AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:22-cv-276	7/22/2022	Eastern District of Texas

PLAINTIFF	DEFENDANT
Orckit Corporation	Cisco Systems, Inc.

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 6,680,904	1/20/2004	Orckit Corporation
2 7,545,740	6/9/2009	Orckit Corporation
3 8,830,821	9/9/2014	Orckit Corporation
4 10,652,111	5/12/2020	Orckit Corporation
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

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
13/311,128	12/05/2011	Daniel Cohn	40552-6169

CONFIRMATION NO. 6031

POWER OF ATTORNEY NOTICE

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

OC000000083677164

Date Mailed: 06/15/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/06/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71.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).

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**.

/tlulu/

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
13/311,128	12/05/2011	Daniel Cohn	40552-6169

CONFIRMATION NO. 6031

POA ACCEPTANCE LETTER

131926
May Patents Ltd. c/o Dorit Shem-Tov
P.O.B 7230
Ramat-Gan, 5217102
ISRAEL

OC000000083677226

Date Mailed: 06/15/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/06/2016.

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**.

/tlulu/

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. 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:

☑ Practitioners associated with the Customer Number: 131926

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:

☑ The address associated with Customer Number: 131926

OR

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

Assignee Name and Address:

Orckit IP, LLC
874 Walker Road, Suite C, Dover, Delaware, USA

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

ORCKIT IP, LLC
DE LLC # 5886551
831 Beacon St. # 307
Newton, MA 02459-1840

Signature		Date	June 5, 2016
Name	Yehuda Binder	Telephone	+972-54-4444577
Title	CEO and Owner of Orckit IP LLC		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether 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.

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
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.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Daniel Cohn, Rafi Ram

Application No./Patent No.: 13/311,128 Filed/Issue Date: 12-05-2011

Titled: METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

ORCKIT IP, LLC, a Limited Liability Company
(Name of Assignee) (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. [ ] the 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 therefore 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: Daniel Cohn, Rafi Ram To: .ORCKIT-CORRIGENT LTD

The document was recorded in the United States Patent and Trademark Office at
Reel 027539, Frame 0073, or for which a copy thereof is attached.

2. From: .ORCKIT-CORRIGENT LTD To: ORCKIT IP, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 038453, Frame 0840, 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).

[ ] 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.

/Yehuda Binder/ June 5, 2016
Signature Date

Yehuda Binder CEO and Owner of Orckit IP LLC
Printed or Typed Name Title

ORCKIT IP, LLC
DE LLC # 5886551
831 Beacon St. # 307
Newton, MA 02459-1940

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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.

Electronic Acknowledgement Receipt

EFS ID:	25972078
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Yehuda Binder
Filer Authorized By:	
Attorney Docket Number:	40552-6169
Receipt Date:	06-JUN-2016
Filing Date:	05-DEC-2011
Time Stamp:	03:04:36
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	Power of Attorney	Signed-POA.pdf	137789 03199d6fc2535ea8201418fc7d2606b12fcefb97	no	2

Warnings:

Information:

2	Assignee showing of ownership per 37 CFR 3.73	SIGNED-sb0096-03.pdf	139485 797c250dfbea0f11f67b0495b5ff7a8106e61600	no	2

Warnings:

Information:

Total Files Size (in bytes):	277274

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.

503811387 05/04/2016

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3858035

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
SEQUENCE:	1

CONVEYING PARTY DATA

Name	Execution Date
ORCKIT COMMUNICATION LTD.	04/25/2016
ORCKIT-CORRIGENT LTD.	04/25/2016

RECEIVING PARTY DATA

Name:	ORCKIT IP, LLC
Street Address:	874 WALKER ROAD
Internal Address:	SUITE C
City:	DOVER
State/Country:	DELAWARE
Postal Code:	19904-2778

PROPERTY NUMBERS Total: 13

Property Type	Number
Patent Number:	7768928
Patent Number:	8830821
Patent Number:	7593400
Patent Number:	9185151
Patent Number:	7545740
Patent Number:	8014394
Patent Number:	7463580
Patent Number:	8199637
Patent Number:	7916636
Patent Number:	7515536
Application Number:	12629310
Application Number:	14878405
Application Number:	14834480

CORRESPONDENCE DATA

Fax Number:

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

Phone:	+972544444577
Email:	yehuda@maypatents.com
Correspondent Name:	MAY PATENTS LTD. C/O DORIT SHEM-TOV
Address Line 1:	P.O.B 7230
Address Line 4:	RAMAT-GAN, ISRAEL 5217102

ATTORNEY DOCKET NUMBER:	ORCKIT-GENERAL
NAME OF SUBMITTER:	YEHUDA BINDER
SIGNATURE:	/Yehuda Binder/
DATE SIGNED:	05/04/2016
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 12

source=Executed assignment agreement#page1.tif
source=Executed assignment agreement#page2.tif
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source=Executed assignment agreement#page12.tif

ASSIGNMENT AGREEMENT

This Assignment Agreement (the "**Agreement**") is made and entered into this 25 day of April 2016 (the "**Effective Date**"), by Orckit Communications Ltd., an Israeli limited liability company (under Creditors' Arrangement) and Orckit - Corrigent Ltd. ("**Orckit**"), having an address with Lior Dagan, Adv. (Trustee), 1 Azrielli Center (Round Building), 35th Floor, Tel-Aviv 67021, Israel (severally and jointly "**Assignor**") and Orckit IP, LLC, a Delaware limited liability company having an address at 874 Walker Road, Suite C, Dover, Delaware and a mailing address at 831 Beacon Street #307, Newton, MA, USA (02459) ("**Assignee**").

RECITALS

A. Assignor is the owner of (select as appropriate):

- ☐ the United States Patents set forth on Appendix A hereto (the "US Patents");
- ☐ the non-United States patents set forth on Appendix A hereto (the "Foreign Patents");
- ☐ the United States patent applications set forth on Appendix B hereto (the "US Patent Applications");
- ☐ the United States provisional patent applications set forth on Appendix B hereto (the "US Provisional Patent Applications"); and/or
- ☐ the foreign patent applications set forth on Appendix B hereto (the "Foreign Patent Applications");

Which collectively shall be referred to herein as the "**Patents**".

B. Assignor and Assignee have agreed by way of a purchase agreement (the "Purchase Agreement") dated November 30, 2015, by and between Assignor and Assignee, the terms of which are incorporated herein by reference, that Assignor shall sell, transfer, and assign and set over unto Assignee and Assignee shall accept, all rights, title and interest in and to the Patents as specified in this Agreement. In the event of any conflict between the terms of this Patent Assignment Agreement and the referenced Purchase Agreement, the terms of the Purchase Agreement shall prevail.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing premises, and the covenants and agreements in this Assignment, Assignor and Assignee agree as follows:

1. Assignor does hereby sell, transfer, convey, assign and deliver to Assignee all of Assignor's right, privilege, title and interest in, to and under the Patents and in the case of patent applications in and to any patents that may issue therefrom, including, in all instances, any counterparts of any of the foregoing in any jurisdiction throughout the world, and any and all divisions, continuations, reissues or reexaminations of any of the foregoing, and, further, all applications for industrial property protection, including without limitation, all applications for patents, utility models, copyright, and designs which may hereafter be filed for any inventions described in said Patents in any country or countries, together with the right to file such applications and the right to claim for the same the priority rights derived from the inventions and the Patents under the laws of the United States, the International Convention for the Protection of Industrial Property, or any other international agreement or the domestic laws of the country in which any such application is filed, as may be applicable, in each instance the same to be held by Assignee for Assignee's own use and enjoyment, and for the use and enjoyment of Assignee's successors, permitted assigns and other legal representatives, as fully and entirely as the same would have been held and enjoyed by Assignor if this Assignment and sale had not been made; together with all claims for damages, royalties, income or other remuneration (hereinafter "Damages") by

reason of past, present and future infringements of the Patents or other rights being assigned hereunder, along with the right to sue for and collect such Damages for the use and benefit of Assignee and its successors, permitted assigns and other legal representatives.

2. Insofar as this assignment concerns European patents and patent applications, Assignor does hereby declare that it is the owner of said Patents and that Assignor has assigned same, along with all rights and duties appurtenant thereto, to Assignee and agree that the assignment will be recorded in the register with the European Patent Office; and Assignee hereby declares that Assignee has agreed to the assignment of the aforementioned Patents to it and that Assignee will simultaneously apply for recording of the assignment in the register with the European Patent Office.

3. Assignor hereby authorizes and requests the Commissioner for Patents of the United States, and any officer of any country or countries foreign to the United States, whose duty it is to issue patents or other evidence or forms of intellectual property protection or applications as aforesaid, to issue the same to Assignee and its successors, permitted assigns and other legal representatives in accordance with the terms of this instrument.

4. Assignor authorizes and empowers Assignee, its successors, permitted assigns and legal representatives or nominees, to invoke and claim for any application for patent or other form of protection for the inventions, the benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, or any other international agreement or the domestic laws of the country in which any such application is filed, as may be applicable, and to invoke and claim such right of priority without further written or oral authorization from Assignor.

5. Assignor hereby acknowledges and agrees that all of the rights, title and interest in and to the Patents sold, transferred, assigned and set over to Assignee hereunder include all income, royalties, damages and payments now or hereafter due or payable with respect thereto, and all causes of action (whether in law or equity) and the right to sue, counterclaim, and recover for the past, present and future infringement of the rights assigned or to be assigned hereunder.

6. Assignor hereby consents that a copy of this Agreement shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document that may be required in any country for any purpose and more particularly in proof of the right of Assignee or nominee to claim the aforesaid benefit of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

IN WITNESS WHEREOF, the Parties have executed this Assignment on the Effective Date written at _____.

Assignor:

Orckit Communications Ltd. (Under Creditors' Arrangement)

Orckit - Corrigent Ltd.

By: _____

Name: Adv. Lior Dagan

Title: Trustee for the Creditors' Arrangement of Orckit Communications Ltd (Under Creditors' Arrangement)

Assignee: Orckit IP, LLC

By: _____

Name: Mr. Yehuda Binder

Title: C.E.O and Owner

ORCKIT IP, LLC
DE LLC # 5886551
891 Beacon St. # 307
Newton, MA 02459-1646

APPENDIX A

TO ASSIGNMENT AGREEMENT

TITLE	COUNTRY	FILED	SERIALNO	ISSUED	PATENT NO
AUTO-CONFIGURATION OF NETWORK INTERFACES IN A BIDIRECTIONAL RING NETWORK					
	UNITED STATES	16-Oct-01	09/978,642	06-Dec-05	6973049
AUTOMATED WEIGHT CALCULATION FOR PACKET NETWORKS					
	UNITED STATES	03-Jun-04	10/861,272	26-Aug-08	7418000
Automatic Implementation of Network Configuration Changes					
	UNITED STATES	11-Aug-00	09/637,300	17-May-05	6894983
AVOIDING OVERLAPPING SEGMENTS IN TRANSPARENT LAN SERVICES ON RING-BASED NETWORKS					
	UNITED STATES	25-Jan-02	10/057,332	24-Oct-06	7127523
	UNITED STATES	25-Jan-02	10/054,845	05-Dec-06	7145878
BANDWIDTH ALLOCATION FOR LINK AGGREGATION					
	UNITED STATES	13-May-03	10/436,516	26-Feb-08	7336605
BANDWIDTH SHARING METHOD					
	UNITED STATES	28-Feb-00	09/514,745	03-Feb-04	6687224
Bi-directional Chaining of Network Access Ports					
	UNITED STATES	27-Dec-99	09/472,683	20-Jan-04	6680904
COMMUNICATION IN A BIDIRECTIONAL RING NETWORK WITH SINGLE-DIRECTION RECEIVING					
	UNITED STATES	07-Jun-01	09/876,414	04-Oct-05	6952397
CONNECTIVITY FAULT MANAGEMENT (CFM) IN NETWORKS WITH LINK AGGREGATION GROUP CONNECTIONS					
	UNITED STATES	11-Jul-06	11/483,650	03-Aug-10	7768928

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	JAPAN	11-Jun-07	2009519055	08-Mar-13	5213854
	SOUTH KOREA	11-Jun-07	2009-7001476	28-Jan-14	10-1360120
DIFFERENTIATED SERVICES WITH MULTIPLE TAGGING LEVELS					
	UNITED STATES	24-Apr-02	10/128,454	09-Oct-07	7280560
DYNAMIC PACKET FRAGMENTATION					
	UNITED STATES	08-Jan-01	09/756,554	10-May-05	6891855
EFFICIENT TRANSPORT OF TDM SERVICES OVER PACKET NETWORKS					
	UNITED STATES	24-Mar-03	10/396,008	07-Apr-09	7515605
	UNITED STATES	16-Mar-09	12/404,444	14-Jun-11	7961755
EQUIPMENT PROTECTION USING A PARTIAL STAR ARCHITECTURE					
	UNITED STATES	02-Aug-02	10/211,065	18-Apr-06	7032135
FAST FAILURE PROTECTION USING REDUNDANT NETWORK EDGE PORTS					
	UNITED STATES	07-Jan-02	10/036,518	12-Jul-05	6917986
FAST PROTECTION IN RING TOPOLOGIES					
	UNITED STATES	30-Aug-01	09/941,723	13-Jun-06	7061859
FAULT-TOLERANT MEDIUM ACCESS CONTROL (MAC) ADDRESS ASSIGNMENT IN NETWORK ELEMENTS					
	UNITED STATES	22-Sep-06	11/534,556	09-Feb-10	7660234
	EUROPEAN PATENT CONVENT	18-Sep-07	07805604.1	22-Jan-14	2069934
	UNITED KINGDOM	18-Sep-07	07805604.1	22-Jan-14	2069934
FLOW ALLOCATION IN A RING TOPOLOGY					
	UNITED STATES	09-Jan-01	09/756,946	25-Apr-06	7035279
FORWARDING MULTICAST TRAFFIC OVER LINK AGGREGATION PORTS					
	UNITED STATES	21-Dec-06	11/644,773	13-Apr-10	7697525
FRAME CONCATENATION WITH DROP PRECEDENCE ASSIGNMENT					
	UNITED STATES	08-Feb-07	11/704,615	13-Apr-10	7697532

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	EUROPEAN PATENT CONVENT	11-Dec-07	07849561.1	09-Jul-14	2132905
	UNITED KINGDOM	11-Dec-07	07849561.1	09-Jul-14	2132905
	HONG KONG	11-Dec-07	10106007.6	23-Jan-15	HK1139531
GENERIC FRAMEWORK FOR EMBEDDED SOFTWARE DEVELOPMENT					
	UNITED STATES	03-Dec-01	10/005,030	27-Jun-06	7069546
HASH-BASED MULTI-HOMING					
	UNITED STATES	16-Jul-07	11/778,286	01-Dec-09	7626930
HIDDEN FAILURE DETECTION					
	UNITED STATES	30-May-02	10/156,851	18-Oct-05	6957369
HIERARCHICAL VIRTUAL PRIVATE LAN SERVICE PROTECTION SCHEME					
	UNITED STATES	07-Jan-03	10/337,382	16-Oct-07	7283465
HIGH CAPACITY RING COMMUNICATION NETWORK					
	UNITED STATES	02-Mar-06	11/367,231	05-Oct-10	7808931
	UNITED STATES	04-Oct-10	12/897,341	30-Aug-11	8009684
HIGH-SPEED PROCESSING OF MULTICAST CONTENT REQUESTS					
	UNITED STATES	11-Feb-09	12/369,011	06-Sep-11	8014394
INTERCONNECT AND GATEWAY PROTECTION IN BIDIRECTIONAL RING NETWORKS					
	UNITED STATES	24-Jul-01	09/910,790	30-May-06	7054264
INTERFACE BETWEEN A SYNCHRONOUS NETWORK AND HIGH-SPEED ETHERNET					
	ISRAEL	11-Apr-07	194824	01-Jul-14	194824
LATENCY EVALUATION IN A RING NETWORK					
	UNITED STATES	04-Sep-01	09/947,183	26-Sep-06	7113485
LAYER-3 NETWORK ROUTING WITH RPR LAYER-2 VISIBILITY					
	UNITED STATES	29-Mar-04	10/812,321	23-Jun-09	7551599

L.O.

LINE DRIVER WITH OUTPUT IMPEDANCE SYNTHESIS					
	UNITED STATES	23-Dec-99	09/470,777	17-Apr-01	6218872
MAC ADDRESS LEARNING IN A DISTRIBUTED BRIDGE					
	UNITED STATES	19-May-06	11/419,444	22-Sep-09	7593400
	ISRAEL	17-May-07	195263	29-May-13	195263
	SOUTH KOREA	17-May-07	10200870306 94	08-Oct-14	10-1451174
MAC ADDRESS SCALABILITY IN INTERCONNECTED RINGS					
	UNITED STATES	18-Jun-07	11/764,764	13-Apr-10	7697552
MANAGEMENT INTERFACE FOR A NETWORK ACCESS MULTIPLEXING SYSTEM					
	UNITED STATES	08-Nov-00	09/708,845	23-Nov-04	6822944
Method and Apparatus for Compensating for an Echo Signal Component in Telecommunication Systems					
	UNITED STATES	14-Dec-99	09/460,891	18-Oct-05	6956944
METHOD AND APPARATUS FOR FILTERING ASYMMETRIC DIGITAL SUBSCRIBER LINE (ADSL) SIGNALS					
	UNITED STATES	12-May-99	09/310,518	02-Nov-04	6813343
METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES					
	UNITED STATES	05-Dec-11	13/311,128	09-Sep-14	8830821
MULTIPOINT TO MULTIPOINT COMMUNICATION OVER RING TOPOLOGIES					
	UNITED STATES	03-Sep-04	10/933,572	12-Feb-08	7330431
MULTIPROTOCOL MEDIA CONVERSION					
	UNITED STATES	13-Jun-03	10/461,807	10-Jun-08	7386010
NETWORK ACCESS MULTIPLEXER WITH PROTOCOL ADDRESS TRANSLATION					
	UNITED STATES	08-Nov-00	09/708,841	23-Nov-04	6822943

L.D.

NETWORK INTERFACE AUTO-CONFIGURATION IN AN ACCESS MULTIPLEXING SYSTEM					
	UNITED STATES	01-Aug-00	09/629,664	04-May-04	6731607
PACKET FRAGMENTATION WITH NESTED INTERRUPTIONS					
	UNITED STATES	08-Jan-01	09/756,553	05-Apr-05	6876669
PERFORMANCE MONITORING OF HIGH SPEED COMMUNICATIONS NETWORKS					
	UNITED STATES	24-Apr-02	10/128,459	28-Nov-06	7142516
PERFORMANCE MONITORING OF MULTIPLE CHANNELS IN AN AUTOMATIC PROTECTION SWITCHED NETWORK					
	UNITED STATES	25-Feb-02	10/082,771	02-Jan-07	7158721
POINT-TO-MULTIPOINT FUNCTIONALITY IN A BRIDGED NETWORK					
	UNITED STATES	22-Aug-06	11/508,599	09-Feb-10	7660303
	JAPAN	19-Jun-07	2009525169	03-Aug-12	5053376
	SOUTH KOREA	19-Jun-07	10200970050 97	23-Jan-14	10-1357457
Prevention Of Frame Duplication In Interconnected Ring Networks					
	UNITED STATES	07-Mar-08	12/044,158	25-Jan-11	7876673
PROTECTING THE FILTERING DATABASE IN VIRTUAL BRIDGES					
	UNITED STATES	01-Feb-02	10/061,721	26-Dec-06	7154899
	UNITED STATES	09-Nov-06	11/595,635	10-Aug-10	7773508
Protection Against Master Unit Failure in Remote Network Access Multiplexing					
	UNITED STATES	11-Aug-00	09/637,757	21-Dec-04	6834038
RATE CONTROL IN TRANSMISSION OF PACKET DATA OVER AN ATM NETWORK					
	UNITED STATES	27-Nov-00	09/723,206	31-Aug-04	6785232
RESOURCE RESERVATION IN A RING NETWORK					
	UNITED STATES	26-Feb-01	09/794,898	08-Nov-05	6963537

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RESOURCE SHARING AMONG NETWORK TUNNELS					
	UNITED STATES	15-Dec-05	11/305,486	09-Dec-08	7463580
RING NETWORK AGGREGATE RATES					
	UNITED STATES	05-Jan-09	12/348,361	29-Mar-11	7916636
RING NETWORK WITH VARIABLE RATE					
	UNITED STATES	12-Mar-03	10/387,657	02-Sep-08	7420922
ROUTE SELECTION WITH BANDWIDTH SHARING OPTIMIZATION OVER RINGS					
	UNITED STATES	24-Jan-06	11/339,148	29-Sep-09	7596088
	ISRAEL	03-Oct-06	192993	25-Jun-13	192993
SELECTIVE PROTECTION FOR RING TOPOLOGIES					
	UNITED STATES	03-Oct-01	09/969,839	10-May-05	6892329
	GERMANY	03-Mar-02	602 12 108.6	06-Jul-06	602 12 108.6
	EUROPEAN PATENT CONVENT	03-Mar-02	02701519.7		1378096
	SPAIN	03-Mar-02	02701519.7	07-Jun-06	2 266 445
	FRANCE	03-Mar-02	02701519.7	07-Jun-06	1378096
	UNITED KINGDOM	03-Mar-02	02701519.7	07-Jun-06	1378096
	ISRAEL	03-Mar-02	158008	05-Dec-09	158008
	ITALY	03-Mar-02	02701519.7	07-Jun-06	1378096
	JAPAN	03-Mar-02	2002577349	08-Aug-08	4167072
SIGNALING MPLS OVER RPR RINGS					
	UNITED STATES	20-Feb-03	10/369,953	27-Jan-09	7483399
SONET CIRCUIT EMULATION WITH VT COMPRESSION					
	UNITED STATES	17-Oct-01	09/978,342	07-Nov-06	7133415
Splitterless Ethernet DSL on Subscriber Loops					
	UNITED STATES	01-Jul-99	09/346,416	19-Nov-02	6483903
SYNCHRONIZED RING SOFTWARE DOWNLOAD					
	UNITED STATES	27-Sep-04	10/951,575	13-Jan-09	7478382
TRAFFIC ENGINEERING IN BI-DIRECTIONAL RING NETWORKS					
	UNITED STATES	02-Aug-02	10/211,066	16-Oct-07	7283478

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TRANSPARENT TRANSPORT OF FIBRE CHANNEL TRAFFIC OVER PACKET-SWITCHED NETWORKS					
	UNITED STATES	29-Jun-06	11/479,595	07-Apr-09	7515536
Tunnel provisioning with link aggregation					
	UNITED STATES	06-May-05	11/123,801	05-Jul-11	7974202
	UNITED STATES	26-May-11	13/116,696	17-Sep-13	8537682
	UNITED STATES	31-May-11	13/149,196	23-Apr-13	8427953
	UNITED STATES	17-Aug-13	13/969,520	25-Aug-15	9118602
TWO-WAY LINK AGGREGATION					
	UNITED STATES	07-Apr-06	11/279,045	09-Jun-09	7545740
	ISRAEL	27-Mar-07		31-Jul-2015	194652
VIRTUAL PRIVATE LAN SERVICE OVER RING NETWORKS					
	UNITED STATES	19-Nov-04	10/993,882	05-Jul-11	7974223
VIRTUAL PRIVATE LAN SERVICE USING A MULTICAST PROTOCOL					
	UNITED STATES	23-Aug-02	10/226,525	04-Mar-08	7339929
VPLS failure protection in ring networks					
	UNITED STATES	18-Jan-06	11/335,770	19-Jul-11	7983150
	GERMANY	18-Jan-07	0770619.2	24-Jul-13	6.02007E+11 –
	EUROPEAN PATENT CONVENT	18-Jan-07	07706019.2	24-Jul-13	1974485
	FRANCE	18-Jan-07	07706019.2	24-Jul-13	1974485
	UNITED KINGDOM	18-Jan-07	07706019.2	24-Jul-13	1974485
VPLS REMOTE FAILURE INDICATION					
	GERMANY	07-Nov-06	06809843.3	09-Oct-13	602006038796.2
	EUROPEAN PATENT CONVENT	07-Nov-06	06809843.3	09-Oct-13	1958364
	FRANCE	07-Nov-06	06809843.3	09-Oct-13	1958364
	UNITED KINGDOM	07-Nov-06	06809843.3	09-Oct-13	1958364
	ISRAEL	07-Nov-06	191454	01-Feb-14	191454
	UNITED STATES	07-Nov-06	12/093,824	12-Jun-12	8199637
METHOD FOR SUPPORTING SNCP OVER PACKET					

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NETWORK					
	UNITED STATES	15-Apr-11	13/087,438	13-Oct-15	9160446
Device, Method and System for Media Packet Distribution					
	UNITED STATES	02-Dec-10	12/738,080	10-Nov-15	9185151

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APPENDIX B

TO ASSIGNMENT AGREEMENT

TITLE	COUNTRY	FILED	SERIALNO
CONNECTIVITY FAULT MANAGEMENT (CFM) IN NETWORKS WITH LINK AGGREGATION GROUP CONNECTIONS			
	EUROPEAN PATENT CONVENT	11-Jun-07	07736442
	ISRAEL	11-Jun-07	196401
Device, Method and System for Media Packet Distribution			
	INDIA	22-Oct-08	836/MUMNP/2010
Edge optimized transrating system			
	UNITED STATES	02-Dec-09	12/629,310
FORWARDING MULTICAST TRAFFIC OVER LINK AGGREGATION PORTS			
	EUROPEAN PATENT CONVENT	09-Dec-07	07827481.8
HASH-BASED MULTI-HOMING			
	EUROPEAN PATENT CONVENT	12-Nov-07	07827358.8
METHOD FOR SUPPORTING MPLS TRANSPORT ENTITY RECOVERY WITH MULTIPLE PROTECTION ENTITIES			
	UNITED KINGDOM	22-Jun-12	1400156.4
METHOD FOR SUPPORTING SNCP OVER PACKET NETWORK			
	EUROPEAN PATENT CONVENT	13-Apr-12	12772045.6
	UNITED STATES	8-Oct-15	14/878,405
POINT-TO-MULTIPOINT FUNCTIONALITY IN A BRIDGED			

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NETWORK			
	EUROPEAN PATENT CONVENT	19-Jun-07	07736484.2
	HONG KONG	19-Jun-07	09110631.5
RESOURCE SHARING AMONG NETWORK TUNNELS			
	ISRAEL	14-Dec-06	192192
ROUTE SELECTION WITH BANDWIDTH SHARING OPTIMIZATION OVER RINGS			
	EUROPEAN PATENT CONVENT	03-Oct-06	06796145.8
TRANSPARENT TRANSPORT OF FIBRE CHANNEL TRAFFIC OVER PACKET-SWITCHED NETWORKS			
	EUROPEAN PATENT CONVENT	09-Jul-06	06756247
A METHOD AND SYSTEM FOR DEEP PACKET INSPECTION IN SOFTWARE DEFINED NETWORKS	US	21- April – 15	PCT/US15/26869
Tunnel provisioning with link aggregation	US	25-Aug-15	14/834,480

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/311,128	09/09/2014	8830821	40552-6169	6031

57449 7590 08/20/2014
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

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 324 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):

Daniel Cohn, Raanana, ISRAEL;
Rafi Ram, Herzliya, ISRAEL;

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IR103 (Rev. 10/09)

PART B - FEE(S) TRANSMITTAL

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

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

57449 7590 05/08/2014
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/311,128	12/05/2011	Daniel Cohn	40552-6169	6631

TITLE OF INVENTION: METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

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	08/08/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
HOUVEN, CHUONG M	2411	370-217000

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 Peter A. Nieves
2 Sheehan Phinney Bass + Green PA
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: Orckit-Corrigent Ltd.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Tel Aviv, Israel

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

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

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☐ A check is enclosed.
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☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50130d (enclose an extra copy of this form).

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☐ 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: [signature] Date: 8-7-2014
Typed or printed name: Peter A. Nieves Registration No.: 48173

Electronic Patent Application Fee Transmittal

Application Number:	13311128
Filing Date:	05-Dec-2011
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Filer:	Peter Anthony Nieves/Karen Morin
Attorney Docket Number:	40552-6169

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0

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

Electronic Acknowledgement Receipt

EFS ID:	19787026
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	40552-6169
Receipt Date:	06-AUG-2014
Filing Date:	05-DEC-2011
Time Stamp:	11:28:31
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	7644
Deposit Account	501304
Authorized User	

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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)	S0415658.pdf	116707 a46b63104d830b950dc37c957e5da6b55f554cfd	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32045 588aab90944302555d6a2b619caaec6749cc7f5b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	148752		

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

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

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER
NGUYEN, CHUONG M

ART UNIT	PAPER NUMBER
2411	

DATE MAILED: 05/08/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/311,128	12/05/2011	Daniel Cohn	40552-6169	6031

TITLE OF INVENTION: METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

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	08/08/2014

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.

PTOL-85 (Rev. 02/11)

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)

57449 7590 05/08/2014
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

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.
13/311,128	12/05/2011	Daniel Cohn	40552-6169	6031

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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	08/08/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, CHUONG M	2411	370-217000

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

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13/311,128	12/05/2011	Daniel Cohn	40552-6169	6031

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EXAMINER
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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.

PTOL-85 (Rev. 02/11)

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. 13/311,128	Applicant(s) COHN ET AL.	
	Examiner CHUONG M. NGUYEN	Art Unit 2411	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 *See Continuation Sheet*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp 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 *04/09/14* .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☒ Other *Examiner's Amendment Authorization*.

/CHUONG M NGUYEN/ Patent Examiner, Art Unit 2411	/Jung Park/ Primary Examiner AU 2411

Continuation of Item 1. This communication is responsive to : Applicant Arguments/Remarks Made in an Amendment filed on 03/24/14 and Examiner's Amendment on 04/09/2014.

DETAILED ACTION

a. Claims 1-20 in the present application are being examined under the pre-AIA first to invent provisions:

- claims 1, 7, 11, 14, 17-20 are amended

b. This is a final action on the merits based on Applicant's claims submitted in an Applicant Arguments/Remarks Made in an Amendment on 03/25/2014 and Examiner's Amendment on 04/09/2014.

EXAMINER'S COMMENTS

1. This is a final action on the merits based on Applicant's Arguments/Remarks Made in An Amendment submitted on 03/25/2014.

2. Regarding claims 1 and 7 previously objected for minor informalities, these claims have been amended according to the Examiner's recommendation and thus the previous objection has been withdrawn.

3. Regarding claims 17-20 previously rejected under 35 U.S.C. § 101, these claims have been amended according to the Examiner's recommendation and thus the previous rejection has been withdrawn.

4. Regarding claims 1-20 previously rejected under 35 U.S.C. § 103(a), Applicant's arguments see "Applicant Arguments/Remarks Made in An Amendment", filed 03/25/2014, with respect to Tochio US Patent 7961602, in view of Young US Pub 2010/0309778, Nakash US Pub 2010/0157794, and further in view of Bates et al. US Pub 2007/0064702, have been fully considered and are persuasive. The previous rejection of claims 1-20 has been withdrawn.

EXAMINER'S AMENDMENT

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

Authorization for this examiner's amendment was given in a telephone interview with Jonathan B. Whitcomb (Reg. No. 65,184) on 04/09/2014 and subsequent confirmation via email correspondence on 04/09/2014 as indicated in form PTO-413B.

Below are the amended claims as authorized by the applicant's:

Claim 1. (Currently amended)

An entity selection method performed by a network device, comprising the steps of:

providing a plurality of <u>multi protocol label switching</u> (MPLS) transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair <u>from the group</u>

consisting of said entity pair and a replacement entity pair comprising at least one entity distinct from the entities of said entity pair,

wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for
one of said plurality of transport entities.

Claim 2. (Original)

The method of claim 1, wherein said step of selecting an entity pair further comprises:

selecting a working entity from said entity pair; and

selecting a protection entity from said entity pair.

Claim 3. (Original)

The method of claim 2, further comprising the step of selecting an active entity from the set consisting of said working entity and said protection entity.

Claim 4. (Original)

The method of claim 2, wherein selecting an entity pair further comprises minimizing an overall cost function.

Claim 5. (Original)

The method of claim 4, wherein said overall cost function comprises substantially minimizing a probability of concurrent failure of said protection entity and said working entity.

Claim 6. (Original)

The method of claim 4, wherein said overall cost function comprises a predefined entity cost metric.

Claim 7. (Currently amended)

The method of claim 6, wherein said predefined entity cost metric is selected from the group consisting of interior gateway protocol (IGP) and traffic engineering (TE).

Claim 8. (Original)

The method of claim 4, further comprising the step of configuring said working entity as revertive.

Claim 9. (Original)

The method of claim 4, wherein said overall cost function comprises:

selecting a subset of entity pairs wherein each entity pair of said subset has substantially minimum probability of a concurrent failure of said protection entity and said working entity; and

if said subset comprises at least two entity pairs, selecting an entity pair from said subset that minimizes an entity cost function.

Claim 10. (Original)

The method of claim 9, wherein said entity cost function comprises a predefined metric.

Claim 11. (Currently amended)

The method of claim 10, wherein said predefined metric is selected from the group consisting of interior gateway protocol (IGP) and traffic engineering (TE).

Claim 12. (Original)

The method of claim 10, further comprising the step of configuring said working entity as revertive.

Claim 13. (Original)

The method of claim 1, further comprising the step of:

if said entity pair reselection results in both working and protection entities being replaced, sequentially replacing said working entity and said protection entity.

Claim 14. (Currently amended)

A system for selecting entities within an MPLS network, comprising:

a data structure comprising a plurality of transport entity descriptors;

an entity protection switch configured to switch between a working entity and a protection entity; and

digital logic configured to select said working entity and said protection entity from said plurality of transport entity descriptors, comprising: logic configured to determine a probability of concurrent failure of said working entity and said protection entity;

logic configured to determine an entity cost of said plurality of transport entity descriptors: and

logic configured to reselect said working entity and said protection entity from said plurality of transport entity descriptors upon a reselection event,

wherein said reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

Claim 15. (Original)

The system of claim 14 wherein said entity protection switch comprises a 1:1 switch.

Claim 16. (Original)

The system of claim 14 wherein said entity protection switch comprises a 1+1 switch.

Claim 17. (Currently amended)

Non-transitory computer readable media configured to perform a method comprising the steps of:

providing a plurality of MPLS transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair from the group consisting of said entity pair and a replacement entity pair comprising at least one entity distinct from the entities of said entity pair,

wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

Claim 18. (Currently amended)

The non-transitory computer readable media of claim 17, wherein said step of selecting an entity pair further comprises:

selecting a working entity from said plurality of transport entities;

selecting a protection entity from said plurality of transport entities; and

selecting an active entity from the set consisting of said working entity and said protection entity.

Claim 19. (Currently amended)

The non-transitory readable media of claim 18, wherein said step of selecting an entity pair further comprises minimizing an overall cost function.

Claim 20. (Currently amended)

The non-transitory readable media of claim 19, wherein said overall cost function comprises:

minimizing a probability of concurrent failure of said protection entity and said working entity; and

a predefined metric selected from the group consisting of interior gateway protocol (IGP) and traffic engineering (TE).

Allowable Subject Matter

6. Claims 1-20 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHUONG M. NGUYEN whose telephone number is (571)272-8184. The examiner can normally be reached on Monday-Thursday 9 am - 5 pm (Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Lai can be reached on (571) 272-9741. 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.

/CHUONG M NGUYEN/
Patent Examiner, Art Unit 2411

/JUNG PARK/
Primary Examiner, Art Unit 2411

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	13/311,128	COHN ET AL.	
	Examiner	Art Unit	
	CHUONG M. NGUYEN	2411	

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

(1) *CHUONG M. NGUYEN*. (3)_____.

(2) *JONATHAN B. WHITCOMB*. (4)_____.

Date of Interview: *04/09/2014*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *7,11 and 20*.

Identification of prior art discussed: _____.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

The Examiner contacted the Appicant's representative, Mr. Jonathan Whitcomb, to ask for authorization to conduct an Examiner's Amendment with regard to claims 11 and 20.
The Examiner would like to amend claims 11 and 20 to spell out the acronyms IGP and TE in similar fashion as done in the currently amended claim 7.
Mr. Whitcomb verbally agreed to the Examiner's recommendation and he will be following up with a written Examiner's Amendment authorization..

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/CHUONG M NGUYEN/
Patent Examiner, Art Unit 2411

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13311128	COHN ET AL.
	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

CPC- SEARCHED

Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner
370	219, 227-228, 392	12/12/2013	CN
370	same as above updated	04/09/2014	CN

SEARCH NOTES

Search Notes	Date	Examiner
EAST search (inventorship, Double Patenting, key terms etc.)	12/12/2013	CN
EAST search updated (inventorship, Double Patenting, key terms, US classes, etc.). See attached Search History printout.	04/09/2014	CN

INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
370	all	04/09/2014	CN

/CHUONG M NGUYEN/ Patent Examiner.Art Unit 2411	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13311128	COHN ET AL.
	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

CPC						
Symbol					Type	Version
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CPC Combination Sets							
Symbol					Type	Set	Ranking	Version
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/CHUONG M NGUYEN/ Patent Examiner.Art Unit 2411 (Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/JUNG PARK/ Primary Examiner.Art Unit 2411 (Primary Examiner)	04/15/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

U.S. Patent and Trademark Office

Part of Paper No. 20140409

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13311128	COHN ET AL.
	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
370	217	H 0 4 J 1 / 16 (2006.0)	
CROSS REFERENCE(S)		H 0 4 L 12 / 28 (2006.0)	

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
370	219	227	228	392	

/CHUONG M NGUYEN/ Patent Examiner.Art Unit 2411 (Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/JUNG PARK/ Primary Examiner.Art Unit 2411 (Primary Examiner)	04/15/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

U.S. Patent and Trademark Office

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

☒ **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

/CHUONG M NGUYEN/ Patent Examiner.Art Unit 2411 (Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/JUNG PARK/ Primary Examiner.Art Unit 2411 (Primary Examiner)	04/15/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

U.S. Patent and Trademark Office

Part of Paper No. 20140409

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13311128	COHN ET AL.
	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

✓	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	12/17/2013	04/09/2014							
1	1	✓	=							
2	2	✓	=							
3	3	✓	=							
4	4	✓	=							
5	5	✓	=							
6	6	✓	=							
7	7	✓	=							
8	8	✓	=							
9	9	✓	=							
10	10	✓	=							
11	11	✓	=							
12	12	✓	=							
13	13	O	=							
14	14	✓	=							
15	15	✓	=							
16	16	✓	=							
17	17	✓	=							
18	18	✓	=							
19	19	✓	=							
20	20	✓	=							

Nguyen, Chuong M.

From: Jonathan B. Whitcomb <JWhitcomb@sheehan.com>
Sent: Wednesday, April 09, 2014 11:41 AM
To: Nguyen, Chuong M.
Cc: Peter A. Nieves; Karen A Morin
Subject: Examiner's Amendment for 13/311,128 (our ref. 40552-6169)

Dear Examiner Nguyen,

It was good to speak with you this morning. I am writing to confirm authorization for the Examiner's Amendment you proposed this morning on the telephone. In particular, I authorize amending claims 11 and 20 to reflect the amendments to claim 7 in the response to the office action dated December 26, 2013. We are grateful for the allowance of these claims.

Please let us know if you need anything else.

Kind Regards,
Jonathan B. Whitcomb
Patent Attorney

Sheehan Phinney Bass + Green PA
1000 Elm Street
Manchester, NH 03105-3701
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	7	"7961602".pn. "20100309778" "20100157794" "20070064702"	US-PGPUB; USPAT	OR	ON	2014/04/09 09:16
L2	4	(US-20070064702-$ or US-20100309778-$ or US-20100157794-$).did. or (US-7961602-$).did.	US-PGPUB; USPAT	AND	ON	2014/04/09 09:16
L3	0	2 and (entity near pair)	US-PGPUB; USPAT	AND	ON	2014/04/09 09:16
L4	2	2 and entity	US-PGPUB; USPAT	AND	ON	2014/04/09 09:17
L5	3	2 and (work$6 near path)	US-PGPUB; USPAT	AND	ON	2014/04/09 09:18
L6	2	2 and pair	US-PGPUB; USPAT	AND	ON	2014/04/09 09:26
L7	0	2 and reselect$6	US-PGPUB; USPAT	AND	ON	2014/04/09 09:30
L8	4	2 and select$6	US-PGPUB; USPAT	AND	ON	2014/04/09 09:30
L9	2	reselect$6 with (pair near3 (entities or path or link))	US-PGPUB; USPAT	AND	ON	2014/04/09 09:38
L10	4178	select$6 with (pair near3 (entities or path or link))	US-PGPUB; USPAT	AND	ON	2014/04/09 09:52
L11	3898	10 and @ad<"20110622"	US-PGPUB; USPAT	AND	ON	2014/04/09 09:53
L12	1695	11 and cost	US-PGPUB; USPAT	AND	ON	2014/04/09 09:53
L13	22	12 and (status near change)	US-PGPUB; USPAT	AND	ON	2014/04/09 09:53
L14	8	13 and ("370" or "709" or "455").clas.	US-PGPUB; USPAT	AND	ON	2014/04/09 09:54
L15	1	(reselect$6 with (pair near5 entity)).clm.	US-PGPUB; USPAT	AND	ON	2014/04/09 10:00
L18	221	((daniel with cohn) or (rafi with ram)).in.	US-PGPUB;	AND	ON	2014/04/09 10:01

			USPAT			
L19	1	18 and (reselect$6 with (pair near3 (entities or path or link)))	US-PGPUB; USPAT	AND	ON	2014/04/09 10:01

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L16	1	(reselect$6 with (pair near5 entity)).clm.	US-PGPUB; USPAT	AND	ON	2014/04/09 10:00
L17	221	((daniel with cohn) or (rafi with ram)).in.	US-PGPUB; USPAT	AND	ON	2014/04/09 10:01

4/9/2014 10:05:23 AM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. Of:	Daniel Cohn, et al.	Group Art Unit: 2447
Serial No.:	13/311,128	Examiner: Nguyen, Chuong
Filed:	December 5, 2011	DOCKET: 40552-6169
Confirmation No.:	6031	

For: METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

AMENDMENT UNDER 37 C.F.R. 1.111

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

Sir:

The non-final Office Action mailed December 26, 2013 has been carefully considered. In response thereto, please enter the following amendments and consider the following remarks.

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

Remarks/Arguments begin on page 8 of this paper.

AUTHORIZATION TO DEBIT ACCOUNT

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to deposit account no. 501304.

Amendment To The Claims

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

Please amend claims 1, 7, 14, and 17-20.

Listing of Claims:

1. (Currently amended) An entity selection method performed by a network device, comprising the steps of:

providing a plurality of multi protocol label switching (MPLS) transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair from the group consisting of said entity pair and a replacement entity pair comprising at least one entity distinct from the entities of said entity pair,

wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

2. (Original) The method of claim 1, wherein said step of selecting an entity pair further comprises:

selecting a working entity from said entity pair; and

selecting a protection entity from said entity pair.

3. (Original) The method of claim 2, further comprising the step of selecting an active entity from the set consisting of said working entity and said protection entity.

4. (Original) The method of claim 2, wherein selecting an entity pair further comprises minimizing an overall cost function.

5. (Original) The method of claim 4, wherein said overall cost function comprises substantially minimizing a probability of concurrent failure of said protection entity and said working entity.

6. (Original) The method of claim 4, wherein said overall cost function comprises a predefined entity cost metric.

7. (Currently amended) The method of claim 6, wherein said predefined entity cost metric is selected from the group consisting of interior gateway protocol (IGP) and traffic engineering (TE).

8. (Original) The method of claim 4, further comprising the step of configuring said working entity as revertive.

9. (Original) The method of claim 4, wherein said overall cost function comprises:

selecting a subset of entity pairs wherein each entity pair of said subset has substantially minimum probability of a concurrent failure of said protection entity and said working entity; and

if said subset comprises at least two entity pairs, selecting an entity pair from said subset that minimizes an entity cost function.

10. (Original) The method of claim 9, wherein said entity cost function comprises a predefined metric.

11. (Original) The method of claim 10, wherein said predefined metric is selected from the group consisting of IGP and TE.

12. (Original) The method of claim 10, further comprising the step of configuring said working entity as revertive.

13. (Original) The method of claim 1, further comprising the step of:

if said entity pair reselection results in both working and protection entities being replaced, sequentially replacing said working entity and said protection entity.

14. (Currently amended) A system for selecting entities within an MPLS network, comprising:

a data structure comprising a plurality of transport entity descriptors;

an entity protection switch configured to switch between a working entity and a protection entity; and

digital logic configured to select said working entity and said protection entity from said plurality of transport entity descriptors, comprising:

logic configured to determine a probability of concurrent failure of said working entity and said protection entity; ~~and~~

logic configured to determine an entity cost of said plurality of transport entity descriptors; and

logic configured to reselect said working entity and said protection entity from said plurality of transport entity descriptors upon a reselection event,

wherein said reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

15. (Original) The system of claim 14 wherein said entity protection switch comprises a 1:1 switch.

16. (Original) The system of claim 14 wherein said entity protection switch comprises a 1+1 switch.

17. (Currently amended) Non-transitory computer ~~Computer~~ readable media configured to perform a method comprising the steps of:

providing a plurality of MPLS transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair from the group consisting of said entity pair and a replacement entity pair comprising at least one entity distinct from the entities of said entity pair,

wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

18. (Currently amended) The non-transitory computer readable media of claim 17, wherein said step of selecting an entity pair further comprises:

selecting a working entity from said plurality of transport entities;

selecting a protection entity from said plurality of transport entities; and

selecting an active entity from the set consisting of said working entity and said protection entity.

19. (Currently amended) The non-transitory readable media of claim 18, wherein said step of selecting an entity pair further comprises minimizing an overall cost function.

20. (Currently amended) The non-transitory readable media of claim 19, wherein said overall cost function comprises:

minimizing a probability of concurrent failure of said protection entity and said working entity; and

a predefined metric selected from the group consisting of IGP and TE.

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed December 26, 2013. In the present response, claims 1, 7, 14, and 17-20 have been amended for non-statutory reasons to better define Applicants' contribution to the art. No new matter has been added. Claims 1-20 remain pending.

Claim Objections

The Office Action objected to claim 1 for not identifying the term MPLS. Applicants have amended claim 1 to define this term. Similarly, Applicants have amended claim 27 to define the acronyms TE and IGP.

Claim Rejections - 35 USC §101

The Office Action rejected claims 17-20 as not falling within one of the four statutory categories of invention. Applicants have amended claims 17-20 to specify non-transitory computer readable media.

Claim Rejections - 35 U.S.C. § 103

In the Office Action, claims 1-4, 8-9, and 17-19 were preliminarily rejected under 35 U.S.C. §103(a) as allegedly being unpatententable over Tochio US Patent 7961602 in view of Young US Pub 2010/0309778, and further in view of Nakash US Pub 2010/0157794, claims 5-7, 10-12, and 20 were preliminarily rejected under 35 U.S.C. §103(a) as allegedly being unpatententable over Tochio in view of Young and Nakash, and further in view of Bates et al. US Pub 2007/0064702, claims 14 and 15 were preliminarily rejected under 35 U.S.C. §103(a) as allegedly being unpatententable over Young, and in view of Bates, and claim 16 was preliminarily rejected under 35 U.S.C. §103(a) as allegedly being unpatententable over Young, in view of Bates, and further in view of Tochio.

It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of

references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue.[1]

Claim 1

Claim 1 is allowable as amended at least because no combination of Toshio, Nakash and/or Yong discloses, teaches, or suggests determining an overall cost for each entity pair of said plurality of entities, selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost, and if an entity pair reselection event occurs, reselecting said entity pair. Applicants note the Office Action has cited a reference disclosing a single 1:1 MPLS protection scheme (Tochio), a disclosure of weighting of non-provisioned paths (Nakash at 13), and a disclosure of selection of a shortest path among non-protection active paths that are not protection paired (Nakash at 31). None of these, alone or in combination, discloses, teaches or suggests the entity selection method of claim 1, as explained further below.

The Office Action cites Nakash as disclosing determining an overall cost for each entity pair of said plurality of entities. Applicants respectfully disagree. While Nakash discloses at paragraph 13 "The TE topology **can be** represented as a weighted graph of nodes and interconnecting links…", Nakash actually teaches away from determining an overall cost for each entity pair, instead teaching only computing the path for a requested LSP (label switched path). Here, Nakash does not disclose pairs of provided MPLS entities, but instead the cost of links along an MPLS entity path that have not been established. This is important, as under claim 1 the MPLS entities are already provided and are immediately available for the claimed selection and/or reselection, wherein Nakash merely discloses determining costs of links that have not been established, and are therefore clearly not available for either selection or reselection.

The Office Action cites Nakash at 31 as disclosing selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost. Applicants respectfully disagree. Here, Nakash does not disclose selecting an entity pair from each entity pair, but only for finding one active path having a shortest path. Further, Nakash

[1] See, e.g., In re Dow Chemical, 5 U.S.P.Q. 2d 1529, 1531 (Fed. Cir. 1988), and In re Keller, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

does not disclose selecting the shortest active path (AP) path from each (or even any) entity pair, but instead selecting the shortest path from among a small set of APs. No entity pair is disclosed. Indeed, at paragraph 31, Nakash clearly states the set of APs may not even include a protected path:

> "Since the KSP method is based on a limited number of *a priori* chosen AP's, it might not find a protected path even if such one exists."

Therefore, Nakash clearly does not disclose selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost, but merely selecting one active path from among several active paths.

Nakash discusses fast reroute (FRR), where a primary route switches over to a backup route when the primary route fails. However, like Tochio, Nakash is silent regarding the claimed reselection due to any reselection event, where the selection of the entity working/protection pair is re-performed ("reselected") by selecting a new entity pair based on re-evaluation of each entity in the plurality of entities after an event ("reselection event"). The Office Action cites Tochio and Nakash as disclosing the claimed reselection events. However, while Applicants do not agree with the Office Action's characterizations of reselection events cited in the prior art, these characterizations are moot since none of the prior art discloses, teaches, or suggests reselecting said entity pair.

The Office Action cites Tochio/Nakash as disclosing reselecting said entity pair. Applicants respectfully disagree. Neither Tochio nor Nakash, alone or in combination, disclose a reselection event. Indeed, the language cited by the Office Action (Tochio col. 1, lines 50-56 and FIG. 2) describes/depicts nothing more than a switch-over between an active (working) to a standby (backup) path, not reselecting an entity pair as claimed. The protection switching cited by the office action does not disclose, teach or suggest reselecting said entity pair. Indeed, as claimed, a reselection event may be entirely unrelated to and independent of a protection switch-over. A reselection event is claimed as including adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities. As noted by Applicants at paragraph 28, "Entity pair reselection may

not impact traffic as long as the newly selected entity pair does not change the currently active entity." Applicants also wish to clarify that a reselection event is an event that triggers reselecting an entity pair. As noted above, while the Office Action cites instances of reselection events, it cites no instances of reselecting an entity pair.

The Office Action cites Young as disclosing the selection of an entity pair as a result of an operational status change for one of said plurality of transport entities. However, like Tochia and Nakash, Young nowhere discloses reselecting said entity pair. Applicants also note the Office Action characterizes an entity pair as "the connecting path between two endpoints/nodes." Applicants respectfully note it takes two entities to form an entity pair. A single connecting path between two endpoints/nodes is not an entity pair.

For the purposes of clarity, Applicants have amended claim 1 to clarify that "reselecting said entity pair" means reselecting said entity pair from the group consisting of said entity pair and a replacement entity pair comprising at least one entity distinct from the entities of said entity pair. Applicants have amended claim 1 to clarify that selecting and reselecting an entity pair are clearly different from a protection switching event. Therefore, claim 1 is allowable for at least the abovementioned reasons. Reconsideration and allowance of claim 1 is respectfully requested.

Claim 17

The Office Action rejected claim 17 for the same reasons as claim 1. Applicants have amended claim 17 as per claim 1 above. Therefore, claim 17 is allowable for at least the reasons discussed above regarding claim 1. Reconsideration and allowance of claim 17 is respectfully requested.

Claim 14

Applicants have amended claim 14 to include limitations similar to those from claims 1 and 17 regarding reselection, as discussed above regarding claims 1 and 17. As amended, claim 14 reads:

> A system for selecting entities within an MPLS network, comprising:
> a data structure comprising a plurality of transport entity descriptors;

an entity protection switch configured to switch between a working entity and a protection entity; and

digital logic configured to select said working entity and said protection entity from said plurality of transport entity descriptors, comprising:

logic configured to determine a probability of concurrent failure of said working entity and said protection entity; ~~and~~

logic configured to determine an entity cost of said plurality of transport entity descriptors; and

logic configured to reselect said working entity and said protection entity from said plurality of transport entity descriptors upon a reselection event,

wherein said reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

Therefore, claim 14 is allowable for at least the reasons discussed above regarding claim 1. Reconsideration and allowance of claim 14 is respectfully requested.

General Comments on Rejections of Dependent Claims

Since each of the dependent claims depends from a base claim that is believed to be in condition for allowance, Applicants believe that it is unnecessary at this time to argue the allowability of each of the dependent claims individually. However, Applicants do not necessarily concur with the interpretation of the dependent claims as set forth in the Office Action, nor do Applicants concur that the basis for the rejection of any of the dependent claims is proper. Therefore, Applicants reserve the right to specifically address the patentability of the dependent claims in the future, if deemed necessary.

Allowable Subject Matter

Applicants are grateful for allowance of claim 13. The Office Action stated claim 13 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims. Applicants believe the base claims are allowable as per the

arguments above. However, Applicants reserve the right to rewrite these claims in the future.

Conclusion

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 set forth in the Office Action 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. Furthermore, nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as specifically stated in this paper.

In light of the foregoing and for at least the reasons set forth above, Applicants respectfully requests favorable reconsideration and allowance of the present application and the presently pending claims. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited and encouraged to call the undersigned attorney at (603) 627-8114.

Respectfully submitted,
SHEEHAN, PHINNEY, BASS + GREEN, P.A.

/Jonathan B. Whitcomb/
Jonathan B. Whitcomb
Attorney for Applicants
Registration No.: 65,184

Electronic Acknowledgement Receipt

EFS ID:	18575253
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Jonathan B. Whitcomb/Karen Morin
Filer Authorized By:	Jonathan B. Whitcomb
Attorney Docket Number:	40552-6169
Receipt Date:	25-MAR-2014
Filing Date:	05-DEC-2011
Time Stamp:	14:05:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	S0354982.pdf	157651 fbe76f5b6ec9c4d4435b01ddb66e017a4e7b59d9	no	14

Warnings:

Information:

Total Files Size (in bytes):	157651

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

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

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

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/311,128	Filing Date 12/05/2011	☐ To be Mailed

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 **03/25/2014**

	(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))	* 20	Minus	** 20	= 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
/PEARLIE A. FENNELL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/311,128	12/05/2011	Daniel Cohn	40552-6169	6031

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EXAMINER
NGUYEN, CHUONG M

ART UNIT	PAPER NUMBER
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12/26/2013	PAPER

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

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

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No. 13/311,128	Applicant(s) COHN ET AL.	
	Examiner CHUONG M. NGUYEN	Art Unit 2411	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 MONTHS 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 *12/05/2011*.

☐ 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) *1-20* is/are pending in the application.

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

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-12 and 14-20* is/are rejected.

8)☒ Claim(s) *13* 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 *12/05/2011* 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.

Attachment(s)

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

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *12/28/12, 11/22/13*.

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

4) ☐ Other: _____.

DETAILED ACTION

a. Claims 1-20 in the present application are being examined under the pre-AIA first to invent provisions.

b. This is a first action on the merits based on Applicant's claims submitted on 12/05/2011.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 12/28/2012 and 11/22/2013 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

1. **Claim 1** is objected to because of the following informalities: undefined term. The acronym **"MPLS"** has not been defined in the claim. The first instance of this acronym should read **"multiprotocol label switching (MPLS)"**. Appropriate correction is required.

2. **Claim 7** is objected to because of the following informalities: undefined term. The acronyms **"IGP"** and **"TE"** have not been defined in the claim. The first instance of these acronyms should read **"Interior Gateway Protocol (IGP)"** and **"Traffic Engineering"** respectively. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

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

Claims 17-20 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention.

Claims 17-20 recite the limitation "**computer readable media**", however specification is silent with the definition of term "**computer readable media**". In plain meaning, the computer readable media are directed to transitory computer readable media such as signal as well as non-transitory computer readable media, i.e., ROM, RAM, hard drive, etc. Thus, the broadest readable interpretation in light of specification and in view of one skilled in the art encompasses that the "computer readable media" of claims 17-20, can be signal per se, thus not eligible subject matter under 35 USC 101.

It is recommended to amend and narrow the claims to cover only statutory embodiments to avoid a rejection under 35 U.S.C. § 101 by adding the limitation "**non-transitory computer readable media**" to the claims.

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. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 1-4, 8-9, and 17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tochio US Patent 7,961,602 (hereinafter "Tochio"), in view of Young US Pub 2010/0309778 (hereinafter "Young"), and further in view of Nakash US Pub 2010/0157794 (hereinafter "Nakash").

7. Regarding claim 1

Tochio discloses *An entity selection method performed by a network device* **("packet communication method of facilitating packet communication between nodes in a network according to an embodiment of the present invention includes : selecting one of a working communication path and a backup communication path connected by two switching nodes, transmitting first traffic between the two switching nodes via the selected communication path, and transmitting a switching control packet between the two switching nodes via the backup communication path, the switching control packet including working communication path identification information representing whether the first traffic passes through the working communication path; causing the switching nodes to select the working communication path as a communication path through which the first traffic passes when the working communication path operates under normal conditions, and to select the backup communication path as a communication path through which the first traffic passes when a failure occurs in the working**

communication path;" col. 3, lines 1-18), *comprising the steps of: providing a plurality of MPLS transport entities* **("The packet communication method according to claim 1, wherein the network is an MPLS network, and the input port performs identification and transmission of the second traffic based on label information" [Claim 7])** *between a first endpoint and a second endpoint* **(i.e. switching nodes)**;

Tochio is silent regarding determining an overall cost for each entity pair of said plurality of entities.

In an analogous art, **Nakash also discloses** *MPLS transport entities* **("The present invention relates to the field of data networking, more particularly to finding a protected path in a mesh communication network, and in a specific case--to methods for computing MPLS label switched paths with guaranteed fast reroute (FRR) protection." [0001])**; *determining an overall cost for each entity pair of said plurality of entities* **("In particular, each link connecting an outgoing port of one LSR with an incoming port of another LSR is associated with a weight a.k.a metric or cost…" [0013])**; *selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost* **("Another known approach is called the K Shortest Paths (KSP) method, in which the algorithm finds K shortest active paths (APs) and then tests them one by one in the increasing order of their costs until a backup path is found or all of them have been tested." [0031]).**

The combination of Tochio/Nakash further discloses *if an entity pair reselection event occurs, reselecting said entity pair* **("When a failure occurs in the working communication path 101-103-104-105-102, a communication path through which traffic passes is changed from the working communication path 101-103-104-105-102 to the backup communication path 101-106-107-108-102 using switching nodes 101 and 102, and traffic**

201 is caused to flow the backup communication path 101-106-107-108-102 as shown in FIG. 2" Tochio col. 1, lines 50-56 and see also **Fig. 2)**, *wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities* **("For selecting the fully protected communication path with node-link protection, the transformed graph should comprise an additional operation of adding to the pruned topology graph further fictitious intra -node links with non-zero metrics, wherein a fictitious intra -node link with a non-zero metrics (or penalty P) is added to the node of a node segment to interconnect the incoming link and the outgoing link of said node segment in case there is no node backup path for that node path segment in the pruned graph…" Nakash [0047])**, *removing an entity from said plurality of transport entities* **("…to change the current mode to a packet blocking mode in which the second traffic 202 is removed" col. 9, lines 4-6)**, *and a change in overall cost for one of said plurality of transport entities* **("Another known approach is called the K Shortest Paths (KSP) method, in which the algorithm finds K shortest active paths (APs) and then tests them one by one in the increasing order of their costs until a backup path is found or all of them have been tested." Nakash [0031])**.

Tochio/Nakash does not specifically teach that wherein said entity pair reselection event is selected as a result of an operational status change for one of said plurality of transport entities.

In an analogous art, **Young discloses** the selection of an entity pair (i.e. connecting path between two endpoints/nodes) as a result of *an operational status change for one of said plurality of transport entities* **("The status updates include notifications that the status of a path has changed to non-operational because of failures or maintenance/upgrade activities." [0037]).**

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Tochio's technique of enabling redundant communication between nodes in a network, as modified by Young's system for sharing a protection path between at least two protection groups in a network, to include Nakash's method for computing MPLS label switched paths with guaranteed fast reroute (FRR) protection based on cost **"In particular, each link connecting an outgoing port of one LSR with an incoming port of another LSR is associated with a weight a.k.a metric or cost, available BW (optionally, per a required Class of Service CoS), and information on available backup LSP." Nakash [0013].** Thus, a person of ordinary skill would have appreciated the ability to incorporate Nakash's method for computing MPLS label switched paths with guaranteed fast reroute (FRR) protection based on cost into Tochio's technique of enabling redundant communication between nodes in a network since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

8. Regarding claim 2

Tochio, as modified by Young and Nakash, previously discloses *the method of claim 1, wherein said step of selecting an entity pair further comprises:*

Young further discloses *selecting a working entity* **(i.e. working maintenance entity group ("WMEG"))** *from said entity pair; and selecting a protection entity* **(i.e. protection entity group ("PMEG"))** *from said entity pair* **("A system is provided for sharing a protection path between at least two protection groups in a network. The system includes at least one working path associated with each of the protection groups, and at least one working**

maintenance entity group ("WMEG") monitoring the status of each of the working paths. Each WMEG notifies the protection group associated with the monitored working path of changes in the status of the monitored working path. At least one protection entity group ("PMEG") monitors the status of the protection path and notifies each of the protection groups of changes in the status of the protection path. Each of the protection groups is switchable to the protection path in response to the receipt of notifications from the WMEG of changes to a non-operational status for the respective working paths associated with each of the protection groups." [Abstract]).

9. Regarding claim 3

Tochio, as modified by Young and Nakash, previously discloses *the method of claim 2,*

Young also discloses *further comprising the step of selecting an active entity from the set consisting of said working entity and said protection entity* **("The MAs 101a, 103a share the state with the associated protection group 110 which uses the state information to which the TESIs are set as active for the protection group 110." [0005]** and furthermore **"Each protection group 503 decides on which LTR to use as active, based on the information provided by the working and protection MEGs 506, 507." [0041]** and see also **Fig. 5)**

10. Regarding claim 4

Tochio, as modified by Young and Nakash, previously discloses *the method of claim 2,*

Nakash further discloses *wherein selecting an entity pair further comprises minimizing an overall cost function* **("The TE topology can be represented as a weighted directed**

graph of nodes and interconnecting links, where each node and link is associated with resources (or TE topology constraints). In particular, each link connecting an outgoing port of one LSR with an incoming port of another LSR is associated with a weight a.k.a metric or cost, available BW (optionally, per a required Class of Service CoS), and information on available backup LSP." [0013]).

11. Regarding claim 8

Tochio, as modified by Young and Nakash, previously discloses *the method of claim 4,*

Young also discloses *further comprising the step of configuring said working entity as revertive* **("When the working path returns to operational status, the protection group can be configured to switch back to the working path manually or automatically upon receipt of operational status notification from the working MEG 405." [0040]** and see also **Fig. 4)**.

12. Regarding claim 9

Tochio, as modified by Young and Nakash, previously discloses *the method of claim 4,*

Young also discloses *wherein said overall cost function comprises: selecting a subset of entity pairs* **(i.e. "m protection groups 503", "i working groups 507"** and see **Fig. 5)** *wherein each entity pair of said subset has substantially minimum probability of a concurrent failure of said protection entity and said working entity* **(as afore-mentioned in claim 5 discussion)**; *and if said subset comprises at least two entity pairs* **("A more general embodiment is depicted in FIG. 5. In this case, one or more backbone service instances 501, 502 are mapped to one of m protection groups 503. Each protection group 503 is**

dedicated one working LTR 504 and uses one of the n protection LTR 505, where n<m. In this case, a protection MEG 506, which manages the OAM packets from one protection LTR 505, conveys status information about the protection LTR 505 to one or more protection groups 503. The working MEG i 507 manages the OAM flow from the working LTR 504 and conveys status information about the working LTR i 504 to its associated protection groups i 503. Each protection group 503 decides on which LTR to use as active, based on the information provided by the working and protection MEGs 506, 507. The protection group keeps track of the operational protection paths and switches to one of them when the working path is non-operational. The protection group could use a prioritized list for selecting an operational protection path, or a random selection can also be made." [0041]), *selecting an entity pair from said subset that minimizes an entity cost function* **(as afore-mentioned in claim 4 discussion)**.

13. Regarding claim 17

Computer readable media configured to perform a method comprising the steps of:

providing a plurality of MPLS transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair, wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational

status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

The scope and subject matter of non-transitory computer readable medium claim 17 is drawn to the computer program product of using the corresponding method claimed in claim 1. Therefore computer program product claim 17 corresponds to method claim 1 and is rejected for the same reasons of obviousness as used in claim 1 rejection above.

14. Regarding claim 18

The computer readable media of claim 17, wherein said step of selecting an entity pair further comprises: selecting a working entity from said plurality of transport entities; selecting a protection entity from said plurality of transport entities; and selecting an active entity from the set consisting of said working entity and said protection entity.

The scope and subject matter of non-transitory computer readable medium claim 18 is drawn to the computer program product of using the corresponding method claimed in claims 2 and 3. Therefore computer program product claim 18 corresponds to method claims 2 and 3 and is rejected for the same reasons of obviousness as used in claims 2 and 3 rejections above.

15. Regarding claim 19

The computer readable media of claim 18, wherein said step of selecting an entity pair further comprises minimizing an overall cost function.

The scope and subject matter of non-transitory computer readable medium claim 19 is drawn to the computer program product of using the corresponding method claimed in claim 4. Therefore computer program product claim 19 corresponds to method claim 4 and is rejected for the same reasons of obviousness as used in claim 4 rejection above.

16. **Claims 5-7, 10-12, and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tochio, in view of Young and Nakash, and further in view of Bates et al. US Pub 2007/0064702 (hereinafter "Bates").

17. Regarding claim 5

Tochio, as modified by Young and Nakash, previously discloses *the method of claim 4,*

The combination of Tochio/Young/Nakesh discloses the overall cost function as previously discussed but doesn't specifically teach that wherein said overall cost function comprises substantially minimizing a probability of concurrent failure of said protection entity and said working entity.

In an analogous art, **Bates discloses** *wherein said overall cost function* **("The supernode/tracker then uses the length of the shortest path (i.e., the cost of the path between the two nodes) to rank peer-to-peer protocol candidate nodes." [0065])** *comprises substantially minimizing a probability of concurrent failure of said protection entity and said working entity* **("For example, a supernode receives link cost, link delay, or link utilization information from an IGP module of a router, and uses such link status information to route traffic to another supernode in the peer-to-peer network." [0070]).**

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Tochio's technique of enabling redundant communication between nodes in a network, as modified by Young and Nakash, to include Bates' method for managing and improving the operation of peer-to-peer networks in order to improve network routing efficiency **"The needs identified in the foregoing Background, and other needs and objects that will become apparent for the following description, are achieved in the present invention,**

which comprises, in one aspect, a data processing method, comprising establishing a first node in a peer-to-peer data communications network, wherein the node is configured as a supernode in conformance with a peer-to-peer communications protocol, wherein the first node is configured as an active listener to one or more network routing protocols executing at a network router; receiving a routing information message from one of the network routing protocols; modifying an operational characteristic of the first node in response to the routing information message; receiving a request from a second node in the peer-to-peer network for a resource that is known to the first node; and responding to the request based on the modified operational characteristic." Bates [0033]. Thus, a person of ordinary skill would have appreciated the ability to incorporate Bates' method for managing and improving the operation of peer-to-peer networks into Tochio's technique of enabling redundant communication between nodes in a network since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

18. Regarding claim 6

Tochio, as modified by Young and Nakash, previously discloses *The method of claim 4,*

The combination of Tochio/Young/Nakesh discloses the overall cost function as previously discussed but doesn't specifically teach that wherein said overall cost function comprises a predefined entity cost metric.

In an analogous art, **Bates discloses** *wherein said overall cost function comprises a predefined entity cost metric* **("The supernode/tracker then uses the length of the shortest**

path (i.e., the cost of the path between the two nodes) to rank peer-to-peer protocol candidate nodes." [0065] and furthermore **"a supernode receives link cost, link delay, or link utilization information from an IGP module of a router, and uses such link status information to route traffic to another supernode in the peer-to-peer network." [0070])**.

19. Regarding claim 7

Tochio, as modified by Young, Nakash, and Bates, previously discloses *The method of claim 6,*

Bates also discloses *wherein said predefined entity cost metric is selected from the group consisting of IGP and TE* **("In other implementations, the supernode/tracker can use a field from IGP TE extension TLVs, such as the Traffic Engineering metric TLV, the Maximum bandwidth TLV, the Maximum reservable bandwidth TLV, or the Unreserved bandwidth TLV…" [0066])**.

20. Regarding claim 10

Tochio, as modified by Young and Nakash, previously discloses *The method of claim 9,*

The combination of Tochio/Young/Nakesh discloses the overall cost function as previously discussed but doesn't specifically teach that wherein said entity cost function comprises a predefined metric.

In an analogous art, **Bates discloses** *wherein said entity cost function comprises a predefined metric* **("The supernode/tracker then uses the length of the shortest path (i.e., the cost of the path between the two nodes) to rank peer-to-peer protocol candidate nodes." [0065]** and furthermore **"a supernode receives link cost, link delay, or link**

utilization information from an IGP module of a router, and uses such link status information to route traffic to another supernode in the peer-to-peer network." [0070]).

21. Regarding claim 11

Tochio, as modified by Young, Nakash, and Bates, previously discloses *The method of claim 10,*

Bates also discloses *wherein said predefined metric is selected from the group consisting of IGP and TE* **("In other implementations, the supernode/tracker can use a field from IGP TE extension TLVs, such as the Traffic Engineering metric TLV, the Maximum bandwidth TLV, the Maximum reservable bandwidth TLV, or the Unreserved bandwidth TLV…" [0066])**.

22. Regarding claim 12

Tochio, as modified by Young, Nakash, and Bates, previously discloses *The method of claim 10,*

Young also discloses *further comprising the step of configuring said working entity as revertive* **("When the working path returns to operational status, the protection group can be configured to switch back to the working path manually or automatically upon receipt of operational status notification from the working MEG 405." [0040]** and see also **Fig. 4)**.

23. Regarding claim 20

The computer readable media of claim 19, wherein said overall cost function comprises: minimizing a probability of concurrent failure of said protection entity and said working entity; and a predefined metric selected from the group consisting of IGP and TE.

The scope and subject matter of non-transitory computer readable medium claim 20 is drawn to the computer program product of using the corresponding method claimed in claims 5 and 7. Therefore computer program product claim 20 corresponds to method claims 5 and 7 and is rejected for the same reasons of obviousness as used in claims 5 and 7 rejections above.

24. **Claims 14 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Young, and in view of Bates.

25. Regarding claim 14

Young discloses *A system for selecting entities within an MPLS network* **("this invention also applies to other connection-oriented protection switched technology using end-to-end tunnel (e.g. MPLS-TP tunnel or GRE)…" [0035])**, *comprising:*

a data structure comprising a plurality of transport entity descriptors **("The IEEE802.1Qay standard initially specified a one for one (1:1) linear protection between a source and a destination in a network. This capability is accomplished using two tunnels or Traffic Engineered Service Instances (TESIs) which link the maintenance endpoints of the source and destination using a different path through the network." [0003])**;

an entity protection switch configured to switch between a working entity and a protection entity **("FIG. 6 is a diagrammatic illustration of a load-sharing configuration of a 1:1 state machine." [0033])**; *and*

Young does not specifically teach that digital logic configured to select said working entity and said protection entity from said plurality of transport entity descriptors, comprising: logic configured to determine a probability of concurrent failure of said working entity and said protection entity; and logic configured to determine an entity cost of said plurality of transport entity descriptors.

In an analogous art, **Bates discloses** *digital logic* **("FIG. 6 is a block diagram of an embodiment in which a supernode is hosted in a computer separate from a router. The router 106A is located within a service provider network 102 and is coupled through Internet 101 to a computer 600. The router 106A hosts an operating system 202, IP stack 204, TCP module 206, BGP module 208, and IGP module 210. Links 212 couple the BGP module 208 and IGP module 210 to peer-to-peer supernode logic 214 and network-aware peer-to-peer supernode logic 212 in computer 600." [0055])** *configured to select said working entity and said protection entity from said plurality of transport entity descriptors* **(as afore-mentioned in claim 2 discussion)**, *comprising:*

logic configured to determine a probability of concurrent failure of said working entity and said protection entity **(as afore-mentioned in claim 5 discussion)**; *and*

logic configured to determine an entity cost of said plurality of transport entity descriptors **(as afore-mentioned in claim 10 discussion)**.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Young's system for sharing a protection path between at least two protection groups in a network to include Bates' method for managing and improving the operation of peer-to-peer networks in order to improve network routing efficiency **"The needs identified in the foregoing Background, and other needs and objects that will become apparent for the following description, are achieved in the present invention, which comprises, in one aspect, a data processing method, comprising establishing a first node in a peer-to-peer data communications network, wherein the node is configured as a supernode in conformance with a peer-to-peer communications protocol, wherein the first node is configured as an active listener to one or more network routing protocols executing at a network router; receiving a routing information message from one of the network routing**

protocols; modifying an operational characteristic of the first node in response to the routing information message; receiving a request from a second node in the peer-to-peer network for a resource that is known to the first node; and responding to the request based on the modified operational characteristic." Bates [0033]. Thus, a person of ordinary skill would have appreciated the ability to incorporate Bates' method for managing and improving the operation of peer-to-peer networks into Young's system for sharing a protection path between at least two protection groups in a network since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

26. Regarding claim 15

Young, as modified by Bates, previously discloses *The system of claim 14*

Young also discloses *wherein said entity protection switch comprises a 1:1 switch* **("The present invention generally relates to protection switching for telecommunication network and, in particular, to the use of 1:1 protection state machines for alternative protection schemes and for load sharing." [0001])**.

27. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Young, in view of Bates, and further in view of Tochio.

28. Regarding claim 16

Young, as modified by Bates, previously discloses *The system of claim 14*

The combination of Young/Bates is silent regarding wherein said entity protection switch comprises a 1+1 switch.

In an analogous art, **Tochio discloses** *wherein said entity protection switch comprises a 1+1 switch* **("For example, if the network is an Ethernet network, VLAN (Virtual Local Area Network) based protection modes, that is, 1:1 unidirectional and bidirectional protection modes and 1+1 unidirectional and bidirectional protection modes are defined." col. 1, lines 63-67).**

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Young's system for sharing a protection path between at least two protection groups in a network, as modified by Bates, to include Tochio's technique of enabling redundant communication between nodes in a network in order to establish backup communication path **"The present invention relates to a technique of enabling redundant communication between nodes in a network, and, more particularly, to a packet communication method and a packet communication device capable of effectively using a communication bandwidth of a backup communication path in 1:1 redundant communication. In the 1:1 redundant communication, nodes are interconnected by a working communication path and the backup communication path. When the working communication path operates under normal conditions, no redundant packets are transmitted via the backup communication path." [Tochio] col. 1, lines 8-18.** Thus, a person of ordinary skill would have appreciated the ability to incorporate Bates' method for managing and improving the operation of peer-to-peer networks into Young's system for sharing a protection path between at least two protection groups in a network since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

Allowable Subject Matter

29. **Claim 13** recites the feature *"…**sequentially replacing** said working entity and said protection entity…"* **(bold emphasis)**. This feature when combined with other features in claim 13 and its parent claims, conventional techniques of record in the art appear to have failed to anticipate or render obvious.

Claim 13 is objected to as being dependent upon a rejected base claim 1, 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 CHUONG M. NGUYEN whose telephone number is (571) 272-8184. The examiner can normally be reached on Monday-Thursday 9 am - 5 pm (Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Lai can be reached on (571) 272-9741. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/CHUONG M NGUYEN/
Patent Examiner, Art Unit 2411

/Andrew Lai/
Supervisory Patent Examiner, Art Unit 2411

Notice of References Cited	Application/Control No. 13/311,128	Applicant(s)/Patent Under Reexamination COHN ET AL.	
	Examiner CHUONG M. NGUYEN	Art Unit 2411	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2007/0064702 A1	03-2007	Bates et al.	370/392
*	B	US-2010/0157794 A1	06-2010	Nakash, Shell	370/228
*	C	US-2010/0309778 A1	12-2010	Young, Kenneth W.	370/219
*	D	US-7,961,602 B2	06-2011	Tochio, Yuji	370/227
	E	US-			
	F	US-			
	G	US-			
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	J	US-			
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	~~2447~~
	Examiner Name	Chuong M. Nguyen
	Attorney Docket Number	40552-6169

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	6314093	B1	2001-11-06	Mann et al	
	2	7561534	B2	2009-07-14	Alicherry et al	

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	1	20100157794	A1	2010-06-24	Nakash	
	2	20050185654	A1	2005-08-25	Zadikian et al	

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	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	~~2447~~
	Examiner Name	Chuong M. Nguyen
	Attorney Docket Number	40552-6169

CERTIFICATION STATEMENT

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Signature		Date (YYYY-MM-DD)	2012-12-21
Name/Print	Peter A. Nieves	Registration Number	48173

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13311128	COHN ET AL.
	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

✓	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	12/17/2013								
	1	✓								
	2	✓								
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	18	✓								
	19	✓								
	20	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	212	((daniel near2 cohn) or (rafi near2 ram)).inv.	US-PGPUB; USPAT	AND	ON	2013/12/12 12:47
L2	23	1 and (mpls or (multiprotocol near label near switch$6))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:48
L3	0	2 and ((protection or working) near enity).clm.	US-PGPUB; USPAT	AND	ON	2013/12/12 12:49
L4	1	2 and ((protection or working) near entity).clm.	US-PGPUB; USPAT	AND	ON	2013/12/12 12:49
L5	10	(mpls or (multiprotocol near label near switch$6)) and ((select$6 or add$6 or remov$6 or chang$6) with ((active or protection or working) adj entity))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:51
L6	9	5 and @ad<"20110622"	US-PGPUB; USPAT	AND	ON	2013/12/12 12:51
L7	0	6 and (cost with (metric or function))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:52
L8	1	6 and cost	US-PGPUB; USPAT	AND	ON	2013/12/12 12:52
L9	0	8 and (cost same ((interior near gateway near protocol) or igp or te or (traffic near engineering)))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:53
L10	2	6 and ((interior near gateway near protocol) or igp or te or (traffic near engineering))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:54
L11	31	(mpls or (multiprotocol near label near switch$6)) and ((select$6 or add$6 or remov$6 or chang$6) with ((active or protection or working) near2 entity))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:55
L12	29	11 and @ad<"20110622"	US-PGPUB; USPAT	AND	ON	2013/12/12 12:56
L13	17	12 and ((interior near gateway near protocol) or igp or te or (traffic near engineering))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:56
L14	0	13 and (cost with (metric or function))	US-PGPUB; USPAT	AND	ON	2013/12/12 12:56
L15	0	13 and cost	US-PGPUB; USPAT	AND	ON	2013/12/12 12:56

L16	4	13 and "370".clas.	US-PGPUB; USPAT	AND	ON	2013/12/12 12:57
L17	6	"6314093".pn. or "7561534".pn. or "20100157794" or "20050185654"	US-PGPUB; USPAT	AND	ON	2013/12/12 13:01
L18	8	(US-20100309778-$ or US-20100238791-$ or US-20050185654-$ or US-20100157794-$).did. or (US-7961602-$ or US-8184526-$ or US-6314093-$ or US-7561534-$).did.	US-PGPUB; USPAT	AND	ON	2013/12/12 13:01
L19	8	18 and @ad<"20110622"	US-PGPUB; USPAT	AND	ON	2013/12/12 13:01
L20	5	19 and (mpls or (multiprotocol near label near switch$6))	US-PGPUB; USPAT	AND	ON	2013/12/12 13:02
L21	2	19 and (cost with (metric or function))	US-PGPUB; USPAT	AND	ON	2013/12/12 13:02
L22	4	19 and cost	US-PGPUB; USPAT	AND	ON	2013/12/12 13:03
L23	5	19 and ((interior near gateway near protocol) or igp or te or (traffic near engineering))	US-PGPUB; USPAT	AND	ON	2013/12/12 13:03
L24	0	19 and revertive	US-PGPUB; USPAT	AND	ON	2013/12/12 13:04
L25	0	19 and revert$6	US-PGPUB; USPAT	AND	ON	2013/12/12 13:04
L26	3	19 and (1+1)	US-PGPUB; USPAT	AND	ON	2013/12/12 13:04
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L28	4	27 and ((data near2 structure) or (entity near2 switch$6) or (logic or program))	US-PGPUB; USPAT	AND	ON	2013/12/12 13:15

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	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	~~2447~~
	Examiner Name	Chuong M. Nguyen
	Attorney Docket Number	40552-6169

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Signature		Date (YYYY-MM-DD)	2013-11-21
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	Attorney Docket Number	40552-6169

	1	S. Bryant, et al; MPLS-TP Linear Protection; Nokia Siemens Networks, Html markup produced by rfcmarkup 1.104, available from http://tools.ietf.org/tools/rfcmarkup/; June 2, 2011	☐
	2	Haiyan Zhang et al; Linear Protection Switching in MPLS-TP; Telecom Italia; Html markup produced by rfcmarkup 1.104, available from http://tools.ietf.org/tools/rfcmarkup/; July 12, 2010	☐

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SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/311,128	12/05/2011 RULE	370	2411	40552-6169

APPLICANTS

INVENTORS

Daniel Cohn, Raanana, ISRAEL;
Rafi Ram, Herzliya, ISRAEL;

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

This appln claims benefit of 61/499,943 06/22/2011

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
12/15/2011

Foreign Priority claimed	☐ Yes ☑ No		STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No	☐ Met after Allowance	ISRAEL	6	20	3
Verified and Acknowledged	/CHUONG M NGUYEN/ Examiner's Signature	Initials				

ADDRESS

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701
UNITED STATES

TITLE

METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

FILING FEE RECEIVED		
595	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
	13311128	COHN ET AL.
	Examiner	**Art Unit**
	CHUONG M NGUYEN	2411

CPC- SEARCHED		
Symbol	**Date**	**Examiner**

CPC COMBINATION SETS - SEARCHED		
Symbol	**Date**	**Examiner**

US CLASSIFICATION SEARCHED			
Class	**Subclass**	**Date**	**Examiner**
370	219, 227-228, 392	12/12/2013	CN

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
EAST search (inventorship, Double Patenting, key terms etc.)	12/12/2013	CN

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

/CHUONG M NGUYEN/ Patent Examiner.Art Unit 2411	

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13311128
Filing Date	2011-12-05
First Named Inventor	Daniel Cohn
Art Unit	2447
Examiner Name	
Attorney Docket Number	40552-6169

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					

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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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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							☐

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]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	2447
	Examiner Name	
	Attorney Docket Number	40552-6169

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		Date (YYYY-MM-DD)	2013-11-21
Name/Print	Peter A. Nieves	Registration Number	48173

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.**

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	2447
	Examiner Name	
	Attorney Docket Number	40552-6169

	1	S. Bryant, et al; MPLS-TP Linear Protection; Nokia Siemens Networks, Html markup produced by rfcmarkup 1.104, available from http://tools.ietf.org/tools/rfcmarkup/; June 2, 2011	☐
	2	Haiyan Zhang et al; Linear Protection Switching in MPLS-TP; Telecom Italia; Html markup produced by rfcmarkup 1.104, available from http://tools.ietf.org/tools/rfcmarkup/; July 12, 2010	☐

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[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.

Electronic Acknowledgement Receipt

EFS ID:	17482602
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	40552-6169
Receipt Date:	22-NOV-2013
Filing Date:	05-DEC-2011
Time Stamp:	16:10:57
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)	S0295130.pdf	202518 493feeec4719629e01cd93538a478a4e308ee3b3	no	3

Warnings:

Information:

This is not an USPTO supplied IDS fillable form					
2	Non Patent Literature	S0294323.pdf	138492 70f9f3281d3b3c73f7928e3fca32d8ea5968ad99	no	19
Warnings:					
Information:					
3	Non Patent Literature	S0294320.pdf	169427 d7e2d508aa9b39164729d939f5af12d2326052e6	no	28
Warnings:					
Information:					
			Total Files Size (in bytes):	510437	

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New International Application Filed with the USPTO as a Receiving Office
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	2447
	Examiner Name	
	Attorney Docket Number	40552-6169

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	6314093	B1	2001-11-06	Mann et al	
	2	7561534	B2	2009-07-14	Alicherry et al	

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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
	1	20100157794	A1	2010-06-24	Nakash	
	2	20050185654	A1	2005-08-25	Zadikian et al	

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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	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	2447
	Examiner Name	
	Attorney Docket Number	40552-6169

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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		☐

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Examiner Signature		Date Considered	

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

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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.

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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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13311128
	Filing Date	2011-12-05
	First Named Inventor	Daniel Cohn
	Art Unit	2447
	Examiner Name	
	Attorney Docket Number	40552-6169

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

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☐ 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		Date (YYYY-MM-DD)	2012-12-21
Name/Print	Peter A. Nieves	Registration Number	48173

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.**

Electronic Acknowledgement Receipt

EFS ID:	14573695
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	40552-6169
Receipt Date:	28-DEC-2012
Filing Date:	05-DEC-2011
Time Stamp:	08:46:35
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)	S0145953.pdf	271196 1eb9de1d6d46f48ffebb5c60f61720542af4424d	no	4

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New International Application Filed with the USPTO as a Receiving Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/311,128	12/05/2011	Daniel Cohn	40552-6169

CONFIRMATION NO. 6031

PUBLICATION NOTICE

OC000000058354509

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

Title:METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

Publication No.US-2012-0327762-A1
Publication Date:12/27/2012

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
13/311,128

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	95		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	310		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 30 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 125 =	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 $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	530		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 =	
AMENDMENT A	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
AMENDMENT A	Application Size Fee (37 CFR 1.16(s))									
AMENDMENT A	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	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
AMENDMENT B	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
AMENDMENT B	Application Size Fee (37 CFR 1.16(s))									
AMENDMENT B	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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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
13/311,128	12/05/2011	2447	595	40552-6169	20	3

CONFIRMATION NO. 6031

UPDATED FILING RECEIPT

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

OC000000052079249

Date Mailed: 01/20/2012

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)
Daniel Cohn, Raanana, ISRAEL;
Rafi Ram, Herzliya, ISRAEL;

Assignment For Published Patent Application
Orckit-Corrigent, Tel Aviv, ISRAEL

Power of Attorney: The patent practitioners associated with Customer Number 57449

Domestic Priority data as claimed by applicant
This appln claims benefit of 61/499,943 06/22/2011

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 12/15/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/311,128**

Projected Publication Date: 12/27/2012

Non-Publication Request: No

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

Title

METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

Preliminary Class

709

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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

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

NOT GRANTED

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	13/311,128		
Applicant(s):	Daniel Cohn		
Filing Date:	December 5, 2011		
Art Unit:	2447	Confirmation No.:	6031
Docket No.:	40552-6169		
Title:	**METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES**		

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

RESPONSE TO NOTICE TO FILE MISSING PARTS OF NON-PROVISIONAL APPLICATION

Enclosed herewith in response to the Notice to File Missing Parts of Non-provisional Application mailed December 20, 2011 is the following:

1. The Notice States that an Oath or Declaration is missing.

   Enclosed please find an Executed Declaration (3 pages).

2. The Notice States that a $65 surcharge is required.

   We are paying the $65 surcharge contemporaneous with filing this Response.

Payment of Fee(s)

The fee of **$65.00** is to be paid as follows:

Application No.: 13/311,128

[X] The Director is hereby authorized to charge all fees, or credit an overpayment, to Deposit Account No. 50-1304.

As this Response is electronically-filed, a copy of the Notice to File Missing Parts is not attached.

Respectfully submitted,

SHEEHAN, PHINNEY, BASS + GREEN PA

Dated: 1/7/2012

Peter A. Nieves
Attorney for Applicant
Registration No.: 48,173

Electronic Patent Application Fee Transmittal

Application Number:	13311128
Filing Date:	05-Dec-2011
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Filer:	Peter Anthony Nieves/Karen Morin
Attorney Docket Number:	40552-6169

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

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

Electronic Acknowledgement Receipt

EFS ID:	11811385
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	40552-6169
Receipt Date:	11-JAN-2012
Filing Date:	05-DEC-2011
Time Stamp:	15:03:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$65
RAM confirmation Number	1512
Deposit Account	501304
Authorized User	

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

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

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

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

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	DPOA.pdf	137992 3d6f1dfb7e8fe372c4aadcc5ddbf560aefa899f9	no	3
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	response.pdf	52994 70c51e4de8e15491dfd0d6b6153be1dfb8f2a505	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30280 8d9fafb86248816d3953aa0231600bf6ee3c2d8b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	221266	

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.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) AND POWER OF ATTORNEY	Attorney Docket No.	40552-6169
	First Named Inventor	Daniel Cohn
	COMPLETE IF KNOWN	
☐ Declaration Submitted With Initial Filing	Application No.	13/311,128
OR	Filing Date	December 5, 2011
[X] Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Confirmation No.	6031
	Art Unit	2447
	Examiner Name	

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on December 5, 2011 as United States Application Number or PCT International Application

Number 13/311,128.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, 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.

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

DECLARATION – Utility or Design Patent Application

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

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYY)	Priority Not Claimed	Certified Copy Attached? YES	NO

☐ Additional foreign application numbers are listed on a supplementary priority data sheet attached hereto.

POWER OF ATTORNEY

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

[X] The practitioners/address associated with Customer Number: **57449**.
Please direct all telephone calls to: Peter A. Nieves, Esq.
Telephone: 603-627-8134 Facsimile: 603-641-2353
Email: pnieves@sheehan.com

OR

☐ Correspondence address below:

Name		
Address		
City	State	Zip

Country	Telephone	Email

DECLARATION – Utility or Design Patent Application

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

NAME OF SOLE OR FIRST INVENTOR:	
Daniel Cohn	
Inventor's Signature	Date Jan 5, 2012
Citizenship: IL	
Address 23 Schuartz Street, Raanana IL 43212	
NAME OF ADDITIONAL JOINT INVENTOR(S), IF ANY:	
Rafi Ram	
Inventor's Signature	Date Jan 5, 2012
Citizenship: IL	
Address 23 Hadar Street, Herzliya IL 46326	

Electronic Acknowledgement Receipt

EFS ID:	11811385
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohn
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	40552-6169
Receipt Date:	11-JAN-2012
Filing Date:	05-DEC-2011
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Application Type:	Utility under 35 USC 111(a)

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Submitted with Payment	yes
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	DPOA.pdf	137992 3d6f1dfb7e8fe372c4aadcc5ddbf560aefa899f9	no	3
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	response.pdf	52994 70c51e4de8e15491dfd0d6b6153be1dfb8f2a505	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30280 8d9fafb86248816d3953aa0231600bf6ee3c2d8b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	221266	

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/311,128	12/05/2011	2447	530	40552-6169	20	3

CONFIRMATION NO. 6031

FILING RECEIPT

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c/o PETER NIEVES
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Orckit-Corrigent, Tel Aviv, ISRAEL

Power of Attorney: None

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

Non-Publication Request: No

Early Publication Request: No
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Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/311,128

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	95		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	310		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	125		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 30 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 125 =	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 $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	530		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 =	
AMENDMENT A	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
AMENDMENT A	Application Size Fee (37 CFR 1.16(s))									
AMENDMENT A	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	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
AMENDMENT B	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
AMENDMENT B	Application Size Fee (37 CFR 1.16(s))									
AMENDMENT B	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/311,128	12/05/2011	Daniel Cohn	40552-6169

CONFIRMATION NO. 6031

FORMALITIES LETTER

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

OC000000051539001

Date Mailed: 12/20/2011

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
  Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

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

- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $**65** for a small entity in compliance with 37 CFR 1.27, must be submitted.

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/ldvan/

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Electronic Acknowledgement Receipt

EFS ID:	11542180
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohen
Customer Number:	57449
Filer:	Peter Nieves
Filer Authorized By:	
Attorney Docket Number:	40552-6169
Receipt Date:	05-DEC-2011
Filing Date:	
Time Stamp:	16:21:03
Application Type:	Utility under 35 USC 111(a)

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12/15/2011 VVAN11   00000015 501304   13311128

01 FC:4011          95.00 DA
02 FC:2111         310.00 DA
03 FC:2311         125.00 DA

Adjustment Date: 12/15/2011  VVAN11
12/06/2011 INTEFSW  00001806 501304 13311128
01 FC:1011         380.00 CR
02 FC:1111         620.00 CR
03 FC:1311         250.00 CR
```

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1250
RAM confirmation Number	1806
Deposit Account	501304
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

Method for Supporting MPLS Transport Entity Recovery with Multiple Protection Entities

Inventors: Daniel Cohn, Rafi Ram

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Patent Application serial number 61/499,943, filed June 22, 2011, entitled "Method for Supporting MPLS Transport Path Recovery with Multiple Protection Paths," which is incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

The present invention relates to telecommunications and more particularly, is related to high availability of telecommunication entities.

BACKGROUND OF THE INVENTION

Availability of network connections has been the focus of increasing interest in the telecommunications field. In particular, the practice of maintaining redundant network devices and connections has become commonplace. Under the practice of redundancy, when a failure is detected in a network device or connection, network traffic is switched to a standby network device or connection. While some data may be lost in the switch-over process, most network protocols, for example TCP/IP, have integral recovery mechanisms, such as retransmission of dropped packets, that are intended to minimize disruption of network traffic during a switch-over from active to standby equipment or connections. If the disruption is brief, these recovery mechanisms will maintain network connections. However, if the disruption is more prolonged, connections may drop.

The multiprotocol label switching-transport profile (MPLS-TP) framework requires support of the transport entity or trail recovery. For example, in the event of a span or a node failure of a label switch path (LSP), pseudowire (PW) or sub network connection (SNC), the entity should recover within 50 ms of the failure. This is known as a sub-50 ms recovery, or a sub-50 ms traffic hit. References to a transport entity in this document are applicable to LSP, PW and SNC.

Several MPLS-TP mechanisms exist to accomplish a sub-50 ms node or span failure recovery by defining a second transport entity, the protection entity, between the same endpoints as the original entity, the working entity, where the working and protection entities do not share the span or nodes against whose failure protection is required. When a failure is detected at the working entity, the endpoints switch traffic to the protection entity. Traffic recovery is expected to occur within 50 ms of fault detection. These mechanisms rely on proactive connectivity verification between the endpoints for fast failure detection, and support both 1:1 and 1+1 protection architectures.

Examples of such mechanisms can be found in IETF draft-ietf-mpls-tp-linear-protection, IETF draft-zulr-mpls-tp-linear-protection-switching, and ITU-T G.8131 T-MPLS Linear Protection. However, in network environments where span or node failure likelihood is relatively high, existing MPLS-TP linear protection mechanisms may not meet operator availability requirements since they may not protect against one or several failures affecting both the working entity and the protection entity. To overcome the abovementioned shortcomings and meet operator requirement in such an environment, there is a need for a protection mechanism to provide sub-50 ms recovery in the event of a failure in any of the transport entities.

SUMMARY OF THE INVENTION

Embodiments of the present invention provide a method for supporting MPLS transport entity recovery with multiple protection entities. Briefly described, a first aspect of the present invention is directed to an entity selection method by an MPLS network device. The method includes the steps of providing a plurality of MPLS transport entities between a first endpoint and a second endpoint, determining an overall cost for each pair of entities of the plurality of entities, selecting a pair of entities from the plurality of transport entities based at least in part upon the entity pair cost, and if an entity pair reselection event occurs, reselecting the entity pair. The entity pair reselection event may be one of the following events: adding an entity, removing an entity, an operational status change in one of the entities, and an entity cost change.

The method of the first aspect may further include the steps of selecting a working entity from the plurality of transport entities, selecting a protection entity from the plurality of transport entities, and selecting an active entity from the set consisting of the working entity and the protection entity, wherein selecting an entity further includes minimizing a cost function. The cost function may include minimizing a probability of concurrent failure of the protection entity and the working entity. The cost function may further incorporate a predefined metric, such as IGP and/or TE.

A second aspect of the present invention is directed to a system for selecting entities within an MPLS network. The system includes a data structure including a plurality of transport entity descriptors, an entity protection switch configured to switch between a working entity and a protection entity, and digital logic configured to select the working entity and the protection entity from the plurality of transport entity descriptors. The digital logic includes logic configured to determine a probability of concurrent failure of the working entity and the

protection entity, and logic configured to determine an entity cost of the plurality of transport entity descriptors.

Other systems, methods and features of the present invention will be or become apparent to one having ordinary skill in the art upon examining the following drawings and detailed description. It is intended that all such additional systems, methods, and features be included in this description, be within the scope of the present invention and protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings are included to provide a further understanding of the invention, and are incorporated in and constitute a part of this specification. The drawings illustrate embodiments of the invention and, together with the description, serve to explain the principals of the invention.

FIG. 1 is a block diagram of a first exemplary embodiment of an entity protection system.

FIG. 2 is a logic flowchart for a first exemplary embodiment for an entity selection method.

FIG. 3 is a logic flowchart expanding upon entity selection for the first exemplary embodiment for an entity selection method.

FIG. 4A is a logic flowchart of a first method for determining overall cost of an entity.

FIG. 4B is a logic flowchart of a second method for determining overall cost of an entity.

FIG. 4C is a logic flowchart of a third method for determining overall cost of an entity.

FIG. 5 is a schematic diagram illustrating an example of a system for executing functionality of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the description to refer to the same or like parts.

The present invention includes a method to provide a high probability of sub-50 ms protection against multiple span or node failures, relying on multiple fully or partially resource disjoint transport entities between two endpoints. In addition, the method attempts to optimize network efficiency by minimizing the cost of an active entity. The steps for the method may make use of elements used for a MPLS-TP linear protection scheme.

An exemplary embodiment may include a network with a set of N MPLS-TP transport entities, for example, label switch paths (LSPs) or pseudo wires (PWs) between a first endpoint and a second endpoint. It is preferable that an operator will define the entity set such that, with high probability, at least one entity will stay up in the event of multiple span or node failures.

A first exemplary embodiment of an entity protection system 100 is shown in FIG. 1. The first embodiment for executing the functionality may be a computer, as described below. An entity protection switch 130 switches between a working entity 122 and a protection entity 124 from a set of entities 120 or entity descriptors represented within an entity selection logic block 110. Each entity 120 represents a network route between a first endpoint and a second endpoint, and may include entity cost data associated with each entity, for example, interior gateway protocol (IGP) data, traffic engineering (TE) data, and probability of entity failure. An overall cost logic block 140 uses results from a concurrent failure probability matrix 150 and an entity cost determination block 160 to select the working entity 122 and the protection entity 124 from the set of entities 120, as described below. The concurrent failure probability matrix 150

examines the set of entities 120 and calculates the probability of concurrent failure for each entity pair. For example, a pair having multiple spans and/or nodes in common may be more likely to simultaneously fail than a pair having no spans or nodes in common. Similarly, an entity traversing a network element having a high mean-time-between-failures value may be less likely to fail than an entity traversing a network element having a low mean-time-between-failures value.

The working entity 122 and the protection entity 124 are inputs to an entity protection switch 130. The entity protection switch 130 may employ, for example, an MPLS linear protection scheme such as those defined in IETF draft-ietf-mpls-tp-linear-protection, IETF draft-zulr-mpls-tp-linear-protection-switching, and ITU-T G.8131 T-MPLS Linear Protection. However, a person having ordinary skill in the art will appreciate that other protection switching mechanisms may be employed within the scope of this disclosure. The entity protection switch 130 may select either the working entity 122 or the protection entity 124 to be the active entity 126.

FIG. 2 is a logic flowchart for a first exemplary embodiment for an entity selection method. It should be noted that any process descriptions or blocks in flow charts should be understood as representing modules, segments, portions of code, or steps that include one or more instructions for implementing specific logical functions in the process, and alternative implementations are included within the scope of the present invention in which functions may be executed out of order from that shown or discussed, including substantially concurrently or in reverse order, depending on the functionality involved, as would be understood by those reasonably skilled in the art of the present invention.

A plurality of transport entities between a first endpoint and a second endpoint are provided, as shown by block 210. Each possible entity pairing is examined for cost in turn, starting with a first entity pair, as shown by block 215. An overall cost for each pair of the plurality of transport entities is determined, as shown by block 220. The overall cost may be determined based on the probability of simultaneous failure of the working and protection entities (SFP), as described below, the entity cost, or a combination of SFP and entity cost. The entity cost may be defined as the sum of the link metrics, for example IGP or TE metrics, along the entity. Three embodiments of overall cost determination are described in more detail below (FIGS. 4A, 4B and 4C).

If all entities have not been examined, as shown by decision block 222, a next entity pairing is chosen for analysis, as shown by block 224, and the overall cost for the next entity pair is determined, as shown by block 220. If all of the entities have been examined, an entity pair is selected, as shown in block 230. The entity pair may generally be selected for several purposes, for example, each entity of the selected entity pair may be selected as a working entity, a protection entity, or an active entity, as described further below. The entity pair may be selected to minimize an overall cost, as described further below. Entity pair reselection may be triggered by an event, as shown by block 240. For example, entity pair reselection may be triggered when the operational status changes for an entity in the plurality of transport entities, when an entity is added to the plurality of transport entities, when an entity is removed from the plurality of transport entities, or due to combined cost changes in one or more entities. When entity pair reselection is triggered, the overall cost for one or more entities may be re-determined at block 220, for example, for an entity that is added to the plurality of transport entities, or for an entity in the plurality of transport entities where operational changes have occurred. Entity pair

reselection may be performed, as shown by block 230, where, for example, a new working entity is selected and a new protection entity is selected.

FIG. 3 is a flowchart expanding on the entity selection process as shown by block 230 (FIG. 2). An entity pair is selected, as shown by block 310. The entity pair may be selected based upon the overall cost function, as determined above, as shown by block 220 (FIG. 2). Cost functions are described further below. One entity of the entity pair may be selected as a working entity, as shown by block 320. Similarly, a protection entity may be selected from the entity pair, as shown by block 330. An active entity may be selected from the working entity and the protection entity, as shown by block 340. The protection entity may be selected before the working entity, or the working entity may be selected before the protection entity. The active entity may be selected after either or both the working entity and/or the protection entity have been selected. It should be noted that entity pair reselection, as triggered by a reselection event, may be substantially similar to initial entity selection.

Entity pair reselection may not impact traffic as long as the newly selected entity pair does not change the currently active entity. To ensure that the replaced entity is not active during entity reselection, if entity reselection results in both working and protection entities being replaced, the working entity and the protection entity may be sequentially replaced, for example, using manual commands in the MPLS-TP linear protection block. It should be noted that sequentially replacing entities preferably involves replacing a first entity and afterward replacing a second entity.

For example, in a scenario where a first working entity is selected as a first active entity and a first protection entity is selected as a standby entity, a replacement entity may be intended to supplant the first active entity. The replacement entity may be selected in place of the first

protection entity, thereby becoming a second protection entity. The entity protection switch 130 (FIG. 1) may then switch to the second protection entity, designating the second protection entity as the active entity. Thereafter, the first working entity may serve as a standby entity, or may be replaced by an alternative standby entity. If desired, the active entity may then be designated as the working entity, and the alternative standby entity may be designated as the protection entity.

When a span or node failure affects only one of the selected entities, for example, the working or protection entity, traffic may be recovered in less than 50ms by entity protection switching, for example, the MPLS linear protection scheme. When the working and protection entities fail at the same time, traffic is recovered by the entity pair reselection process. The entity pair reselection process during concurrent failure of the protection entity and the working entity may not meet the sub-50ms traffic hit requirement, due to the calculations involved in the entity pair reselection process triggered by the entity failures or to the entity replacement process itself.

An entity selection method may generally minimize an overall cost function. The cost function for an entity pair is calculated, as shown in block 220 (FIG. 2), and an entity pair may be selected based in part upon the calculated cost function in block 310 (FIG. 3). Flowcharts expanding upon selecting a pair based upon the overall cost function of block 310 (FIG. 3) are shown by FIGS. 4A, 4B, and 4C. A first embodiment of the overall cost minimization minimizes the probability of an over-50 ms traffic hit, as shown by FIG. 4A. The entity pair may be selected based upon each entity of the pair having the lowest possible probability of individual failure. Alternatively, the entity pair may be selected to minimize the probability of a span or node failure simultaneously affecting the working and protection entities, as shown by block 440, and further described below.

A second embodiment of overall cost minimization shown in FIG. 4B, minimizes entity cost according to one or more predefined metrics (block 450), for example, interior gateway protocol (IGP) or traffic engineering (TE) data, for the selected working entity. When network efficiency optimization is desired, the MPLS linear protection block may be configured to be revertive, and therefore, in the absence of entity failures, the working entity will be active.

Since the first overall cost minimizing embodiment and the second overall cost minimizing embodiment may produce conflicting results, a third overall cost minimizing entity selection embodiment, shown in FIG. 4C, may minimize an operator-defined function of the simultaneous failure probability (SFP) and the entity cost. An example of this function would be to minimize SFP (block 410) by selecting working and protection entity pairs with the lowest SFP, and, if there are multiple pairs with the same SFP within an error margin, as shown by block 420, choosing the pair that minimizes entity IGP cost (block 430). It should be noted that the term "simultaneous failure" encompasses concurrent failures of the working and protection entities, such that the failure of the working entity and the failure of the protection entity overlap in time, but the failures do not necessarily begin at the exact same time.

The probability of simultaneous failure in entities i and j can be expressed as shown in Eq. 1,

$$SFP_{ij} = \sum_k P(C_{ij}^k) \quad \text{Eq. 1}$$

where C_{ij}^k is the k-th element common to entities i and j, and P(x) is the element failure probability function. A metric related to the probability of an entity failure is known as the availability of the entity. Entity availability measures the probability that an end-to-end connection will survive the failure of one or more spans or nodes between the endpoints.

The probability of multiple failures affecting two entities, such that the second failure occurs before the entity pair reselection process triggered by the first failure was completed, may be considered low enough to be disregarded.

Entity elements may include spans and/or nodes. Span failure probabilities may be assigned, for example, manually by a network operator based on network knowledge. Alternatively, span failure probabilities may be automatically calculated by the network, for example, by a management entity or by the endpoints themselves, based on span parameters such as span length, which in some scenarios can be automatically detected by the endpoints, for example, based on measured received optical power. Node failure probabilities may be configured by the operator, typically based on vendor-provided mean time between failure (MTBF) parameters, and on infrastructure failure probability, for example, power failure probability.

As discussed above, entity selection logic may select a pair of entities that minimize a combined cost function, or cost logic, of the entity cost and the SFP. As shown in FIG. 1, this may be calculated by populating entries, for example, entity descriptors 120, in the entity selection logic 110, for example, containing SFP values for each entity pair as calculated by a concurrent failure probability matrix 150, and the entity cost vector 160, for example, containing entity cost for each entity, to a combined cost logic function 140 that yields a combined cost metric for each entity pair.

System

As previously mentioned, the present system for executing the functionality described in detail above may be a computer, an example of which is shown in the schematic diagram of FIG. 5. The system 500 contains a processor 502, a storage device 504, a memory 506 having

software 508 stored therein that defines the abovementioned functionality, input and output (I/O) devices 510 (or peripherals), and a local bus, or local interface 512 allowing for communication within the system 500. The local interface 512 can be, for example but not limited to, one or more buses or other wired or wireless connections, as is known in the art. The local interface 512 may have additional elements, which are omitted for simplicity, such as controllers, buffers (caches), drivers, repeaters, and receivers, to enable communications. Further, the local interface 512 may include address, control, and/or data connections to enable appropriate communications among the aforementioned components.

The processor 502 is a hardware device for executing software, particularly that stored in the memory 506. The processor 502 can be any custom made or commercially available single core or multi-core processor, a central processing unit (CPU), an auxiliary processor among several processors associated with the present system 500, a semiconductor based microprocessor (in the form of a microchip or chip set), a macroprocessor, or generally any device for executing software instructions.

The memory 506 can include any one or combination of volatile memory elements (*e.g.*, random access memory (RAM, such as DRAM, SRAM, SDRAM, *etc.*)) and nonvolatile memory elements (*e.g.*, ROM, hard drive, tape, CDROM, *etc.*). Moreover, the memory 506 may incorporate electronic, magnetic, optical, and/or other types of storage media. Note that the memory 506 can have a distributed architecture, where various components are situated remotely from one another, but can be accessed by the processor 502.

The software 508 defines functionality performed by the system 500, in accordance with the present invention. The software 508 in the memory 506 may include one or more separate programs, each of which contains an ordered listing of executable instructions for implementing

logical functions of the system 500, as described below. The memory 506 may contain an operating system (O/S) 520. The operating system essentially controls the execution of programs within the system 500 and provides scheduling, input-output control, file and data management, memory management, and communication control and related services.

The I/O devices 510 may include input devices, for example but not limited to, a keyboard, mouse, scanner, microphone, *etc.* Furthermore, the I/O devices 510 may also include output devices, for example but not limited to, a printer, display, *etc*. Finally, the I/O devices 510 may further include devices that communicate via both inputs and outputs, for instance but not limited to, a modulator/demodulator (modem; for accessing another device, system, or network), a radio frequency (RF) or other transceiver, a telephonic interface, a bridge, a router, or other device.

When the system 500 is in operation, the processor 502 is configured to execute the software 508 stored within the memory 506, to communicate data to and from the memory 506, and to generally control operations of the system 500 pursuant to the software 508, as explained above.

It will be apparent to those skilled in the art that various modifications and variations can be made to the structure of the present invention without departing from the scope or spirit of the invention. In view of the foregoing, it is intended that the present invention cover modifications and variations of this invention provided they fall within the scope of the following claims and their equivalents.

CLAIMS

What is claimed is:

1. An entity selection method performed by a network device, comprising the steps of:

providing a plurality of MPLS transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair, wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

2. The method of claim 1, wherein said step of selecting an entity pair further comprises:

selecting a working entity from said entity pair; and

selecting a protection entity from said entity pair.

3. The method of claim 2, further comprising the step of selecting an active entity from the set consisting of said working entity and said protection entity.

4. The method of claim 2, wherein selecting an entity pair further comprises minimizing an overall cost function.

5. The method of claim 4, wherein said overall cost function comprises substantially minimizing a probability of concurrent failure of said protection entity and said working entity.

6. The method of claim 4, wherein said overall cost function comprises a predefined entity cost metric.

7. The method of claim 6, wherein said predefined entity cost metric is selected from the group consisting of IGP and TE.

8. The method of claim 4, further comprising the step of configuring said working entity as revertive.

9. The method of claim 4, wherein said overall cost function comprises:

selecting a subset of entity pairs wherein each entity pair of said subset has substantially minimum probability of a concurrent failure of said protection entity and said working entity; and

if said subset comprises at least two entity pairs, selecting an entity pair from said subset that minimizes an entity cost function.

10. The method of claim 9, wherein said entity cost function comprises a predefined metric.

11. The method of claim 10, wherein said predefined metric is selected from the group consisting of IGP and TE.

12. The method of claim 10, further comprising the step of configuring said working entity as revertive.

13. The method of claim 1, further comprising the step of:

if said entity pair reselection results in both working and protection entities being replaced, sequentially replacing said working entity and said protection entity.

14. A system for selecting entities within an MPLS network, comprising:

a data structure comprising a plurality of transport entity descriptors;

an entity protection switch configured to switch between a working entity and a protection entity; and

digital logic configured to select said working entity and said protection entity from said plurality of transport entity descriptors, comprising:

logic configured to determine a probability of concurrent failure of said working entity and said protection entity; and

logic configured to determine an entity cost of said plurality of transport entity descriptors.

15. The system of claim 14 wherein said entity protection switch comprises a 1:1 switch.

16. The system of claim 14 wherein said entity protection switch comprises a 1+1 switch.

17. Computer readable media configured to perform a method comprising the steps of:

providing a plurality of MPLS transport entities between a first endpoint and a second endpoint;

determining an overall cost for each entity pair of said plurality of entities;

selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost; and

if an entity pair reselection event occurs, reselecting said entity pair, wherein said entity pair reselection event is selected from a group consisting of adding an entity to said plurality of transport entities, removing an entity from said plurality of transport entities, an operational status change for one of said plurality of transport entities, and a change in overall cost for one of said plurality of transport entities.

18. The computer readable media of claim 17, wherein said step of selecting an entity pair further comprises:

selecting a working entity from said plurality of transport entities;

selecting a protection entity from said plurality of transport entities; and

selecting an active entity from the set consisting of said working entity and said protection entity.

19. The computer readable media of claim 18, wherein said step of selecting an entity pair further comprises minimizing an overall cost function.

20. The computer readable media of claim 19, wherein said overall cost function comprises:

minimizing a probability of concurrent failure of said protection entity and said working entity; and

a predefined metric selected from the group consisting of IGP and TE.

ABSTRACT

A system and method for selecting MPLS network transport entities between a first endpoint and a second endpoint are presented. Working and protection entities are selected from a set of available entities based upon minimizing the probability of simultaneous failure and/or minimizing a cost function base upon one or more metrics.

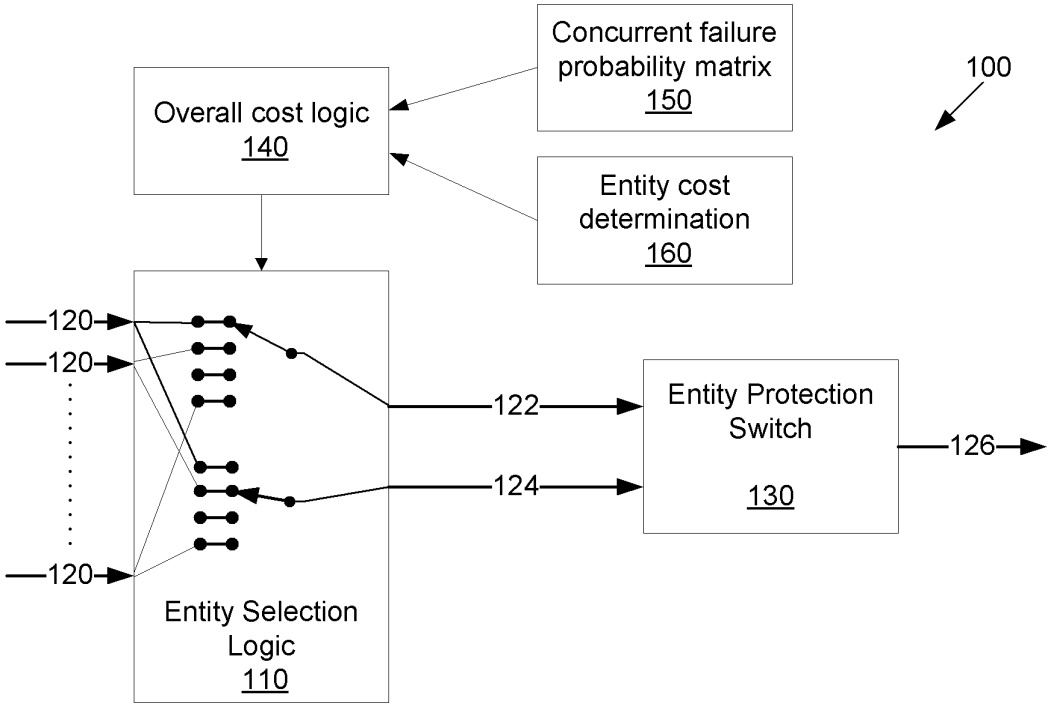
Concurrent failure probability matrix
150
100
Overall cost logic
140
Entity cost determination
160
120
120
120
122
124
Entity Protection Switch
130
126
Entity Selection Logic
110

FIG. 1

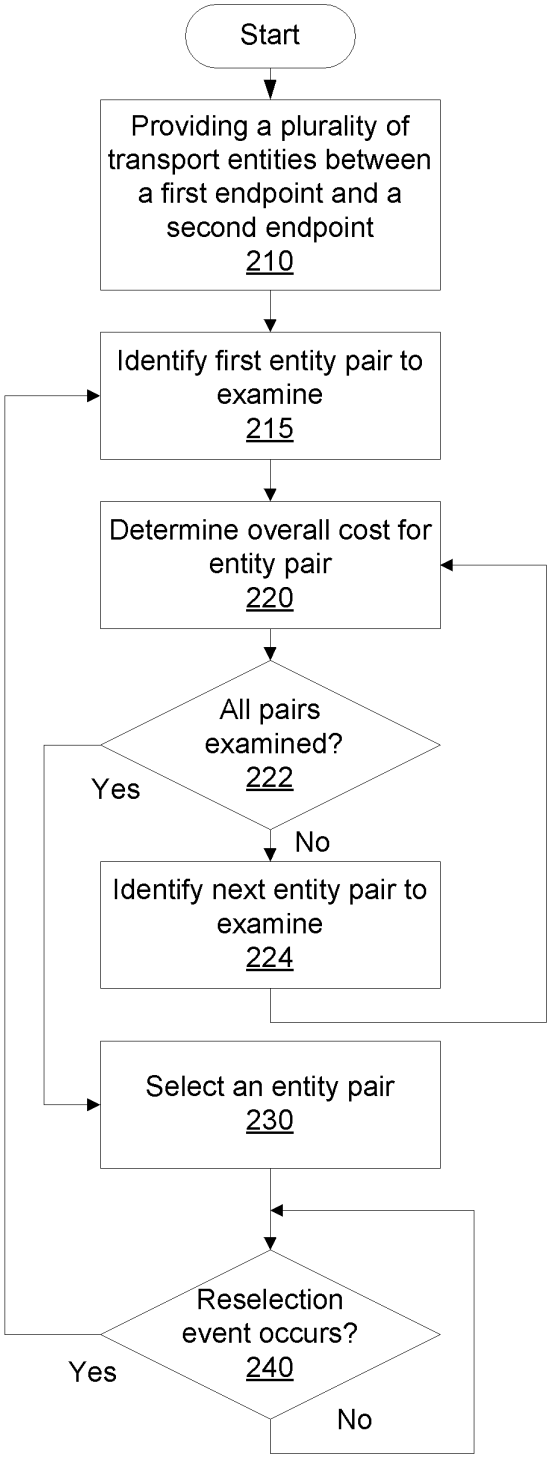
Start
Providing a plurality of transport entities between a first endpoint and a second endpoint
210
Identify first entity pair to examine
215
Determine overall cost for entity pair
220
All pairs examined?
222
Yes
No
Identify next entity pair to examine
224
Select an entity pair
230
Reselection event occurs?
240
Yes
No

FIG. 2

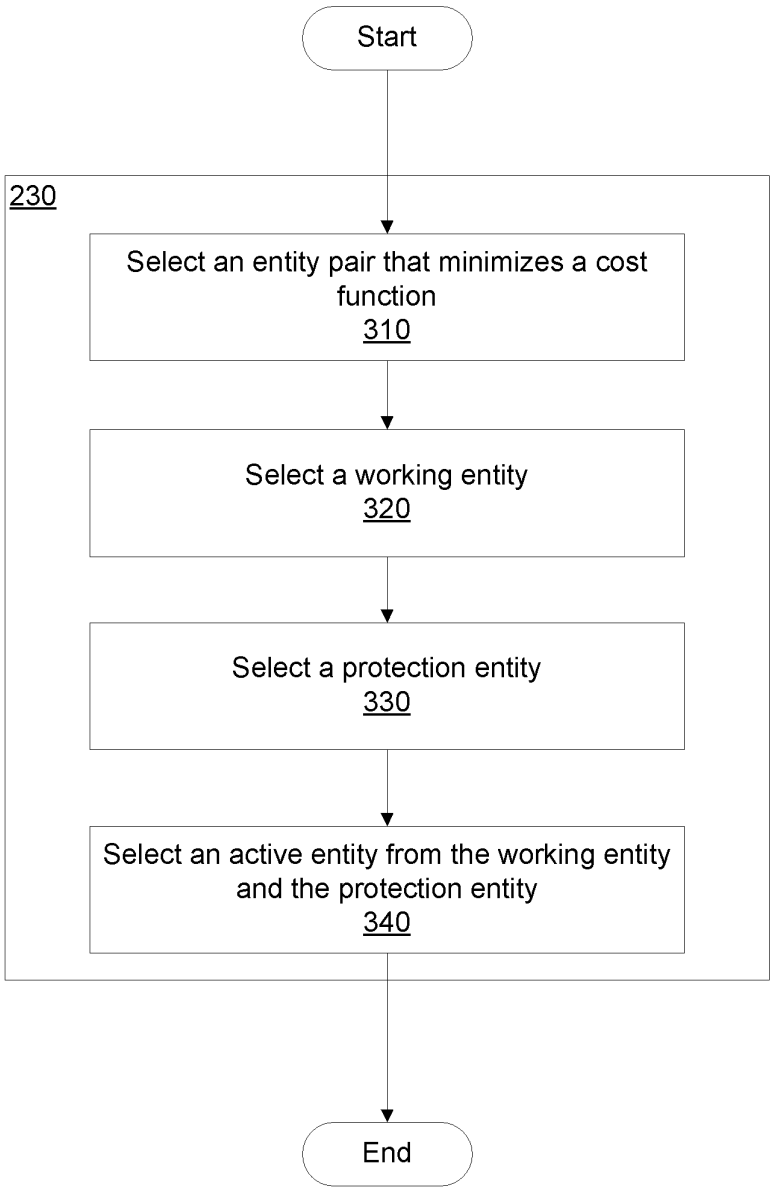
Start
230
Select an entity pair that minimizes a cost function
310
Select a working entity
320
Select a protection entity
330
Select an active entity from the working entity and the protection entity
340
End

FIG. 3

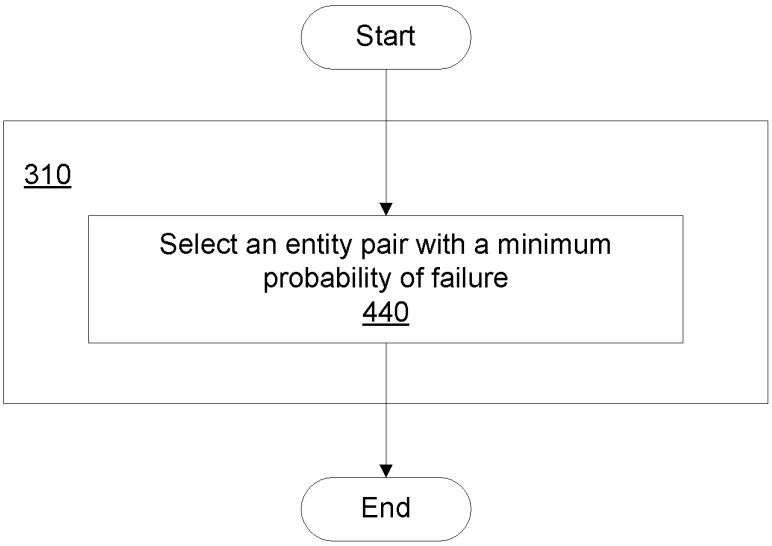
Start
310
Select an entity pair with a minimum probability of failure
440
End

FIG. 4A

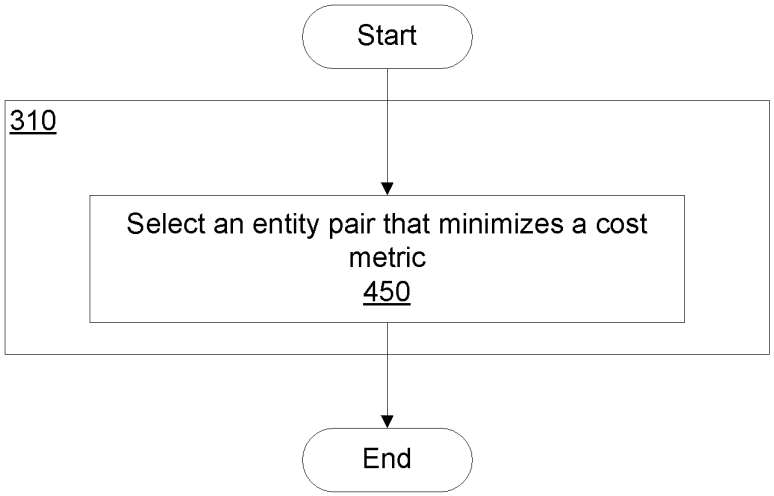
Start
310
Select an entity pair that minimizes a cost metric
450
End

FIG. 4B

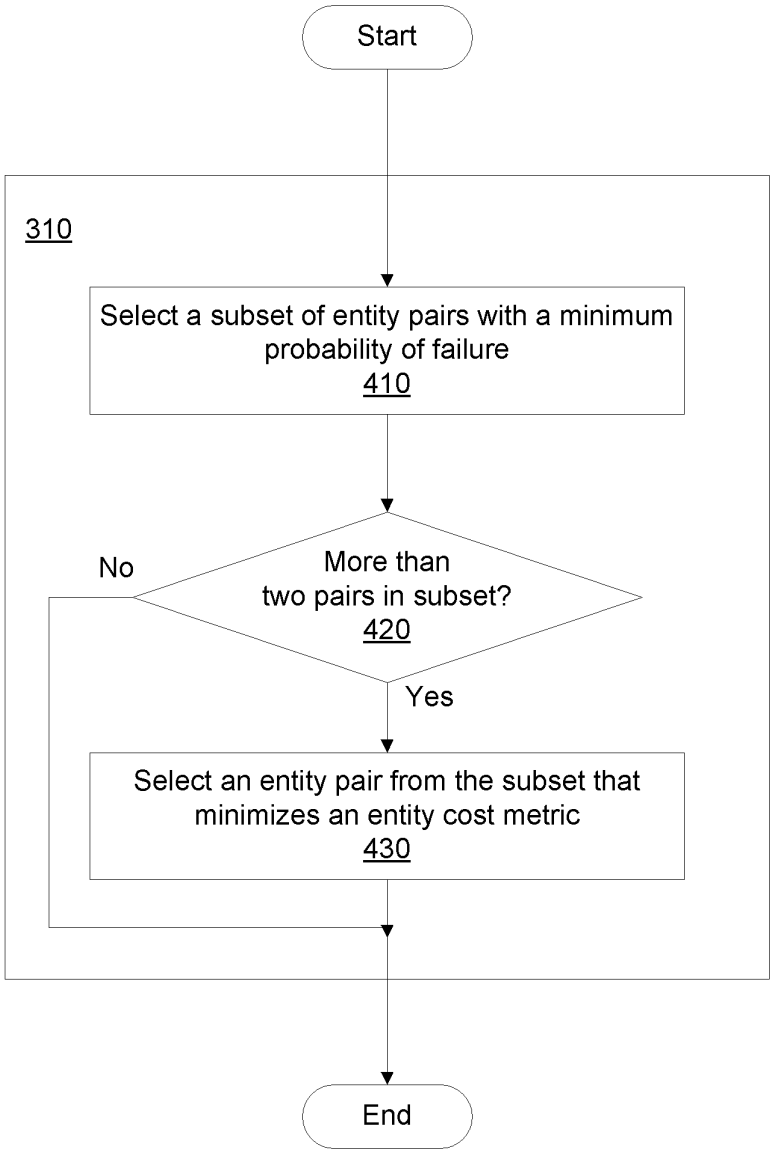
Start
310
Select a subset of entity pairs with a minimum probability of failure
410
More than two pairs in subset?
420
No
Yes
Select an entity pair from the subset that minimizes an entity cost metric
430
End

FIG. 4C

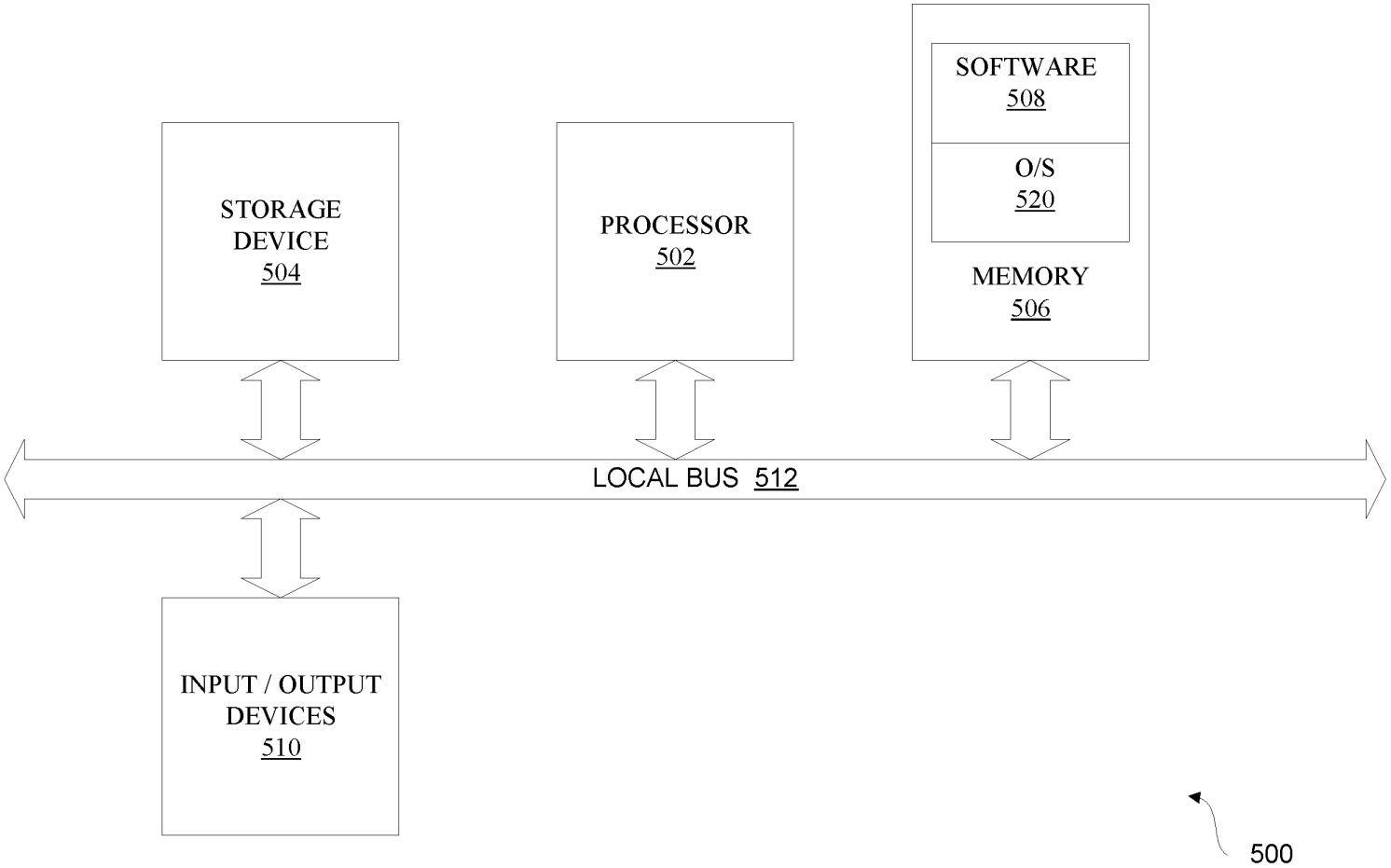
STORAGE DEVICE 504
PROCESSOR 502
SOFTWARE 508
O/S 520
MEMORY 506
LOCAL BUS 512
INPUT / OUTPUT DEVICES 510
500

FIG. 5

PTO/SB/14 (11-08)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	40552-6169
	Application Number	
Title of Invention	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES	

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

Secrecy Order 37 CFR 5.2

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

Applicant Information:

Applicant 1

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

Prefix	Given Name	Middle Name	Family Name	Suffix
	Daniel		Cohn	

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

City	Raanana	State/Province		Country of Residence i	IL

Citizenship under 37 CFR 1.41(b) i IL

Mailing Address of Applicant:

Address 1	23 Schuartz Street		
Address 2			
City	Raanana	State/Province	
Postal Code	43212	Country i	IL

Applicant 2

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

Prefix	Given Name	Middle Name	Family Name	Suffix
	Rafi		Ram	

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

City	Herzliya	Country Of Residence i	IL

Citizenship under 37 CFR 1.41(b) i IL

Mailing Address of Applicant:

Address 1	23 Hadar Street		
Address 2			
City	Herzliya	State/Province	
Postal Code	46326	Country i	IL

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.**

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	40552-6169
	Application Number	
Title of Invention	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES	

Customer Number	57449		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES		
Attorney Docket Number	40552-6169	**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)	6	**Suggested Figure for Publication (if any)**	

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	57449		

Domestic Benefit/National Stage Information:

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

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	non provisional of	61499943	2011-06-22

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

Foreign Priority Information:

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
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	40552-6169
	Application Number	
Title of Invention	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES	

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

Remove

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

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

Assignee Information:

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

Assignee 1

If the Assignee is an Organization check here. ☒

Organization Name	Orckit-Corrigent		
Mailing Address Information:			
Address 1	126 Yigal Allon Street		
Address 2			
City	Tel Aviv	**State/Province**	
Country[i]	IL	Postal Code	67443
Phone Number		Fax Number	
Email Address			

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

Signature:

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

Signature				Date (YYYY-MM-DD)	2011-12-05
First Name	Peter A.	Last Name	Nieves	Registration Number	48173

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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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.

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

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohen
Filer:	Peter Nieves
Attorney Docket Number:	40552-6169

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	380	380
Utility Search Fee	1111	1	620	620
Utility Examination Fee	1311	1	250	250
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1250**

Electronic Acknowledgement Receipt

EFS ID:	11542180
Application Number:	13311128
International Application Number:	
Confirmation Number:	6031
Title of Invention:	METHOD FOR SUPPORTING MPLS TRANSPORT PATH RECOVERY WITH MULTIPLE PROTECTION ENTITIES
First Named Inventor/Applicant Name:	Daniel Cohen
Customer Number:	57449
Filer:	Peter Nieves
Filer Authorized By:	
Attorney Docket Number:	40552-6169
Receipt Date:	05-DEC-2011
Filing Date:	
Time Stamp:	16:21:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1250
RAM confirmation Number	1806
Deposit Account	501304
Authorized User	

File Listing:

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

1		Finalapplication.pdf	673700 854701dfa1cb2036cf19faa5a49a816aa5318dac	yes	19
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	13	
	Claims		14	18	
	Abstract		19	19	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	FinalFig.pdf	55911 65080d350eb4a3e89d2d2e7b4d2a7008b422f240	no	6
Warnings:					
Information:					
3	Application Data Sheet	FinalADS.pdf	280294 f74273d72fbe2df12a79c4a5998661f36021a580	no	4
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
4	Fee Worksheet (SB06)	fee-info.pdf	33104 906d793063fea2004553b57f6e3fdb8ecb3f8f8d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1043009		

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

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

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