form a third adapted signal for communication to one or more other switch-fabric transport elements via one or more links formed in the second signal-communication medium communicatively coupling the third port and the other switch-fabric transport elements.

[0020] In some instances, the third port may be adapted to communicate the third adapted signal via the link, the first and third adapted signals may be formatted in accordance with the same protocol, and the second adapted signal may be formatted in accordance with the same protocol as the electical signals.

[0021] The signal-coupling switch may further include a forth port. This fourth port may be adapted to receive the electrical signals originated from a third node of the unified network, and adapt these electrical signal to form a fourth adapted signal for communication to any of the second and third ports. And the signal-coupling switch may be further adapted to aggregate the first and fourth adapted signals into the first adapted signal.

[0022] In some instances, one or more of the other switch-fabric transport elements may include a switch ("second-transport-element switch"). The second-transport-element switch may include fifth and sixth ports. The fifth port may be adapted to (i) receive the third adapted signal, and (ii) adapt the third adapted signal so as to form a fifth adapted signal for communication to the sixth port. In these instances, the second-transport-element switch may be adapted to (i) communicatively couple any of the fifth and sixth ports via the first signal-communication medium, and (ii) mediate switching of the fifth adapted signal to the sixth port in accordance with the access protocol for shared media. The sixth port may be adapted to (i) receive the fifth adapted signal, and adapt the fifth adapted signal so as to form a sixth adapted signal for communication to a fourth network node.

[0023] The unified network may include multiple switch fabrics that together form a composite switch fabric. The composite switch fabric may be formed, for example, from the plurality of transport elements and the first signal-communication media noted above. In some instances, the composite switch fabric may include two switch fabrics; one formed from one set

of the plurality of transport elements, and another formed from another set of the plurality of transport elements.

[0024] The composite switch fabric may also include three switch fabrics. For example, a first switch fabric may be formed from a set of WDM switches and one or more links in the first signal-communication media ("intra-fabric links") communicatively coupling the WDM switches. A second switch fabric may be formed from a set of core switches along with intra-fabric links communicatively coupling the core switches and intra-fabric links communicatively coupling the core switches to the first switch fabric. A third switch fabric may be formed from a set of signal-coupling edge devices and intra-fabric links communicatively coupling the signal-coupling edge devices to any of the first and second switch fabrics (e.g., using intra-fabric links communicatively coupling the signal-coupling edge devices to the core switches and/or to the WDM switches). The three switch fabrics (e.g., the switch-fabric transport elements, intra-fabric links and connections thereof) may be arranged in any number of other ways, as well.

[0025] The composite switch fabric may also include more than three switch fabrics. These switch fabrics may be arranged in any manner consistent with and/or contemplated by the foregoing and following description and explicit and/or inherent teachings thereof.

[0026] In some instances of the composite switch fabric and/or the unified network, the signal-coupling switches are adapted to format the first and third adapted signals in accordance with the same protocol. Additionally and/or alternatively, the signal-coupling switches are (via, for example, respective ports therein) collect the electrical signals from multiple sources, and aggregate the electrical signals into the first adapted signals.

[0027] Additionally, in instances of the composite switch fabric and/or the unified network, any of the first signal-coupling edge devices may include first, second ,third, fourth ports that operate bidirectionally. In these instances, the third port is additionally adapted to receive transport signals from other switch-fabric transport elements, and adapt the transport signals for communication to the first, second and forth ports. And each of the first, second and fourth ports are additionally adapted to operate bidirectionally.

[0028] A method of communicating in the unified network is also provided. The method may include receiving, at a first port of a first switch-fabric transport element, the electrical signal originated from the first network node, and adapting the electrical signal so as to form a

first adapted signal for communication to any of the second and third ports of the first switch-fabric transport element. The method may also include communicatively coupling any of the first, second and third ports via a signal-communication medium, and mediating switching of the first adapted signal to any of the second and third ports in accordance with an access protocol for shared media. The method may further include receiving, by the second port, the first adapted signal, and adapting the first adapted signal so as to form a second adapted signal for communication to the second network node. The method may also include receiving, at the third port, the first adapted signal, and adapting the first adapted signal so as to form a third adapted signal for communication to a second switch-fabric transport elements via at least one link formed in the signal-communication medium communicatively coupling the third port and second switch-fabric transport element.

[0029] Additionally and/or alternatively, the method may include receiving, at a fourth port of the first switch-fabric transport element, the electrical signal originated from a third network node, and adapting these electrical signals so as to form a fourth adapted signal for communication to any of the second and third ports. The method may also include aggregating the first and fourth adapted signals into the first adapted signal.

[0030] In some instances, the method may further include receiving the third adapted signal at a fifth port of the second switch-fabric transport element, and adapting the third adapted signal so as to form a fifth adapted signal for communication to a sixth port of the second switch-fabric transport element. In addition, the method may include communicatively coupling any of the fifth and sixth ports via the signal-communication medium; mediating switching of the fifth adapted signal to the sixth port in accordance with an access protocol for shared media; receiving the fifth adapted signal at the sixth port; and adapting the fifth adapted signal so as to form a sixth adapted signal for communication to the third network node.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] So the manner in which above recited features of the present invention can be understood in detail, a more particular description of embodiments of the present invention, briefly summarized above, may be had by reference to embodiments, several of which are illustrated in the appended drawings.

[0032] Figures in the appended drawings, like the detailed description, are examples. As such, the Figures and the detailed description are not to be considered limiting, and other equally effective examples are possible and likely. Furthermore, like reference numerals in the Figures indicate like elements, and wherein:

[0033] Figures 1A-1D are block diagrams illustrating an example of a unified network;

[0034] Figure 2A is a block diagram illustrating another example of a unified network 200;

[0035] Figure 2B is a block diagram illustrating an example of a signal-coupling edge device;

[0036] Figure 3 is a block diagram illustrating an alternative example of composite switch fabric;

[0037] Figure 4 is is a block diagram illustrating an alternative example of composite switch fabric; and

[0038] Figure 5 is a block diagram illustrating a first device-class switch fabric; and

[0039] Figure 6 is a flow diagram illustrating an example flow for carrying out a communication in a unified network.

[0040] The headings used herein are for organizational purposes only and are not meant to be used to limit the scope of the description or the claims. As used throughout this application, the word "may" is used in a permissive sense (*i.e.*, meaning having the potential to), rather than the mandatory sense (*i.e.*, meaning must). Similarly, the words “include,” “including,” and “includes” mean including but not limited to. To facilitate understanding, like reference numerals have been used, where possible, to designate like elements common to the figures.

DETAILED DESCRIPTION

[0041] In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of embodiments or other examples described herein. In some instances, well-known methods, procedures, components and circuits have not been described in detail, so as to not obscure the following description.

[0042] Further, the examples disclosed are for exemplary purposes only and other examples may be employed in lieu of, or in combination with, the examples disclosed. It should also be

noted the examples presented herein should not be construed as limiting of the scope of embodiments of the present disclosure, as other equally effective examples are possible and likely.

[0043] Overview

[0044] Included herein are multiple examples of a networking architecuture and a unified network for vehicles, such as aircrafts, satellites, watercrafts and the like, as well as, for other (i.e., non-vehicular) applications. At least some these multiple examples relate to at least aeronautics architectures for legacy aircraft, and "fifth" or newer generation aircrafts, which aircraft will be demanding as they relate to increased data capacity requirements.

[0045] Also provided herein are multiple examples of (i) various switch fabrics of the unified network; (ii) a composite switch fabric formed from the various switch fabrics; (iii) transport elements of the various switch fabrics and/or the composite switch fabric ("switch-fabric transport elements"); (iv) switches of respective switch-fabric transport elements; and (v) a method of communicating in the unified network.

[0046] Unified Network Example

[0047] Figures 1A-1D are block diagrams illustrating an example of a unified network 100. The unified network 100 may include a plurality of network nodes $102_{1\text{-}21}$ and a composite switch fabric 104. The composite switch fabric 104 may include switch-fabric transport elements $106_{1\text{-}11}$ and signal-communication media (shown generally as "108"). The switch-fabric transport elements $106_{1\text{-}11}$ may communicatively couple via intra-fabric links $110_{1\text{-}18}$ of the signal-communication media 108. The network nodes $102_{1\text{-}21}$ may communicatively couple to the switch-fabric transport elements $106_{1\text{-}11}$ via links ("node-coupling links") $120_{1\text{-}22}$. These node-coupling links $120_{1\text{-}22}$ along with the intra-fabric links $110_{1\text{-}18}$ may be formed in physical media, such as, any of optical fiber, electrical transmission lines and wireless media.

[0048] The intra-fabric links $110_1110_{1\text{-}16}$ and the switch-fabric transport elements $106_{1\text{-}11}$ may be arranged so as to form first, second and third switch fabrics 112, 114 and 116. For example, as shown in Figure 1B, the switch-fabric transport elements $106_{9\text{-}11}$ via connections over the intra-fabric links $110_{16\text{-}18}$ may form the third switch fabric 116. As shown in Figure 1C, the switch-fabric transport elements $106_{4\text{-}8}$ and the third switch fabric 116 via connections with the intra-fabric links $110_{6\text{-}15}$ may form the second switch fabric 114. As shown in Figure 1D, the switch-

fabric transport elements 106_{1-3}, second switch fabric 114 and third switch fabric 116 via connections with the intra-fabric links 0.110_{1-5} may form the first switch fabric 112. Together, the first, second and third switch fabrics 112, 114 and 116 may form the composite switch fabric 104 through which communications between and/or among (collectively "among") any of the switch-fabric transport elements 106_{1-3} may be transported.

[0049] Intra-fabric communications among any of the switch-fabric transport elements 106_{1-3} may formatted in accordance with a first protocol. Intra-fabric communications among any of the switch-fabric transport elements 106_{4-8} may formatted in accordance with a second protocol. Similarly, intra-fabric comminications among any of the switch-fabric transport elements 106_{9-11} may formatted in accordance with a third protocol.

[0050] To facilitate inter-fabric communcatons between the first switch-fabric transport elements 106_{1-3} and second switch-fabric transport elements 106_{4-8}, respectively, either or both of the first and second protocols may be adapted (e.g., define extensions) for interoperability between the first and second protocols. Similarly, either or both of the second and third protocols may be adapted for interoperability between the second and third protocols to facilitate inter-fabric communications between the second switch-fabric transport elements 106_{4-6} and the third switch-fabric transport elements 106_{9-11}. Further, either or both of the first and third protocols may be adapted for interoperability between the first and third protocols to facilitate inter-fabric communications between the first switch-fabric transport elements 106_{1-2} and the third switch-fabric transport elements 106_{10-11}.

[0051] Alternative Unified Network Example

[0052] Figure 2A is a block diagram illustrating another example of a unified network 200. The unified network 200 of Figure 2A is similar to the unified network 100 of Figures 1A-1D, except provided herein.

[0053] The unified network 200 may include the network nodes 102_{1-22} and a composite switch fabric 204. The composite switch fabric 204 may include the signal-communication media 108 and switch-fabric transport elements, namely, signal-coupling edge devices 201_{1-3}, core switches 203_{1-5} and switches adapted in accordance with wavelength-division multiplexing ("WDM switches") 205_{1-3}.

[0054] Composite Switch Fabric Example

[0055] The WDM switches $205_{1\text{-}3}$ may communicatively couple via the intra-fabric links $110_{16\text{-}18}$, and together, may form a switch fabric ("WDM switch fabric") 216 in accordance with WDM. The core switches $203_{1\text{-}5}$ may communicatively couple via the intra-fabric links $110_{6\text{-}15}$ and the WDM switch fabric 216 so as to form a core switch fabric 214. The signal-coupling edge devices $201_{1\text{-}3}$ may communicatively couple via the intra-fabric links $110_{1\text{-}5}$, WDM switch fabric 216 and core switch fabric 214. Together, the signal-coupling edge devices $201_{1\text{-}3}$, the intra-fabric links $110_{1\text{-}5}$, WDM switch fabric 216 and core switch fabric 214 may form an switch fabric 212 for transport of communications received, transmitted and exchanged using the the signal-coupling edge devices $201_{1\text{-}3}$. The switch fabric 112, core fabric 214 and WDM fabric 216, in combination, form the composite switch fabric 204.

[0056] Network Node Example

[0057] Each of the network nodes $102_{1\text{-}22}$ may be any of an electrical, electronic and optical device that falls within, i.e., is a member of, one of a number of classes of devices ("device classes"). In general, the device classes may be defined by respective class definitions, where each device-class definition may define one or more signal characteristics ("device-class signal characteristics") corresponding to each of a set of electrical and/or optical signals. These device-class signal characteristics may include any of a format, type, protocol, parameter, classifying indicia, differentiating indicia and the like of the electrical and/or optical signals.

[0058] The device classes may include, for example, first, second and third device classes; each of which may be defined by respective device-class definitions. The first device-class definition may define the first device-class signal characteristics. These first device-class signal characteristics may correspond to a first set of electrical signals ("first device-class signals"), which include, for example, discrete electrical signals, analog electrical signals, electrical signals formed in accordance with Aeronautical Radio, Incorporated ("ARINC") standard 429 ("ARINC 429") and the like.

[0059] The second device class may be defined by a second device-class definition. The second device-class definition may define the second device-class signal characteristics, which correspond to a second set of electrical or optical signals ("second device-class signals"). The second device-class signals include, for example, digital communication signals. These digital

communication signals may be formed in accordance with one or more digital-communications protocols. Examples of such digital-communication protocols include the Ethernet protocol, such as IEEE 802.3; derivatives of the Ethernet protocol, such as AFDX Ethernet and ARINC 664P7; asynchronous transfer mode ("ATM") protocol; and like-type digital-communication protocols. Alternatively, the digital-communication signals may be formed in accordance with one or more digital-communications protocols, such as any of the Fibre-Channel and like-type protocols.

[0060] The third device class may be defined by a third device-class definition. The third device-class definition, in turn, may define the third device-class signal characteristics, which may correspond to a set of optical signals ("third device-class signals"). The third device-class signals include, for example, unformatted optical signals.

[0061] The network nodes $102_{1\text{-}6}$ may include respective ports adapted to exchange the first device-class signals (hereinafter "first device-class nodes $102_{1\text{-}6}$"). As used herein, the term "port" may be any entity that actively communicates over a network, and not necessarily a hardware port.

[0062] The first device class nodes $102_{1\text{-}6}$ may be, for example, onboard electrical and electronic equipments or devices ("onboard devices"). Examples of such onboard devices include any of a terminal device; line-replaceable unit ("LRU"); equipment for command and control, communication and defense applications, where such equipments are adapted to exchange the first device-class signals; and other like-type device adapted to exchange the first device-class signals.

[0063] The network nodes $102_{7\text{-}15}$ may include respective ports adapted to exchange the second device-class signals (hereinafter "second device-class nodes $102_{7\text{-}16}$"). The second device-class nodes $102_{7\text{-}15}$ may be, for example, communication devices that are adapted to exchange digital-communication signals. Examples of such communication devices include edge devices (e.g., routers, switches, gateways, etc.) of one or more other networks. In an avionics context, these other networks may, for instance, handle communication for any of navigation, communications, radar, electronic-warfare and like-type systems.

[0064] The network nodes $102_{17\text{-}21}$ may include respective ports adapted to exchange the third device-class signals (hereinafter "third device-class nodes $102_{17\text{-}21}$"). The third device-class

nodes $102_{17\text{-}21}$may be, for example, devices that are adapted to exchange unformatted optical signals. Examples of such devices may include an antenna adapted to provide radio frequency ("RF") analog optical signals to the composite switch fabric, and a bank of receivers adated to receive the RF analog optical signals from the composite switch fabric 204. The third device-class nodes may be other devices, as well.

[0065] Signal-Coupling Edge Device Example

[0066] Referring now to Figure 2B, a block diagram illustrating an example of the signal-coupling edge device 201_1 is shown. The signal-coupling edge device 201_1 may include an number of elements; most of which are not shown so as to not obscure the following description. Numerous details of a device, which may be representative of the signal-coupling edge device 201_1, may be found in U.S. Pat. Nos. 7,362,936, 7,515,797 and 7,515,798. For simplicity of exposition, the disclosures of the U.S. Pat. Nos. 7,362,936, 7,515,797 and 7,515,798 are incorporated herein in their entirety. The signal-coupling edge device 201_1 may include elements other than and/or in addition to the elements of the represenative device. The signal-coupling edge device 201_1 may be other devices, as well.

[0067] The signal-coupling edge device 201_1 may include a switch ("signal-coupling switch") 205_1 along with first and second ports $207_{1\text{-}2}$. These first and second ports (hereinafter "first device-class n-ports") $207_{1\text{-}2}$ are adapted to handle receipt, transmission and/or exchange of the first device-class signals originated from and/or terminated to the first device-class nodes $102_{1\text{-}2}$, respectively.

[0068] Signal-Coupling Switch Example

[0069] The signal-coupling switch 215_1 may be an optical switch and/or a electrical switch. For simplicity of exposition, the signal-coupling switch 215_1 described herein is embodied as an optical switch. However, details, functions and principles of the signal-coupling switch 215_1, as described, are equally applicable to being embodied as an electrical switch.

[0070] The signal-coupling switch 215_1 may include three ports, namely, a first adaptation port ("A-port") 209_1, a second A-port 209_2 and an E-port 211_1. Each of the first A-port 209_1, second A-port 209_2 and E-port 211_1 may interface and communicatively couple with a portion of the signal-communication media 108 disposed within the signal-coupling switch 215_1 (hereinafter "intra-switch medium 213_1"). This intra-switch medium 213_1 may be any physical

media, including, for example, any of optical fiber, electrical transmission lines and wireless media.

[0071] The signal-coupling switch 215_1 is adapted to carry out network management for communications exchanged internally over the intra-switch medium 213_1 ("intra-switch network management"), as well as for communications exchanged over the larger composite switch fabric ("inter-fabric network management"). The signal-coupling switch 215_1 may, for example, carry out the inter-fabric network management in accordance one or more access protocols adapted for interoperability between the signal-coupling switch 215_1 core switch 203_1 and/or WDM switch 205_1. Alternatively, the access protocols adapted for interoperability among any of the signal-coupling switch 215_1, core switch 203_1, WDM switch 205_1 and the other switch-fabric transport elements indirectly coupled to the signal-coupling switch 215_1.

[0072] For portions of the composite switch fabric 204 involving communications among the core switches $203_{1\text{-}5}$ and/or the core switch fabric 214, the access protocol may be and/or based on standard network transmission protocols, and in particular, optical network protocols, including any of Synchronous Optical Networking ("SONET"), Synchronous Digital Hierarchy ("SDH"), Fibre-channel, and MIL-STD-1773 protocols. The access protocol for communications internal to the core switches $203_{1\text{-}5}$ may be and/or based on the same standard protocols.

[0073] For portions of the composite switch fabric 204 involving communications among WDM switches $205_{1\text{-}3}$ and/or the WDM switch fabric 216, the access protocol may be and/or based on WDM. The access protocol for communications internal to the WDM switches $205_{1\text{-}3}$ may, likewise, be and/or be based on WDM.

[0074] The signal-coupling switch 215_1 may carry out the intra-switch network management in accordance an access protocol for shared media ("shared-medium access protocol"). The shared-medium access protocol may be defined in accordance with and/or based on appropriate (e.g., shared media access definition) portions of standard network transmission protocols, and in particular to, optical network protocols, including any of SONET, SDH, MIL-STD-1773, and Ethernet (IEEE 802.3) Passive Optical Network protocols.

[0075] Alternatively, the shared-medium access protocol may be defined in accordance with and/or based on one or more custom-designed protocols. As an example, the Ethernet (IEEE 802.3) Passive Optical Network defines a protocol stack. This protocol stack defines

multiple layers, including, at its lowest layer, a physical ("PHY") layer protocol, which in turn, defines an 8B/10B PHY layer modulation subcode.

[0076] The PHY layer protocol may be adapted and implemented to facilitate correction of transmission errors. For example, the PHY layer protocol may be adapted and implemented with an error-correcting modulation subcode that replaces the standard 8B/10B PHY layer modulation subcode. The error-correcting modulation subcode may facilitate the correction of transmission errors at the PHY layer, leaving all higher protocol layers unchanged, so that processing in protocol above the PHY layer are unaffected.

[0077] To faciliate the intra-switch network management, the signal-coupling switch 205_1 may be adapted to establish one or more connections among any of the first A-port 209_1, second A-port 209_2 and E-port 211_1 via the intra-switch medium 213_1. The signal-coupling switch 215_1 may also be adapted to mediate switching, or otherwise manage exchanges, of data streams among any of the first A-port 209_1, second A-port 209_2 and E-port 211_1 in accordance with the shared-medium access protocol.

[0078] The first A-port 209_1 may be adapted to receive, from the first device-class n-port 207_1, the first device-class signals originated from the first device-class node 201_1. The first A-port 209_1 may be further adapted to adapt the first device-class signals so as to form first shared-medium signals for communication to any of the second A-port 209_2 and E-port 211_1. Details of an example adaption process suitable for use by the first A-port 209_1 along with architecture for performing the same may be found in U.S. Patent Nos. 7,362,936, 7,515,797 and 7,515,798.

[0079] To facilitate the adaption process, the first A-port 209_1 may be adapted to perform electrical to optical (E/O) conversion and signal conditioning to the first device-class signals to convert (e.g., digitize and/or level shift as appropriate) and multiplex them into a single data stream. This data stream may be encoded and framed to allow robust, error-free transmission. The resultant data steam is the first shared-medium signals. The first A-port 209_1 may use other adaptation processes, as well.

[0080] The signal-coupling switch 215_1 may be further adapted to route, switch and forward the first shared-medium signals to any of the second A-port 209_2 and E-port 211_1. The second A-port 209_2 may be adapted to receive the first shared-medium signals, and to adapt these signals to form outgoing A-port electrical signals for communication to the first device-class n-port 207_2

and for termination to first device-class node 102_2. Details of an example adaption process suitable for use by the second A-port 209_2 along with architecture for performing the same may be found in U.S. Patent Nos. 7,362,936, 7,515,797 and 7,515,798. To facilitate this adaption process, the second A-port 209_2 may be adapted to perform optical to electrical (O/E) conversion and signal conditioning to the first shared-medium signals to deframe, de-multiplex and convert them into the resultant outgoing A-port electrical signals.

[0081] The first A-port 209_1 may use other adaptation processes, as well. Although the outgoing A-port electrical signals have the first device-class signal characteristics, such outgoing A-port electrical signals, after adaptation, need not have the same first device-class signal characteristics as the first device-class signals.

[0082] Like the second A-port 209_2, the E-port 211_1 may be adapted to receive the first shared-medium signals. The E-port 211_1 may also be adapted to adapt the first shared-medium signals to form second shared-medium signals for communication to a port (e.g., an E-port) of the core switch 203_1 over the inter-fabric link 110_1 and/or a port of the WDM switch 205_2 over the inter-fabric link 110_2.

[0083] In addition to adapting the signals for communication, the E-port 211_1 may be also adapted to carry out communication of the second shared-medium signals via the inter-fabric links $110_{1\text{-}2}$. Alternatively and/or additionally, in embodiments in which the port of the core switch 203_1 is adapted to handle the first shared-medium signals, the E-port 211_1 might not be adapted to adapt the first shared-medium signals to form the second shared-medium signals. Instead, the E-port 211_1 may be adapted to relay, dispatch, forward or otherwise communicate the first shared-medium signals to the core switch 203_1 over the inter-fabric link 110_1 and/or the WDM switch 205_2 over the inter-fabric link 110_2.

[0084] Pursuant to other alternative embodiments in which the first and second shared-medium signals are formed in accordance with the same shared-medium access protocol, the E-port 211_1 may be adapted to adapt the first shared-medium signals to form the second shared-medium signals. In these alternative embodiments, forming the second shared-medium signals may consist of adapting the first shared-medium signals for dispatch, forwarding or otherwise communication to the core switch 203_1 over the inter-fabric link 110_1 and/or the WDM switch 205_2 over the inter-fabric link 110_2. In some instances, such second shared-medium signals may

be identical to the first shared-medium signals. In other instances, the second shared-medium signals may differ from the first shared-medium signals in accordance with permissible variations specified in the shared-medium access protocol. These permissible variations are typically defined in one or more layers of a protocol stack of the shared-medium access protocol, and may include, for example, variations to protocol data units specified therein.

[0085] In additional alternative embodiments in which the first and second shared-medium signals are formed in accordance with the same shared-medium access protocol, the E-port 211_1 may be adapted to (i) adapt the first shared-medium signals to form the second shared-medium signals; and (ii) forego adapting the first shared-medium signals to form the second shared-medium signals (notwithstanding being so adapted), and instead, relay, dispatch, forward or otherwise communicate to the first shared-medium signals as, or in place of, the second shared-medium signals.

[0086] The E-port 211_1, as described, is adapted to include functionality for operating as an gateway, router and/or switch (with or without signal adaptation), and carry out forwarding shared-medium signals from the signal-coupling switch 215_1 to the core switch 203_1 over the inter-fabric link 110_1 and/or the WDM switch 205_2 over the inter-fabric link 110_2. The E-port 211_1, however, may be adapted to include the same or similar functionality to carry out forwarding, to the signal-coupling switch 215_1, shared-medium signals received over the inter-fabric links $110_{1\text{-}2}$ from the core switch 203_1 and/or the WDM switch 205_2, respectively.

[0087] The first A-port 209_1, as described, is adapted to include functionality for operating as an input to the composite switch fabric 204 for the first device-class signals, and the second A-port 209_1, as described, is adapted to include functionality for operating as an output from the composite switch fabric 204 for the outgoing A-port electrical signals. In practice, the first A-port 209_1 may be further adapted to include functionality for operating as an output from the composite switch fabric 204 for outgoing A-port electrical signals, and the second A-port 209_1 may be adapted to include functionality for operating as an input to the composite switch fabric 204 for first device-class signals. This way, each of the first and second A-ports 209_1, 209_2 may be adapted to operate bidirectionally.

[0088] Further, although the signal-coupling switch 205_1, as shown, includes three ports, it may include only two ports. In such case, one port is an A-port, and the other port is an E-port.

Alternatively, the signal-coupling switch 205_1 may, and generally do, include more ports. These ports may be additonal A-ports and/or additional E-ports. Examples of both are shown in Figures 3, 4 and 5. In addition, each of the other signal-coupling edge devices $201_{2\text{-}3}$ may include the same elements and funtionality, and be adaped to operate in the same or similar manner, as the signal-coupling edge device 201_1.

[0089] Alternative Composite Switch Fabric Examples

[0090] Figure 3 is a block diagram illustrating an alternative example of composite switch fabric 300. The composite switch fabric 300 may include signal-communication media 308 and six switch-fabric transport elements, namely, signal-coupling edge devices $306_{1\text{-}3}$ and core switches $306_{4\text{-}6}$. The optical-communcation media 308 may include intra-fabric links $310_{1\text{-}6}$.

[0091] The core switches $306_{4\text{-}6}$ may communicatively couple via the intra-fabric links $310_{4\text{-}6}$ to form a core switch fabric 314. The signal-coupling edge devices $306_{1\text{-}3}$ may communicatively couple via the intra-fabric links $310_{1\text{-}3}$ and core switch fabric 314. The inter-coupling of the signal-coupling edge devices $306_{1\text{-}3}$, intra-fabric links $310_{1\text{-}3}$ and core switch fabric 314 form the switch fabric 312, and in turn, the composite switch fabric 300. Like the composite switch fabric 200 of Figure 2, the composite switch fabric 300 of Figure 3 defines multiple, interconnected switch fabrics that allow communication among one or indirectly connected signal-coupling edge devices $306_{1\text{-}3}$.

[0092] Each of the signal-coupling edge devices $306_{1\text{-}3}$ includes an signal-coupling switch 318, an E-port (designated by "E") and multiple A-ports (each designated by "A"), and is adapted to perform at least the functions of the signal-coupling edge devices 206_1 of Figure 2. Additionally, each of the signal-coupling switches $318_{1\text{-}3}$ (and the signal-coupling switch 318_1 of the signal-coupling edge device 206_1 of Figure 2) may also be adapted to aggregate the first device-class signals received at multiple A-ports into adapted signals ("adapted-aggregate signals") for communication to any of the other A-ports and the E-port. The E-port, in turn, may be adapted to (i) receive the adapted-aggregate signals, (ii) adapt the adapted-aggregate signals for communication to the core switch network 314, and (iii) communicate them to the core switch network 314.

[0093] Each of the multiple A-ports may be adapted (i) receive the adapted-aggregate signals, extract desired first device-class signals from the adapted-aggregate signals. In

addition, each of the A-ports may be further adapted to adapt the extracted first device-class signals into outgoing A-port electrical signals for communication to a corresponding first device-class n-port (designated "N") for termination to a corresponding first device-class node.

[0094] Refering now to Figure 4, a block diagram illustrating an alternative example of composite switch fabric 400, is shown. The composite switch fabric 400 may include signal-communication media 400 and four switch-fabric transport elements, namely, signal-coupling edge devices $406_{1\text{-}3}$ and core switch 406_4. The signal-communication media 408 may include intra-fabric links $410_{1\text{-}3}$. The composite switch fabric 400 of Figure 4 is similar to the composite switch fabrics 104, 204 and 300 of Figures 1, 2 and 3 respectively, except as described herein.

[0095] The core switch 406_4 forms a basis of a core switch fabric 414. The signal-coupling edge devices $406_{1\text{-}3}$ may communicatively couple via the intra-fabric links $410_{1\text{-}3}$ and the core switch fabric 414. The inter-coupling of the signal-coupling edge devices $406_{1\text{-}3}$, intra-fabric links $410_{1\text{-}3}$ and core switch fabric 414 form the composite switch fabric 400. Like the composite switch fabrics 200, 300 of Figures 2 and 3, the composite switch fabric 400 of Figure 4 defines multiple, interconnected switch fabrics that allow communication among one or indirectly connected signal-coupling edge devices $406_{1\text{-}3}$.

[0096] Signal-Coupling Switch Fabric Example

[0097] Figure 5 is a block diagram illustrating a first device-class switch fabric 500. This first device-class switch fabric 500 may be employed in connection with a a composite switch fabric, such as the composite switch fabrics 104, 204, 300 and 400 of Figures 1, 2, 3 and 4, respectively. Alternatively, the first device-class switch fabric 500 may be employed in a stand alone manner (i.e., not in connection with other switch fabrics).

[0098] The first device-class switch fabric 500 may include first, second and third signal-coupling edge devices $506_{1\text{-}3}$. Each of the first, second and third signal-coupling edge devices $506_{1\text{-}3}$ may include a signal-coupling switch 518, multiple E-ports (designated by "E") and multiple A-ports (each designated by "A"), and is adapted to perform at least the functions of the signal-coupling edge devices 306_1 of Figure 3. The additional E-ports provide for additional data capacity of and throughput for the switch fabric 500, and if integrated with a larger, composite switch fabric, for that composite switch fabric, as well.

[0099] Method of Communication Example

[00100] Figure 6 is a flow diagram illustrating an example flow 600 for carrying out a communication in a unified network, such as, for example, the unified networks 100 and 200 of Figures 1 and 2, respectively. The flow 600 is described with reference to the unified network 200 for conenience. The flow 600 may be caried out in other networks, as well.

[00101] To faciliate carrying out the flow 600, each of the signal-coupling edge devices $206_{1\text{-}3}$, core switches $206_{4\text{-}8}$ and WDM switches $206_{9\text{-}11}$ (and/or the switches thereof) perform inter-fabric and intra-switch network management in accordance with corresponding access protocols. In this regard, the signal-coupling edge devices $206_{1\text{-}3}$, core switches $206_{4\text{-}8}$ and WDM switches $206_{9\text{-}11}$ and/or the switches thereof, when and where appropriate, establish inter-fabric and intra-switch connections and links. For example, the signal-coupling switch 215_1 may establish, in accordance with the shared-medium access protocol, connections among any of the first A-port 209_1, second A-port 209_1 and E-port 211_1 via the intra-switch medium 213_1 for communications exchanged among such ports. The signal-coupling edge devices $206_{1\text{-}3}$, core switches $206_{4\text{-}8}$ and WDM switches $206_{9\text{-}11}$ and/or the switches thereof, when and where appropriate, may also establish connections to the network nodes 102 via respective first device-class, second device-class and third device class n-ports.

[00102] To begin the communication, the signal-coupling switch 215_1 may establish a connection between the first device-class n-port 207_1 and first device-class node 102_1. Once established, the first device-class node 102_1 may originate first device-class signals to first device-class n-port 207_1, and the first device-class n-port 207_1 may receive such first device-class signals.

[00103] After receipt at the first device-class n-port 207_1, the first A-port 209_1 may obtain of the first device-class signals, as shown in block 602. Typically, the first A-port 209_1 obtains the first device-class signals as a result of the signal-coupling switch 215_1 carrying out a scheduling routine that routes, switches and/or forwards the signals from the first device-class n-port 207_1 to the first A-port 209_1. Alternatively, the first A-port 209_1 may receive the first device-class signals in response to polling the first device-class n-port 207_1.

[00104] After obtaining the first device-class signals, the first A-port 209_1 may adapt them to form first shared-medium signals for communication to any of the second A-port 209_1 and E-

port 211_1, as shown in block 604. The first A-port 209_1 may adapt the first device-class signals in accordance with the adaption process found in in U.S. Patent Nos. 7,362,936, 7,515,797 and 7,515,798. For example, the first A-port 209_1 may perform electrical to optical (E/O) conversion and signal conditioning to the first device-class signals to convert and multiplex them into a single data stream. The A-port 209_1 may then encode and frame the data stream the first shared-medium signals. The first A-port 209_1 may use other adaptation processes, as well.

[00105] The signal-coupling switch 215_1 may be further adapted to route, switch and forward the first shared-medium signal to any of the second A-port 209_1 and E-port 211_1, as shown in block 606. The signal-coupling switch 215_1 may do this by mediating switching, or otherwise managing exchanges, of data streams among any of the first A-port 209_1, second A-port 209_1 and E-port 211_1 in accordance with the shared-medium access protocol.

[00106] Thereafter, the second A-port 209_1 may obtain the first shared-medium signals, as shown in block 608. At block 610, the second A-port 209_1 may adapt the first shared-medium signals to form outgoing A-port electrical signals for communication to the first device-class n-port 207_2 and for termination to first device-class node 102_2. The second A-port 209_1 may do so using the example adaption process found in U.S. Patent Nos. 7,362,936, 7,515,797 and 7,515,798. The second A-port 209_1 may perform, for example, optical to electrical (O/E) conversion and signal conditioning to the first shared-medium signals to de-frame, de-multiplex and convert them into the resultant outgoing A-port electrical signals. The first A-port 209_1 may use other adaptation processes, as well.

[00107] After the adaptation is performed, the outgoing A-port electrical signals may be communicated to first device-class node 102_2, as shown in block 612. The outgoing A-port electrical signals may be communicated to first device-class node 102_2 as a result of the signal-coupling switch 215_1 carrying out the scheduling routine, which routes, switches and/or forwards the signals from the first A-port 209_1 to the first device-class n-port 207_2, and in turn, from the first device-class n-port 207_2 to the first device-class node 102_2. Alternatively, the first device-class n-port 207_1 may receive the signals from the second A-port 209_2 in response to polling the second A-port 207_2.

[00108] After communicating the outgoing A-port electrical signals to first device-class node 102_2, the flow 600 may terminate. Alternatively, the flow 600 may continue to block 614,

whereupon, the E-port 211_1 may obtain the first shared-medium signals. The E-port 211_1 may obtain the first shared-medium signals as a result the scheduling routine carried out by the signal-coupling switch 215_1, which routes, switches and/or forwards such signals from the first A-port 209_1 to the E-port 211_1. Alternatively, the E-port 211_1 may receive the first shared-medium signals in response to polling the first A-port 209_1.

[00109] After receipt, the E-port 211_1 may adapt the first shared-medium signals to form second shared-medium signals for communication to a port (e.g., an E-port) of the core switch 205_1 over the inter-fabric link 110_1, as shown in block 616. Alternatively, the E-port 211_1 might not adapt the first shared-medium signals to form the second shared-medium signals if the port of the core switch 205_1 is adapted to handle the first shared-medium signals. Instead, the E-port 211_1 may relay, dispatch, forward or otherwise communicate the first shared-medium signals to the port of the core switch 205_1 via the inter-fabric link 110_1.

[00110] The E-port 211_1 may communicate the second shared-medium signals via the inter-fabric link 110_1, as shown in block 618. The second shared-medium signals may be communicated to the core switch 206_4 as a result of the scheduling routine carried out by the signal-coupling switch 215_1, which routes, switches and/or forwards the signals from the E-port 211_1 to port of the core switch 205_1.

[00111] After receipt, the core switch 205_1 routes, switches and forwards the second shared-medium signals to an E-port of the switch of signal-coupling edge device 205_1 (assuming the destination of the information in the second shared-medium signals is a network node communicatively coupled to the signal-coupling edge device 205_1), as shown in block 620. At block 622, the switch of signal-coupling edge device 205_1 route, switch and forward the second shared-medium signals to any of its A-ports communicatively coupled to the destination network node. Thereafter, the destination A-port peforms the functions of process blocks 608-612 for termination to the destination network node, whereupon the flow 600 terminates.

[00112] While the foregoing is directed to embodiments of the present disclosure, other and further embodiments of the invention may be devised without departing from the basic scope thereof. It is understood that various embodiments described herein may be utilized in combination with any other embodiment described, without departing from the scope contained herein. Further, the foregoing description is not intended to be exhaustive or to limit

the invention to the precise form disclosed. Modifications and variations are possible in light of the above teachings or may be acquired from practice of the invention.

[00113] No element, act, or instruction used in the description of the present application should be construed as critical or essential to the invention unless explicitly described as such. Also, as used herein, the article "a" is intended to include one or more items. Where only one item is intended, the term "one" or similar language is used. Further, the terms "any of" followed by a listing of a plurality of items and/or a plurality of categories of items, as used herein, are intended to include "any of," "any combination of," "any multiple of," and/or "any combination of multiples of" the items and/or the categories of items, individually or in conjunction with other items and/or other categories of items. Further, as used herein, the term "set" is intended to include any number of items, including zero. Further, as used herein, the term "number" is intended to include any number, including zero.

[00114] Moreover, the claims should not be read as limited to the described order or elements unless stated to that effect. In addition, use of the term "means" in any claim is intended to invoke 35 U.S.C. §112, ¶ 6, and any claim without the word "means" is not so intended.

CLAIMS

What is claimed is:

1. A switch fabric comprising: a plurality of transport elements adapted to communicatively couple and to communicate, via a first signal-communication medium, a first signal adapted for communication among any of the plurality of transport elements, wherein at least one transport element of the plurality of transport elements is adapted to communicate, via a second signal-communication medium, any of a second signal originating from a first network node and a third signal for termination to a second network node, wherein the second and third signals are formatted in accordance with a protocol for electrical signals, and wherein the first signal comprises an adapted form of any of the second and third signals.

2. The switch fabric of claim 1, wherein at least one transport element of the plurality of transport elements is adapted to perform a signal aggregation function.

3. The switch fabric of claim 1, wherein the plurality of transport elements comprises any of core, Fibre-Channel and wavelength-division-multiplexing switches.

4. The switch fabric of claim 1, wherein:

the at least one transport element comprises a switch,

the switch comprises: first, second and third ports;

the first port is adapted to: receive the second signal; and adapt the second signal so as to form a first adapted signal for communication to any of the second and third ports;

the switch is adapted to: communicatively couple any of the first, second and third ports; and mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports;

the second port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form the third signal; and

the third port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a third adapted signal for communication to at least one other transport element via at least one link formed in the signal-communication medium communicatively coupling the third port and the at least one other transport element.

5. The switch fabric of claim 4, wherein the third port is further adapted to communicate the third adapted signal via the link.

6. The switch fabric of claim 4, wherein the first and third adapted signals are formatted in accordance with the same protocol.

7. The switch fabric of claim 4, wherein the second adapted signal is formatted in accordance with the protocol for electrical signals.

8. The switch fabric of claim 4, wherein:

the switch further comprises: a fourth port;

the fourth port is adapted to: receive a fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the second and third ports; and

the switch is further adapted to: aggregate the first and fourth adapted signals into the first adapted signal.

9. The switch fabric of claim 4, wherein at least one other transport element comprises any of a core switch, Fibre-Channel switch and wavelength-division-multiplexing switch.

10. The switch fabric of claim 4, wherein:

the second element comprises a second switch;

the second switch comprises: fifth and sixth ports;

the fifth port is adapted to: receive the third adapted signal; and adapt the third adapted signal so as to form a fifth adapted signal for communication to the sixth port;

the second switch is adapted to: communicatively couple any of the fifth and sixth ports via the first signal-communication medium; and mediate, in accordance with an access protocol for shared media, switching of the fifth adapted signal to the sixth port; and

the sixth port is adapted to: receive the fifth adapted signal; and adapt the fifth adapted signal so as to form a sixth adapted signal for communication to a third node of the unified network.

11. The switch fabric of claim 10, wherein the third and fifth adapted signals are formatted in accordance with the same protocol.

12. The switch fabric of claim 10, wherein the sixth adapted signal is formatted in accordance with the protocol for electrical signals.

13. The switch fabric of claim 4, wherein:

the at least one second transport element comprises at least one second switch;

the at least one second switch comprises: fourth, fifth and sixth ports;

the fifth port is adapted to: receive fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the fourth and sixth ports;

the at least one second switch is adapted to: communicatively couple any of the fourth, fifth and sixth ports via the signal-communication medium; and mediate, in accordance with the access protocol for shared media, switching of the fourth adapted signal to any of the fourth and sixth ports;

the sixth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a fifth adapted signal for communication to a fifth network node; and

the fourth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a sixth adapted signal for communication to the third port via at least one link formed in the signal-communication medium communicatively coupling the third and fourth ports.

14. The switch fabric of claim 13, wherein the third port is further adapted to communicate the third adapted signal via the link.

15. The switch fabric of claim 13, wherein the first, third, fourth and sixth adapted signals are formatted in accordance with the same protocol.

16. The switch fabric of claim 4, wherein at least one other transport element of the plurality of transport elements is adapted to exchange any of the second and third signals formatted in accordance with a protocol for digital communications.

17. The switch fabric of claim 16, wherein the at least one other transport element is any of a core switch, a Fibre-Channel switch and a wavelength-division-multiplexing switch.

18. A switch of a first transport element of switch fabric comprising a plurality of transport elements, the switch comprising: first, second and third ports, wherein:

the first port is adapted to: receive an electrical signal formatted in accordance with a protocol for electrical signals, the electrical signal originating from a first network node; and adapt the electrical signal so as to form a first adapted signal for communication to any of the second and third ports;

the first switch is adapted to: communicatively couple any of the first, second and third ports via a signal-communication medium; and mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports;

the second port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a second adapted signal for communication to a second network node; and

the third port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a third adapted signal for communication to at least one second transport element via at least one link formed in the signal-communication medium communicatively coupling the third port and the at least one second transport element.

19. The switch of claim 18, wherein:

the switch further comprises: a fourth port;

the fourth port is adapted to: receive a fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the second and third ports; and

the switch is further adapted to: aggregate the first and fourth adapted signals into the first adapted signal.

20. A unified network comprising: a switch fabric, a plurality of network nodes, wherein:

The switch fabric comprises: a plurality of transport elements adapted to communicatively couple and to communicate, via a first signal-communication medium, a first signal adapted for communication among any of the plurality of transport elements, wherein at least one transport element of the plurality of transport elements is adapted to communicate, via a second signal-communication medium, any of a second signal originating from a first network node of the plurality of nodes and a third signal for termination to a second network node of the plurality of network nodes, wherein the second and third signals are formatted in accordance with a protocol for electrical signals, and wherein the first signal comprises an adapted form of any of the second and third signals.

21. The unified network of claim 20, wherein at least one transport element of the plurality of transport elements is adapted to perform a signal aggregation function.

22. The unified network of claim 20, wherein the plurality of transport elements comprises any of core, Fibre-Channel and wavelength-division-multiplexing switches.

23. The unified network of claim 20, wherein the switch fabric comprises: first and second switch fabrics; and

the first switch fabric comprises: a first transport element adapted to communicate a first signal formatted in accordance with a protocol for digital communications;

the second switch fabric comprises: a second transport element;

the second transport element comprises a switch;

the switch comprises: first, second and third ports;

the first port is adapted to: receive the second signal; and adapt the second signal so as to form a first adapted signal for communication to any of the second and third ports;

the switch is adapted to: communicatively couple any of the first, second and third ports; and mediate, in accordance with an access protocol for shared media, switching of the first adapted signal to any of the second and third ports;

the second port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form the third signal; and

the third port is adapted to: receive the first adapted signal; and adapt the first adapted signal so as to form a third adapted signal for communication to at least one other transport element via at least one link formed in the signal-communication medium communicatively coupling the third port and first transport element.

24. The unified network of claim 23, wherein the first transport element is any of a core switch, a Fibre-Channel switch and a wavelength-division-multiplexing switch.

25. The unified network of claim 23, wherein the first and third adapted signals are formatted in accordance with the same protocol.

26. The unified network of claim 23, wherein:

the switch further comprises: a fourth port;

the fourth port is adapted to: receive a fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third node of the unified network; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the second and third ports; and

the switch is further adapted to: aggregate the first and fourth adapted signals into the first adapted signal.

27. The unified network of claim 23, wherein:

the switch is a first switch;

the first transport element comprises a second switch;

the second switch comprises: fifth and sixth ports;

the fifth port is adapted to: receive the third adapted signal; and adapt the third adapted signal so as to form a fifth adapted signal for communication to the sixth port;

the second switch is adapted to: communicatively couple any of the fifth and sixth ports via the first signal-communication medium; and mediate, in accordance with an access protocol for shared media, switching of the fifth adapted signal to the sixth port; and

the sixth port is adapted to: receive the fifth adapted signal; and adapt the fifth adapted signal so as to form a sixth adapted signal for communication to a third node of the unified network.

28. The unified network of claim 23, wherein:

the first transport element comprises at least one second switch;

the at least one second switch comprises: fourth, fifth and sixth ports;

the fifth port is adapted to: receive fourth signal formatted in accordance with a protocol for electrical signals, the fourth signal originating from a third network node; and adapt the fourth signal so as to form a fourth adapted signal for communication to any of the fourth and sixth ports;

the at least one second switch is adapted to: communicatively couple any of the fourth, fifth and sixth ports via the signal-communication medium; and mediate, in accordance with the access protocol for shared media, switching of the fourth adapted signal to any of the fourth and sixth ports;

the sixth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a fifth adapted signal for communication to a fifth network node; and

the fourth port is adapted to: receive the fourth adapted signal; and adapt the fourth adapted signal so as to form a sixth adapted signal for communication to the third port via at least one link formed in the signal-communication medium communicatively coupling the third and fourth ports.

ABSTRACT

A unified network and elements thereof, including a switch fabric, is provided. The switch fabric may include a plurality of transport elements and a first signal-communication media. The transport elements may be adapted to communicatively couple and to communicate, via the first signal-communication media, transport signals adapted for communication among any of the plurality of transport elements. At least one transport element may be further adapted to communicate, via a second signal-communication media, signals and/or sets of signal originating from and/or terminating to one or more network nodes. Each of the electrical signals may be formatted in accordance with a protocol for electrical signals. And one or more of the transport signals may include the electrical signals in adapted form. Additionally and/or alternatively, one or more of the transport signals may be formed from, or as a function of, the electrical signals.

100

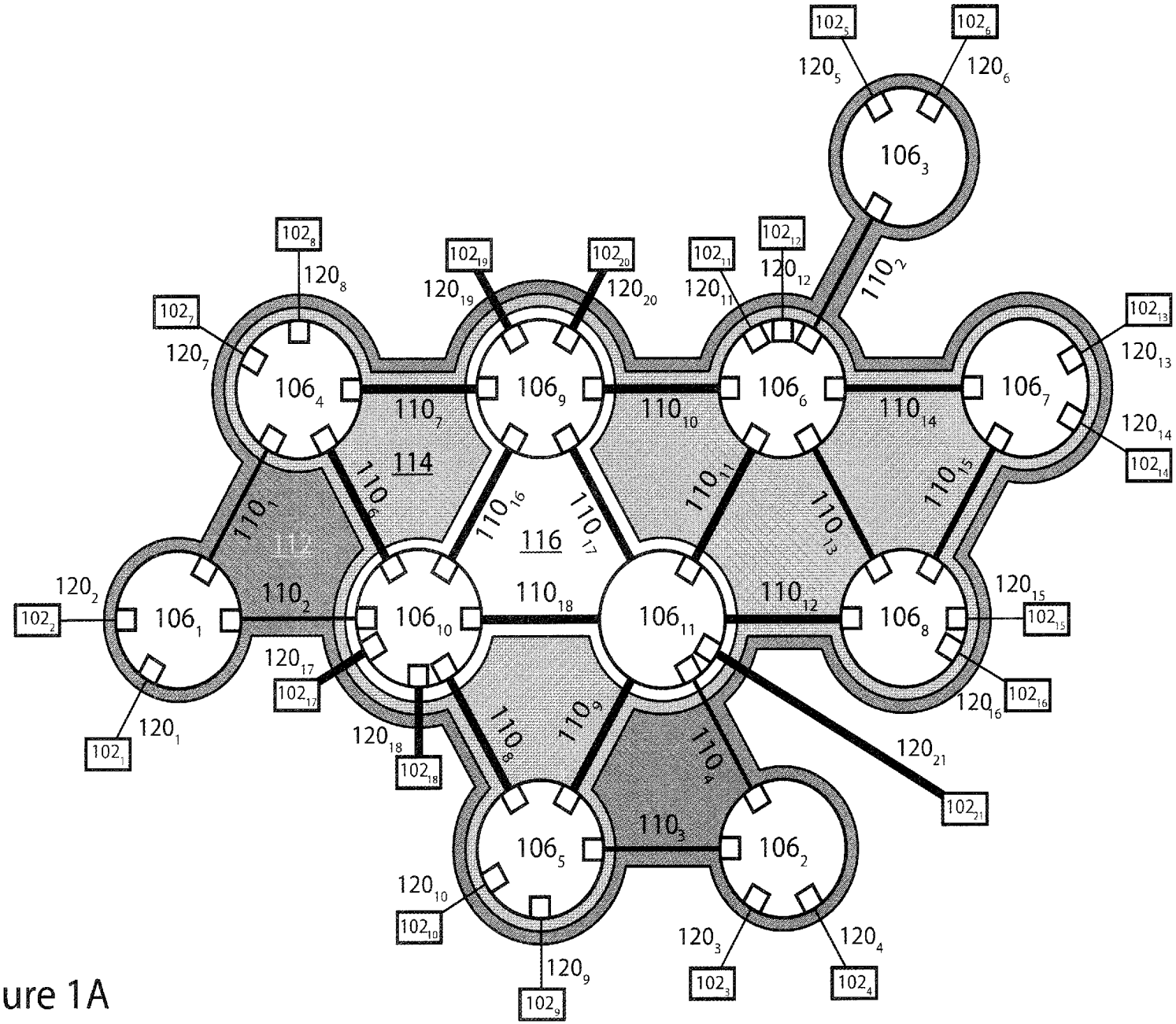

Figure 1A

100

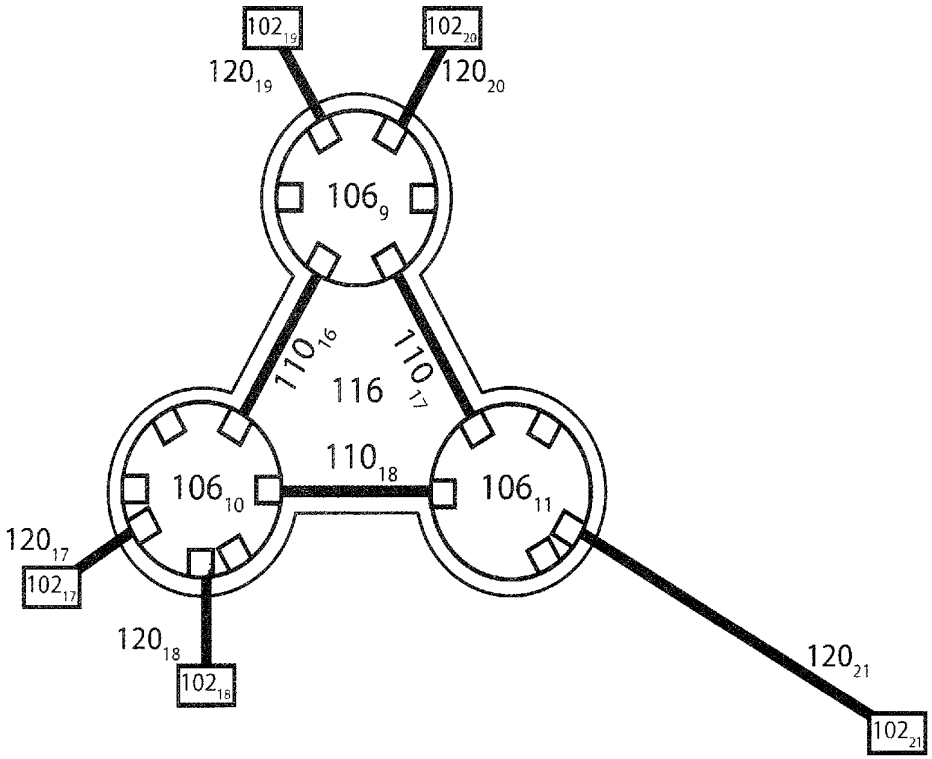

Figure 1B

100

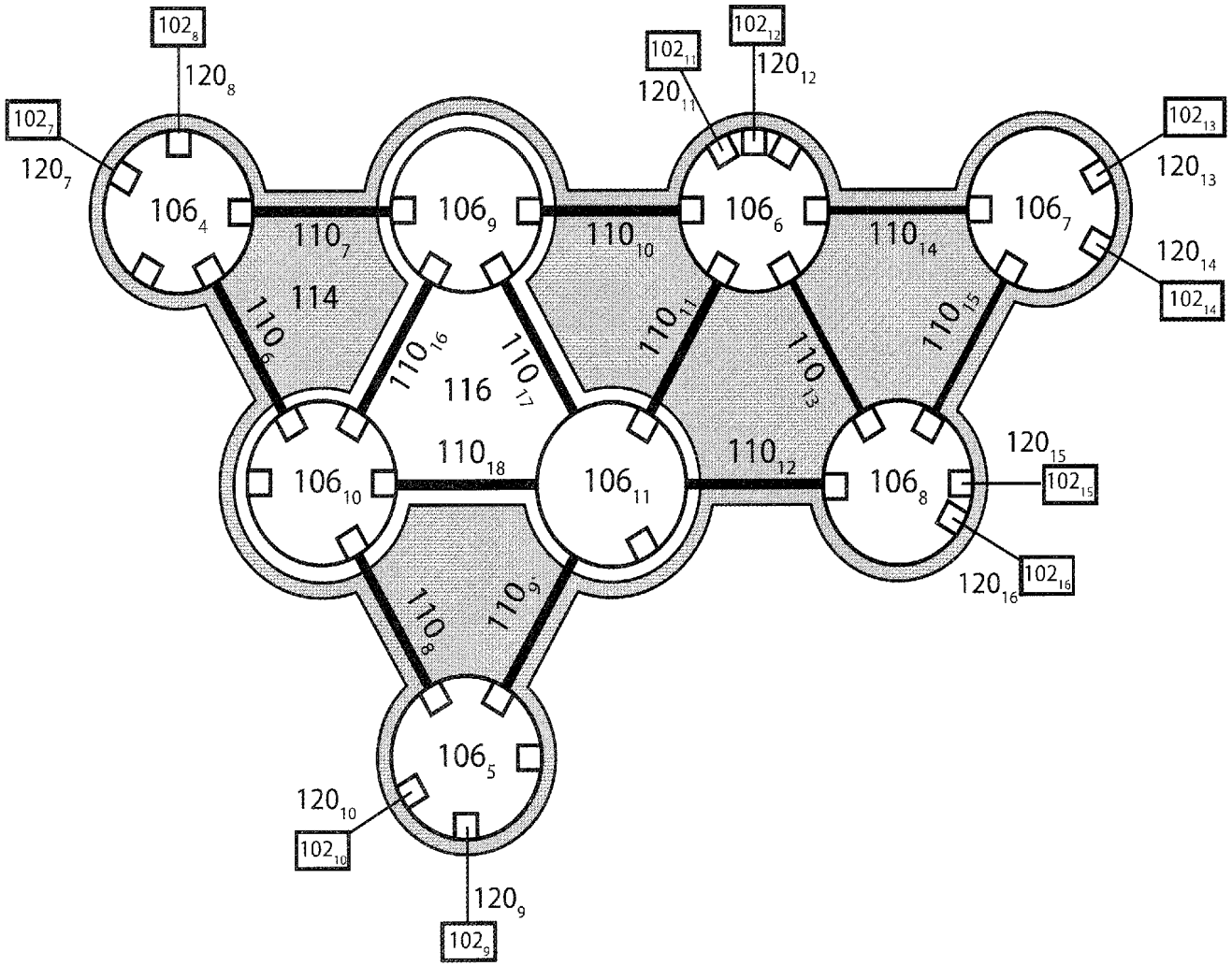

Figure 1C

100

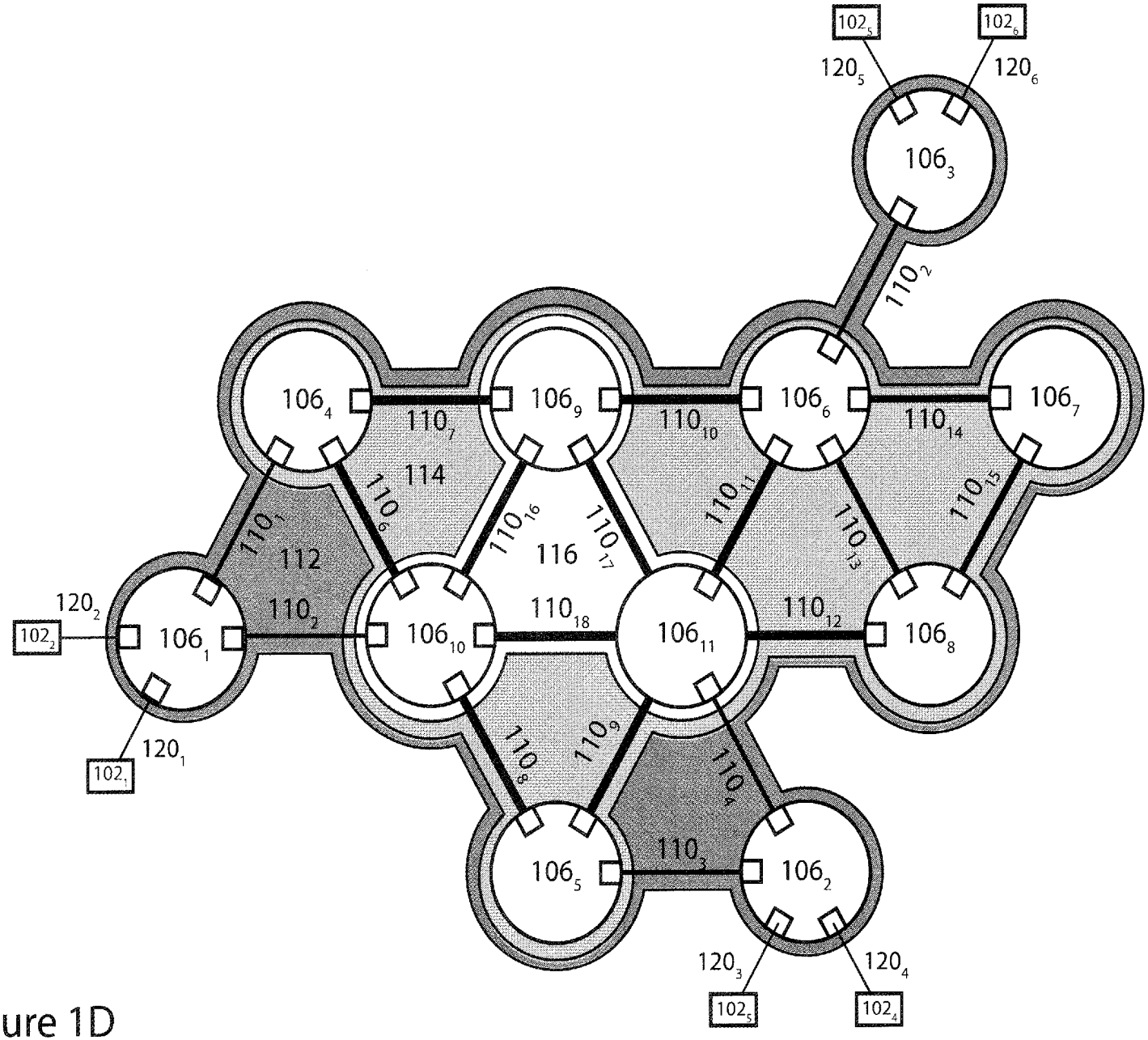

Figure 1D

200

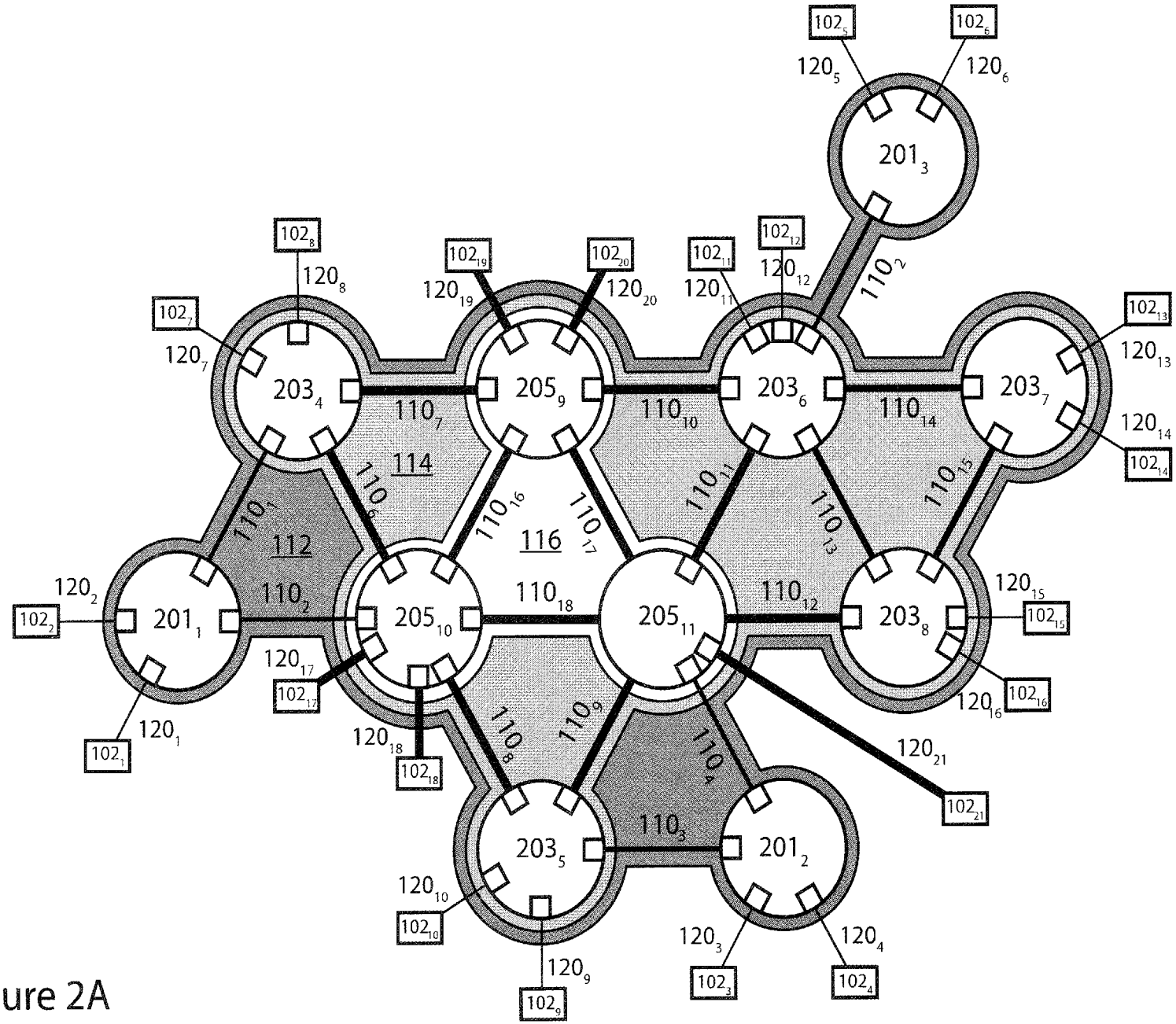

Figure 2A

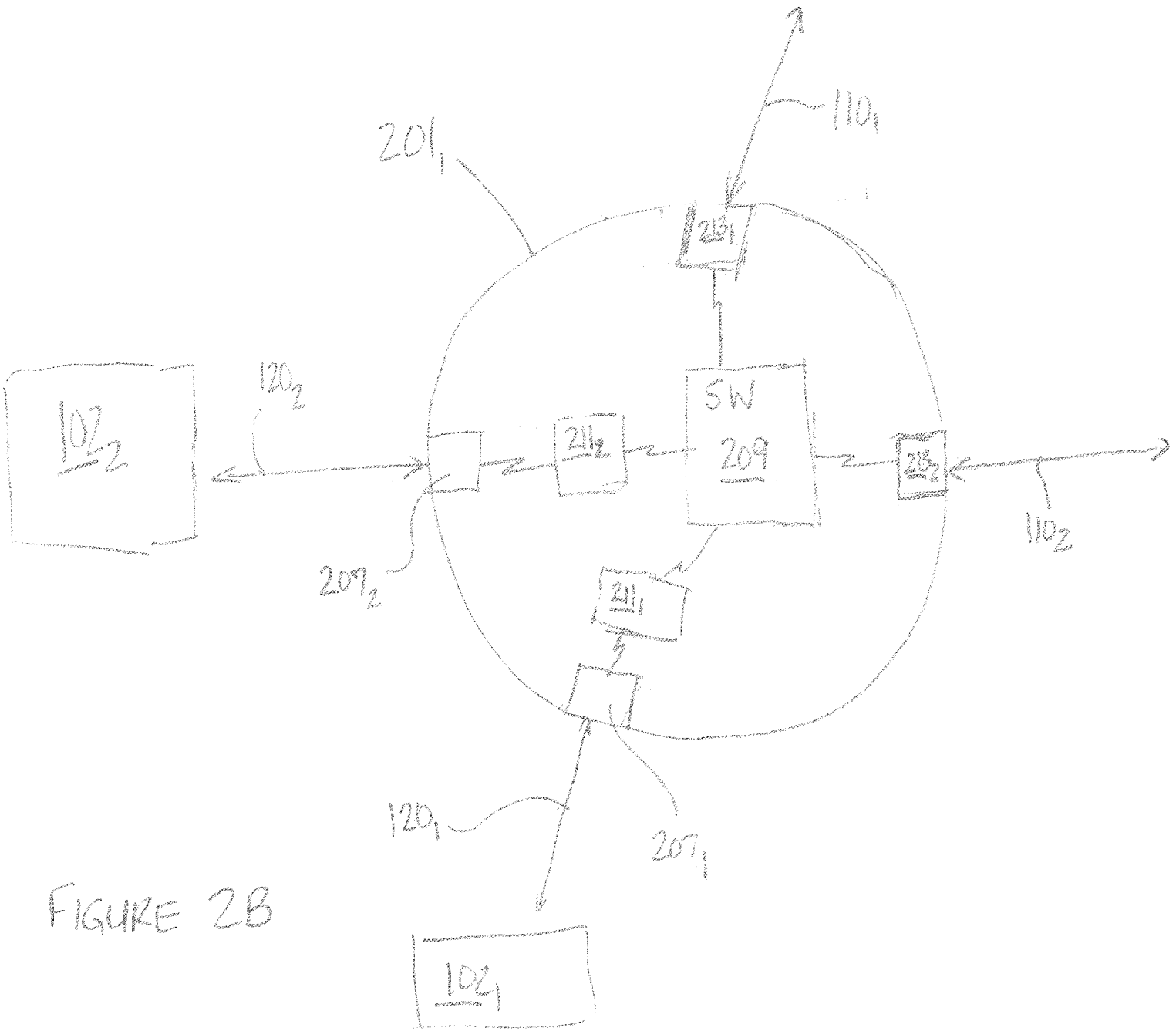
201_1
110_1
213_1
102_2
120_2
SW
209
211_2
213_2
110_2
207_2
211_1
120_1
207_1
102_1

FIGURE 2B

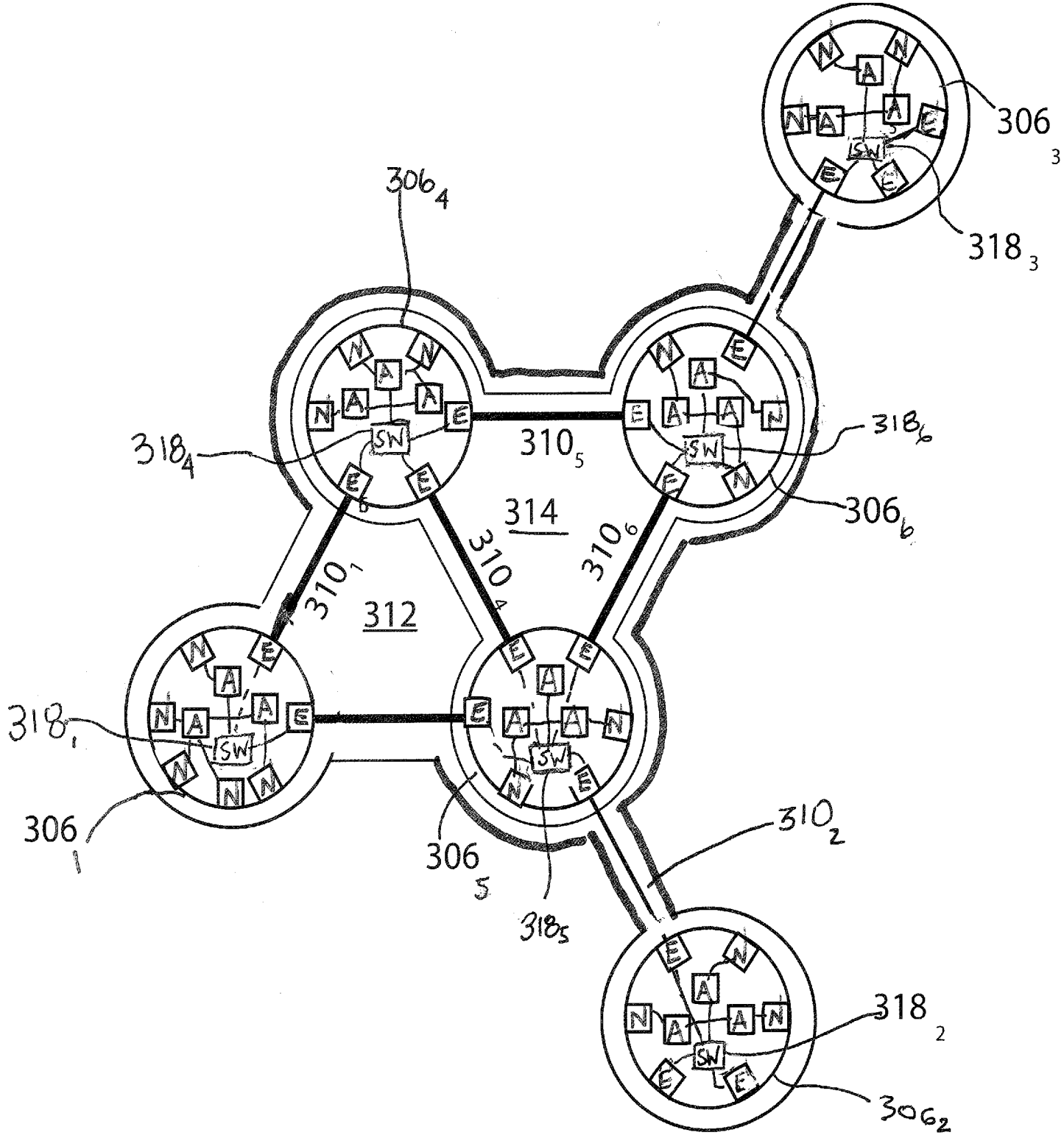
300
306 4
306 3
318 3
318 4
310 5
318 6
306 6
314
310 1
310 4
310 6
312
318 1
306 1
306 5
318 5
310 2
318 2
306 2

Figure 3

400

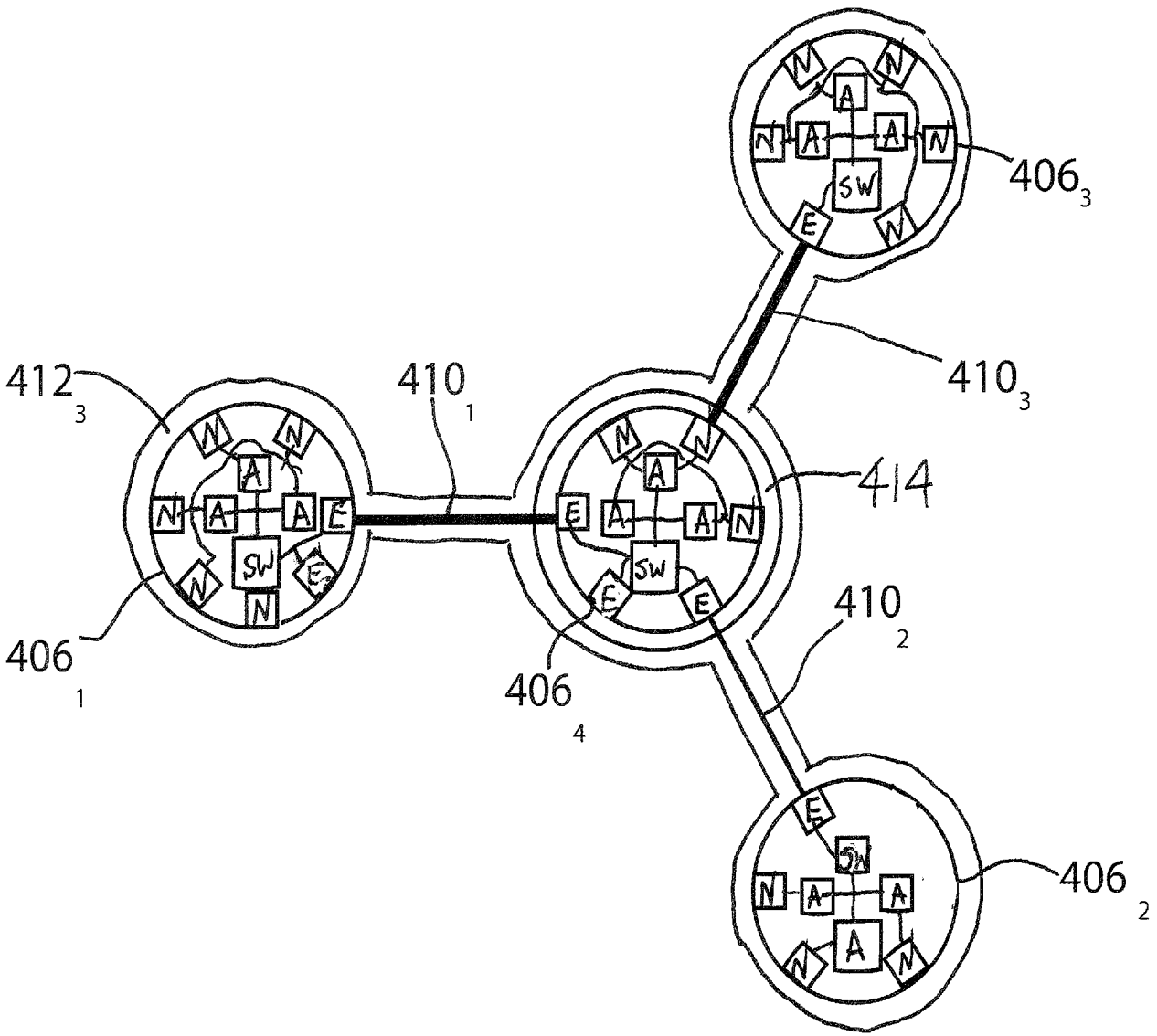

Figure 4

500

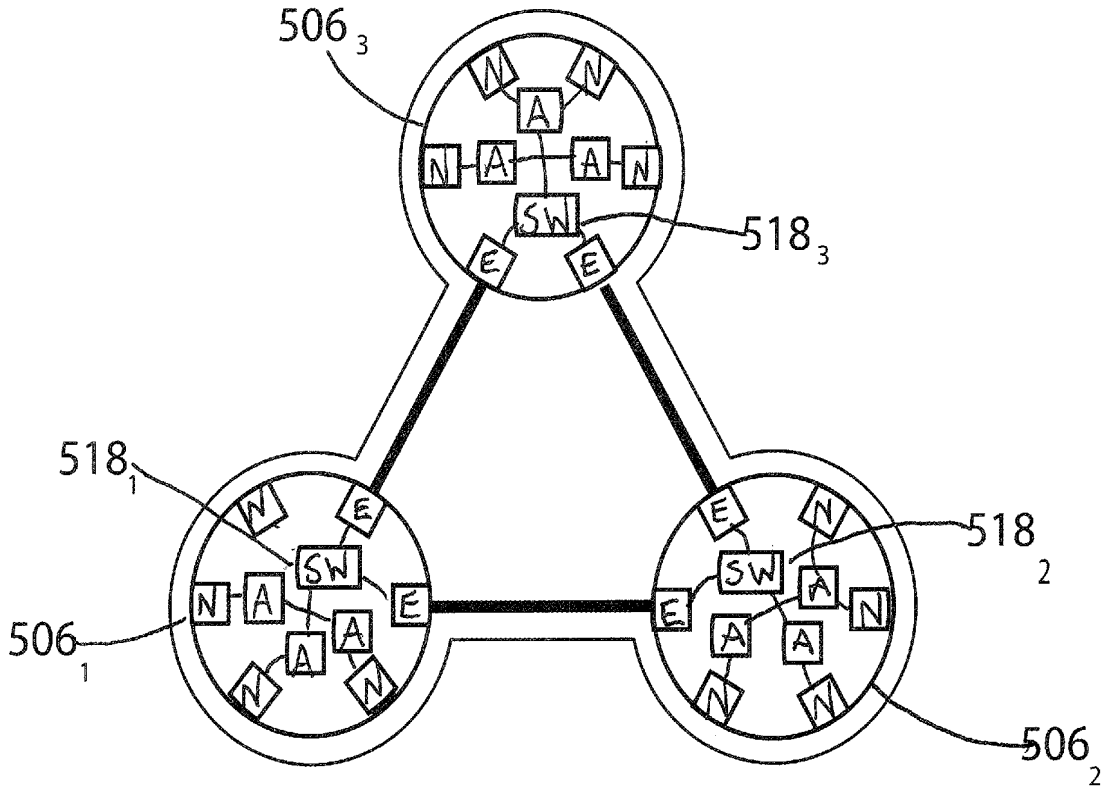

Figure 5

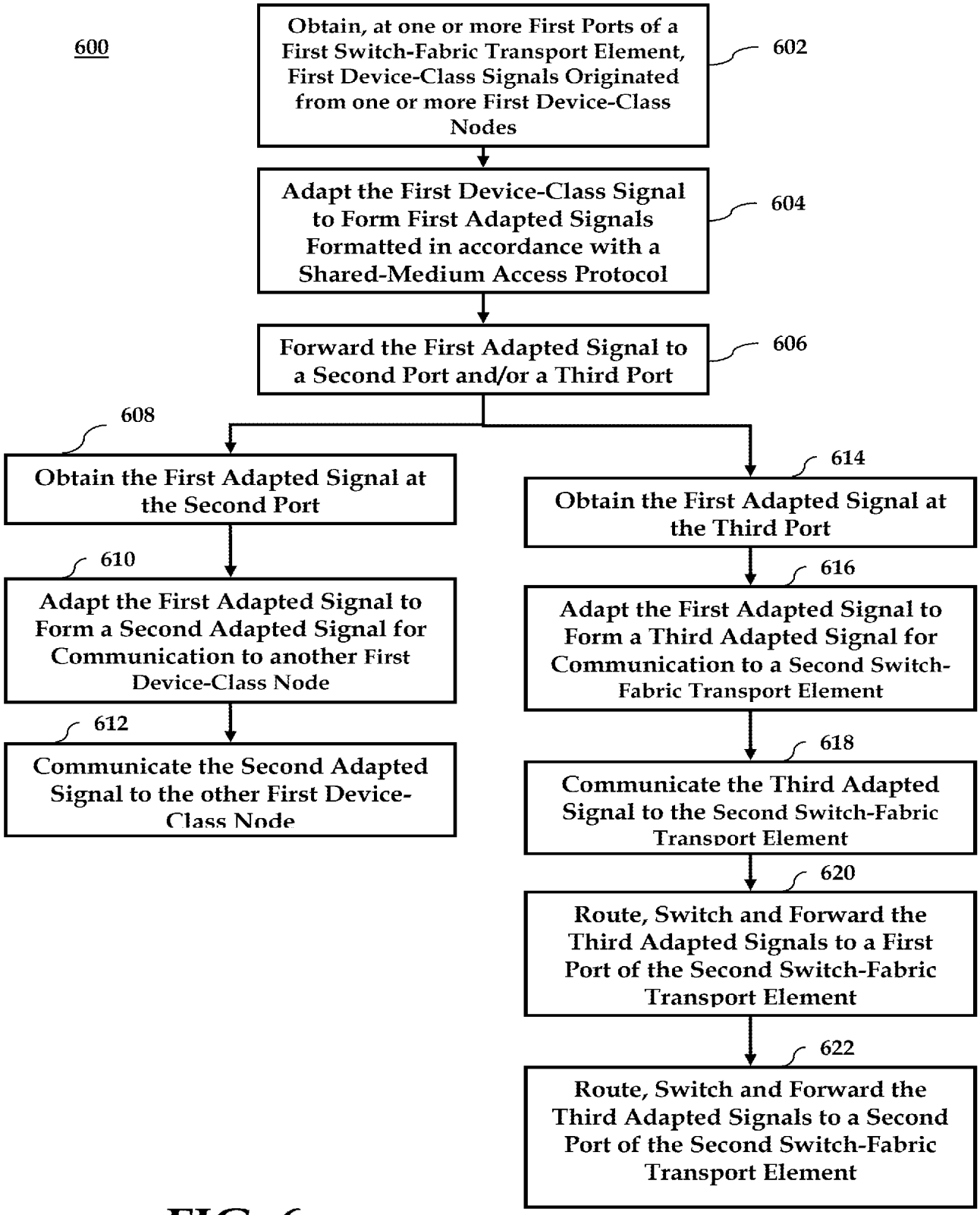
600
Obtain, at one or more First Ports of a First Switch-Fabric Transport Element, First Device-Class Signals Originated from one or more First Device-Class Nodes
602
Adapt the First Device-Class Signal to Form First Adapted Signals Formatted in accordance with a Shared-Medium Access Protocol
604
Forward the First Adapted Signal to a Second Port and/or a Third Port
606
608
Obtain the First Adapted Signal at the Second Port
610
Adapt the First Adapted Signal to Form a Second Adapted Signal for Communication to another First Device-Class Node
612
Communicate the Second Adapted Signal to the other First Device-Class Node
614
Obtain the First Adapted Signal at the Third Port
616
Adapt the First Adapted Signal to Form a Third Adapted Signal for Communication to a Second Switch-Fabric Transport Element
618
Communicate the Third Adapted Signal to the Second Switch-Fabric Transport Element
620
Route, Switch and Forward the Third Adapted Signals to a First Port of the Second Switch-Fabric Transport Element
622
Route, Switch and Forward the Third Adapted Signals to a Second Port of the Second Switch-Fabric Transport Element

FIG. 6

Declaration and Power of Attorney

I, as undersigned inventor, hereby declare:

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

I believe I am an inventor of the subject matter claimed and for which a patent is sought on the invention entitled:

UNIFIED SWITCHING FABRIC ARCHITECTURE

the specification of which is attached hereto.

I hereby state I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations, including for continuation-in-part applications, material information, which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

And I hereby appoint the practitioner(s) associated with Customer Number:

71136

as my attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and I hereby request that all correspondence regarding this application be sent to the address associated with Customer Number:

71136

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Jason Blain Stark, PhD
Name of Inventor

Jason B Stark
Signature of Inventor

March 24, 2011
Date

Residence: 4 Sunrise Circle
Holmdel, NJ 07733

Citizen of: United States of America

Mailing Address: 4 Sunrise Circle
Holmdel, NJ 07733

PTO/SB/14 (11-08)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DPG003
	Application Number	
Title of Invention	UNIFIED SWITCHING FABRIC ARCHITECTURE	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

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

Applicant Information:

Applicant 1 Remove

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jason	Blain	Stark	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Holmdel	State/Province	NJ	Country of Residence i	US

Citizenship under 37 CFR 1.41(b) i: US

Mailing Address of Applicant:

Address 1	4 Sunrise Circle		
Address 2			
City	Holmdel	State/Province	NJ
Postal Code	07733	Country i	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).

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

Customer Number	71136		
Email Address	patent@mfiplaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	UNIFIED SWITCHING FABRIC ARCHITECTURE		
Attorney Docket Number	DPG003	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

PTO/SB/14 (11-08)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DPG003
	Application Number	
Title of Invention	UNIFIED SWITCHING FABRIC ARCHITECTURE	

Publication Information:

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

Representative Information:

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

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	71136		

Domestic Benefit/National Stage Information:

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

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	non provisional of	61317249	2010-03-24

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

Foreign Priority Information:

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

Remove

Application Number	Country [i]	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			◉ Yes ○ No

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Assignee Information:

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

Assignee 1 Remove

PTO/SB/14 (11-08)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	DPG003
	Application Number	
Title of Invention	UNIFIED SWITCHING FABRIC ARCHITECTURE	

If the Assignee is an Organization check here. ☒			
Organization Name	Defense Photonics Group, Inc.		
Mailing Address Information:			
Address 1	126 Corporate Blvd		
Address 2	Suite A		
City	South Plainfield	**State/Province**	NJ
Country [i]	US	Postal Code	07080
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the **Add** button.		Add	

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/s/ John P. Maldjian /			Date (YYYY-MM-DD)	2011-03-24
First Name	John P.	Last Name	Maldjian	Registration Number	41967

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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.

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	JASON BLAIN STARK
Filer:	John P. Maldjian/Julian Santos
Attorney Docket Number:	DPG003

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Claims in excess of 20	2202	8	26	208
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**670**

Electronic Acknowledgement Receipt

EFS ID:	9736022
Application Number:	13071377
International Application Number:	
Confirmation Number:	3908
Title of Invention:	UNIFIED SWITCHING FABRIC ARCHITECTURE
First Named Inventor/Applicant Name:	JASON BLAIN STARK
Customer Number:	71136
Filer:	John P. Maldjian/Julian Santos
Filer Authorized By:	John P. Maldjian
Attorney Docket Number:	DPG003
Receipt Date:	24-MAR-2011
Filing Date:	
Time Stamp:	19:24:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$670
RAM confirmation Number	8118
Deposit Account	504267
Authorized User	

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		DPG003_Pat_Appln_24_Mar_2011.pdf	154581 1efccc22af4cec334e6cee28ce3d77ceee3a0a5f	yes	31
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	23	
	Claims		24	30	
	Abstract		31	31	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	DPG003_Informal_Drawings_24_Mar_2011.pdf	2479749 b88cd55d7acda1dc2dcc17ea3771c771286fbdf0	no	10
Warnings:					
Information:					
3	Oath or Declaration filed	DPG003_DPOA_24_Mar_2011.pdf	280957 5151d4be4b7fb5592dd51cdd1c9d51ef51514b54	no	1
Warnings:					
Information:					
4	Application Data Sheet	DPG003_ADS.pdf	1031144 f7363e7d65c59a6d1534998b77d9a1f8753e48ff	no	4
Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	36707 c68c2a889e93a6dc70ab8fd3a2931f6a9c8a26fb	no	2
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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New International Application Filed with the USPTO as a Receiving Office

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