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UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for new nonprovisional applications under 37 CFR 1.53(b))</small>		Attorney Docket No.	190071
		First Named Inventor	Joseph L. Vilella
		Title	Mutually secure optical data network and method
		Priority Mail Express® Label No.	Filed via EFS-Web
APPLICATION ELEMENTS <small>See MPEP chapter 600 concerning utility patent application contents.</small>		Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	
<div style="display: flex; flex-direction: row;"><div style="flex: 1; padding: 5px;"><p>1. ☒ Fee Transmittal Form (PTO/SB/17 or equivalent)</p><p>2. ☒ Applicant asserts small entity status. See 37 CFR 1.27</p><p>3. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.</p><p>4. ☒ Specification [Total Pages <u>16</u>] Both the claims and abstract must start on a new page. (See MPEP § 608.01(a) for information on the preferred arrangement)</p><p>5. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets <u>6</u>]</p><p>6. Inventor's Oath or Declaration [Total Pages _____] (including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))</p><p>a. ☐ Newly executed (original or copy)</p><p>b. ☐ A copy from a prior application (37 CFR 1.63(d))</p><p>7. ☒ Application Data Sheet * See note below. See 37 CFR 1.76 (PTO/AIA/14 or equivalent)</p><p>8. CD-ROM or CD-R in duplicate, large table, or Computer Program (Appendix)</p><p>☐ Landscape Table on CD</p><p>9. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. – c. are required)</p><p>a. ☐ Computer Readable Form (CRF)</p><p>b. ☐ Specification Sequence Listing on:</p><p>i. ☐ CD-ROM or CD-R (2 copies); or</p><p>ii. ☐ Paper</p><p>c. ☐ Statements verifying identity of above copies</p></div><div style="flex: 1; padding: 5px;">ACCOMPANYING APPLICATION PAPERS<p>10. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____</p><p>11. ☐ 37 CFR 3.73(c) Statement ☐ Power of Attorney (when there is an assignee)</p><p>12. ☐ English Translation Document (if applicable)</p><p>13. ☐ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached</p><p>14. ☐ Preliminary Amendment</p><p>15. ☐ Return Receipt Postcard (MPEP § 503) (Should be specifically itemized)</p><p>16. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)</p><p>17. ☐ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.</p><p>18. ☐ Other: _____ _____ _____ _____</p></div></div>			
*Note: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 must be included in an Application Data Sheet (ADS). (2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).			
19. CORRESPONDENCE ADDRESS			
☒ The address associated with Customer Number: <u>24243</u> OR ☐ Correspondence address below			
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Signature	/John Buchaca/		Date
Name (Print/Type)	John D. Buchaca		Registration No. (Attorney/Agent)
			2019-06-04
			37289

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
		Application Number	
Title of Invention	Mutually secure optical data network and method		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

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

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Joseph	L.	Vilella			
Residence Information (Select One) • US Residency Non US Residency Active US Military Service						
City	San Diego	State/Province	CA	Country of Residence	US	
Mailing Address of Inventor:						
Address 1		Spada Innovations, Inc.				
Address 2		4660 La Jolla Village Dr., Suite 500				
City	San Diego	State/Province	CA			
Postal Code	92122	Country	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	24243		
Email Address	john@charmason.com	Add Email	Remove Email

Application Information:

Title of the Invention	Mutually secure optical data network and method		
Attorney Docket Number	190071	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
		Application Number	
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Filing By Reference:

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

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

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

Publication Information:

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

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

Representative Information:

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

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

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

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

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation in part of	15351315	2016-11-14

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
		Application Number	
Title of Invention	Mutually secure optical data network and method		

Prior Application Status	Abandoned	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15351315	Continuation in part of	14419092	2015-02-02
Prior Application Status	Expired	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14419092	a 371 of international	PCT/US2013/053389	2013-08-02
Prior Application Status	Expired	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2013/053389	Claims benefit of provisional	61678977	2012-08-02
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)	<input type="button" value="Remove"/>
Additional Foreign Priority Data may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>

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

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

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
		Application Number	
Title of Invention	Mutually secure optical data network and method		

Authorization or Opt-Out of Authorization to Permit Access:

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

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

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

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

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

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

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

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

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

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

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
		Application Number	
Title of Invention	Mutually secure optical data network and method		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.				
Applicant		1		<input type="button" value="Remove"/>
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.				
<input type="button" value="Clear"/>				
Assignee		Legal Representative under 35 U.S.C. 117		Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest		
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:				
<div></div>				
Name of the Deceased or Legally Incapacitated Inventor: <div></div>				
If the Applicant is an Organization check here. ☐				
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<div></div>	<div></div>		<div></div>	<div></div>
Mailing Address Information For Applicant:				
Address 1		<div></div>		
Address 2		<div></div>		
City		State/Province		
Country	<div></div>		Postal Code	
Phone Number		Fax Number		
Email Address		<div></div>		
Additional Applicant Data may be generated within this form by selecting the Add button. <input type="button" value="Add"/>				

Assignee Information including Non-Applicant Assignee Information:

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
		Application Number	
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Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
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If the Assignee or Non-Applicant Assignee is an Organization check here. ☐				
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Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1		<input type="text"/>		
Address 2		<input type="text"/>		
City	<input type="text"/>	State/Province	<input type="text"/>	
Country	<input type="text"/>	Postal Code	<input type="text"/>	
Phone Number	<input type="text"/>	Fax Number	<input type="text"/>	
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Signature:

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

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

Signature	/John Buchaca/		Date (YYYY-MM-DD)	2019-06-04	
First Name	John	Last Name	Buchaca	Registration Number	37289
Additional Signature may be generated within this form by selecting the Add button. <input type="button" value="Add"/>					

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	190071
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- 8 A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public 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.

Mutually secure optical data network and method

ABSTRACT

A digital optical data network system for improving information security in Passive Optical Networks ("PON") by providing virtual information separation in the router, such as a premise router, or routers interfacing the entire PON, such as by utilizing virtual routing and forwarding, thus allowing safe data traffic between multiple carriers, service providers accessing the PON and multiple end users on the PON such as tenants in a building, employees of a business entity, or subscribers in a residential community.

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CLAIMS

1. A multi-user optical data network apparatus comprises:
 - a plurality of network service carrier lines connected to a passive optical network interface router;
 - at least one uplink connecting said interface router to an optical line terminal;
 - said optical line terminal being connected to a number of passive optical network feeds for carrying a common data feed to a plurality of optical network units each supporting at least one of a plurality of private user devices;
 - said interface router being configured to have at least one virtual routing table for each one of said plurality of optical network units; and,
 - wherein each of said optical network units is adapted to extract data packets intended for a supported one of said devices.
2. The apparatus of Claim 1, wherein said interface router is a premise router.
3. The apparatus of Claim 1, wherein said interface router is further configured to have a routing table routine generating said at least one virtual routing table for each one of said plurality of optical network units.
4. The apparatus of Claim 1, wherein each of said optical network units provides service to a separate number of private users.
5. The apparatus of Claim 1, wherein said uplink carries data including digitized voice and video data.
6. A multi-user optical data network apparatus comprises:
 - a plurality of network service carrier lines connected to a plurality of passive optical network interface routers;
 - a plurality of uplinks connecting said interface routers to an optical line terminal;
 - said optical line terminal being connected to a number of passive optical network feeds for carrying a common data feed to a plurality of optical network units each supporting at least one of a plurality of private user devices;

wherein each of said interface routers is configured to have at least one virtual routing table for each one of said plurality of optical network units to which said each of said interface routers is connected; and,

wherein each of said optical network units is adapted to extract data packets intended for a supported one of said devices.

7. A digital data network communication method comprises:

accepting a plurality of private data streams into a passive optical network interface router serving a plurality of private users through a plurality of optical network units;

aggregating said private data streams into a combined data feed;

routing said data feed to at least two of said plurality of optical network units;

extracting from said data feed a first one of said private data streams;

wherein said routing comprises:

generating an independently unique virtual routing table for each of said plurality of optical network units;

tagging ethernet frames intended for a first one of said plurality of optical network units according to entries in a first one of said virtual routing tables associated with a first one of said optical network units;

distributing said tagged ethernet frames according to said first one of said virtual routing tables.

8. The method of Claim 7, wherein said distributing comprises associating destinations listed in said first one of said virtual routing tables with said first one of said optical network units.

9. The method of Claim 7, wherein each of said optical network units provides service to a separate number of private users.

10. The method of Claim 7, wherein said accepting comprises:

interfacing a plurality of service provider data lines through a single headend.

11. The method of Claim 10, wherein said interfacing comprises:

utilizing at least one premise router and a radio frequency video converter; and,

feeding an output of said at least one premise router through an optical line terminal.

12. The method of Claim 11, wherein said interfacing further comprises:
feeding an output of said converter through said optical line terminal.
13. The method of Claim 7, wherein said aggregating comprises using an enterprise aggregating switch.

Mutually secure optical data network and method

Prior Application

This is a continuation-in-part of US Patent Application Serial No. 15351315, filed 2016-11-14, which is a continuation-in-part of US Patent Application Serial No. 14419092, filed 2015-02-02, which is a 371 of International Application Serial No. PCT/US2013/053389, filed 2013-08-02, which claims the benefit of U.S. Provisional Patent Application Serial No. 61678977, filed 2012-08-02 all of which are incorporated herein by reference.

Field of the Invention

The instant invention relates to computer networks and more particularly to optical data network traffic routing to multiple users in a local area.

Background

Nowadays a wide variety of entities are moving towards the use of Passive Optical Networks (“PON”) and benefit from the interconnectivity provided by local and wide area networks, and connection to the Internet. Many entities depending on their purpose have many types of devices connected to the network including personal computers, wireless controllers, application servers, printers, scanners, ambient control systems, security cameras and sensors, phone systems, gaming consoles and television sets. The digital signals carried by the PON include converged voice, data and video signal content traffic.

Many individual and business users send and receive digital information which is intended to remain private and can be confidential to the individual users. Such users can be businesses located in the same office building as co-tenants, guests located in a hotel, users located in a commercial, local, state, federal or similar entity, subscribers in a residential entity such as owners or tenants. In the past, reasonable privacy and security can be accomplished by each user connecting directly to a secure service provider carrier using a dedicated headend located in the entity space including a modem, workgroup switches and routing equipment. This equipment typically requires its own cooling equipment. Often the connection throughout the local network and to the carrier is through copper wiring which, due to its electrical resistance, can generate additional heat requiring cooling. All this equipment and cooling capability is often multiplied by the number of individual tenants in a building, leading to high power consumption.

A typical limiting factor using copper wiring for digital connection lines is bandwidth. Thus, a particular business tenant may elect to upgrade its individual local network and its connection to the carrier using high bandwidth equipment. Increasing the bandwidth often requires additional copper wiring, and more air conditioning.

With the development of optical fiber technology, photonic networks which are typically referred to as Passive Optical Networks can deliver significantly higher bandwidth and lower power consumption. This need for increased speed and sustainability by reduced power consumption has promoted the accelerated adoption of PON in most commercial and residential sectors.

The higher available bandwidth has led to network designs where one or more PON interface routers can distribute data streams to a multiplicity of users through an Optical Line Terminal (“OLT”). Further, this can eliminate the need for a dedicated router for each user. Unfortunately however, this creates an increased cyber-security risk for all those users connected to the PON interface routers since the global routing table can be surreptitiously accessed by a nefarious user, or some cyber-entity mimicking a user on the PON.

The instant invention results from efforts to provide an improved passive optical networking system that addresses one or more of the above problems.

Summary

The primary and secondary objects of the invention are to provide an improved optical networking system. These and other objects are achieved by providing an optical network interface router including at least one virtual routing table for each of a plurality of optical network units to which the interface router is connected.

In some embodiments there is provided a multi-user optical data network apparatus comprises: a plurality of network service carrier lines connected to a passive optical network interface router; at least one uplink connecting said interface router to an optical line terminal; said optical line terminal being connected to a number of passive optical network feeds for carrying a common data feed to a plurality of optical network units each supporting at least one of a plurality of private user devices; said interface router being configured to have at least one virtual routing table for each one of said plurality of optical network units; and, wherein each of said optical network units is adapted to extract data packets intended for a supported one of said devices.

In some embodiments said interface router is a premise router.

In some embodiments said interface router is further configured to have a routing table routine generating said at least one virtual routing table for each one of said plurality of optical network units.

In some embodiments each of said optical network units provides service to a separate number of private users.

In some embodiments said uplink carries data including digitized voice and video data.

In some embodiments there is provided a multi-user optical data network apparatus comprises: a plurality of network service carrier lines connected to a plurality of passive optical network interface routers; a plurality of uplinks connecting said interface routers to an optical line terminal; said optical line terminal being connected to a number of passive optical network feeds for carrying a common data feed to a plurality of optical network units each supporting at least one of a plurality of private user devices; wherein each of said interface routers is configured to have at least one virtual routing table for each one of said plurality of optical network units to which said each of said interface routers is connected; and, wherein each of said optical network units is adapted to extract data packets intended for a supported one of said devices.

In some embodiments there is provided a digital data network communication method comprises: accepting a plurality of private data streams into a passive optical network interface router serving a plurality of private users through a plurality of optical network units; aggregating said private data streams into a combined data feed; routing said data feed to at least two of said plurality of optical network units; extracting from said data feed a first one of said private data streams; wherein said routing comprises: generating an independently unique virtual routing table for each of said plurality of optical network units; tagging ethernet frames intended for a first one of said plurality of optical network units according to entries in a first one of said virtual routing tables associated with a first one of said optical network units; distributing said tagged ethernet frames according to said first one of said virtual routing tables.

In some embodiments said distributing comprises associating destinations listed in said first one of said virtual routing tables with said first one of said optical network units.

In some embodiments each of said optical network units provides service to a separate number of private users.

In some embodiments said accepting comprises: interfacing a plurality of service provider data lines through a single headend.

In some embodiments said interfacing comprises: utilizing at least one premise router and a radio frequency video converter; and, feeding an output of said at least one premise router through an optical line terminal.

In some embodiments said interfacing further comprises: feeding an output of said converter through said optical line terminal.

In some embodiments said aggregating comprises using an enterprise aggregating switch.

The text of the original claims is incorporated herein by reference as describing features in some embodiments.

Brief Description of the Drawings

Fig. 1 is a functional block diagram of several data service providers supplying multi-tenant building through a single headend according to an exemplary embodiment of the invention.

Fig. 2 is a functional block diagram of main point of entry room for the data network servicing a multi-tenant building according to an exemplary embodiment of the invention.

Fig. 3 is a functional block diagram for a premise router according to an exemplary embodiment of the invention.

Fig. 4 is a functional block diagram of an optical line terminal servicing multiple tenant users with a common data feed according to an exemplary embodiment of the invention.

Fig. 5 is a functional block diagram of an optical line terminal aggregating data and video streams into a common optical data feed according to an exemplary embodiment of the invention.

Fig. 6 is a functional block diagram of an optical network unit interfacing a tenant private network with a common optical data feed according to an exemplary embodiment of the invention.

Description of the Exemplary Embodiments

Referring now to the drawing, there is illustrated in Figs. 1 - 6 the components of a system **1** used to provide a mutually secure, shared Local Area Network ("LAN") implementation which can supply a multi-tenant site such as an office building **100** with converged voice, data and video signal content traffic at gigabit speeds to a plurality of mutually secure end point users such as building tenants having multiple end user devices such as

computers, access points and wireless controllers, application servers and printers, and television sets.

As shown in Figure 1, a single building **100** can have multiple tenants **102, 104, 106** such as individual companies, each potentially having multiple digital network devices. The system offers each tenant the ability to specify and use their own private address space even if the data feed overlaps with neighboring tenant on the same network, and the transmission of converged content traffic over the shared infrastructure while maintaining the separation and security of the individual tenant content traffic.

The system relies upon a collection of standards-based technologies that are designed and implemented to provide a point-to-multipoint networking through a single aggregation switch that is capable of providing thousands of IP voice, data, and video connection ports.

In a basic configuration, the aggregate downstream rate can be 2.5 Gbps, while the upstream rate can be 1.25 Gbps. Each of the connections can be adapted to support high-bandwidth multimedia applications on a single optical fiber over a distance of 20km or more. Telecommunications service traffic that includes Internet, public switched telephone networks, and broadcast/cable television **108, 110, 112** for the building are provided by one or more commercial carriers **114, 116, 118**. The telecommunications services carrier lines **120,122,124** enter the building **100** at a Main Point Of Entry (MPOE) room **126** and terminate into headend equipment **128**. From the headend equipment, the voice, video and data content traffic can distributed to each of the tenants **102, 104, 106** over data feeds carried by fiber optic cabling **130, 132, 134**.

As shown in Figure 2, the secure, shared multi-tenant LAN architecture can include a Passive Optical Network (“PON”) interface router, which for clarity in this embodiment is a single premise router **140**, an aggregation switch referred to as an Optical Line Terminal (OLT) **146**, a plurality of end user terminal devices such as computers, telephones and televisions located within the physically separate tenant **102, 104, 106** spaces, and an optical distribution network that consists of splitters and fiber cabling infrastructure. It shall be understood that a plural number of interface routers such as premise routers can be used.

The headend equipment **128** receives the plurality of telecommunications service carrier lines **120,122,124** from the separate carrier providers **114, 116, 118**. An RF-based video signal can be supplied by one or more of the carriers to the headend equipment via a broadband coaxial cable **130**. The interface to the carrier lines within the headend equipment is the premise router **140**.

The premise router **140** can be configured with Virtual Routing and Forwarding (VRF) as described in RFC 4381 and RFC 4382, and utilizes Virtual Local Area Network (VLAN) tagging to separate and manage the distribution of the voice, video and data content traffic to each of the users. The VLAN-tagged voice, video, and data content traffic is connected to the Optical Line Terminal (OLT) **146** through an uplink **142** that provides primary communication. Optionally, a secondary uplink **144** may be employed as a backup communication path.

The OLT **146** can be powered by dual 48 VDC power feeds **148, 150** from rectifier modules **152, 154** that are attached to separate AC Mains **156, 158** through an uninterruptible power supply **160**. The OLT has a minimum of eight optical ports, but can have well over fifty such ports. Each port delivers a beam of light that contains the aggregated data for a multiplicity of users. The aggregated data may or may not be encrypted based on the type of PON.

The OLT **146** takes the VLAN-tagged voice, video, and data content traffic **142, 144** and processes each of the ethernet frames by first optionally encrypting them, then converting them into light, and outputting them as a photonic broadcast stream to the appropriate initial passive optical network feeds **162, 164, 166, 168, 170** that connects to an optical distribution patch panel **172**. The optical distribution patch panel **172** is used to provide the ability for cross-connecting the initial feeds **162, 164, 166, 168, 170** to the distribution feeds **174, 176, 178, 180** that traverse the distance to the remotely located tenants **102, 104, 106**. A tenant **106** requiring larger bandwidth can accept multiple distribution feeds **178, 180**.

In the case where a carrier provider **114** supplies an RF-based video signal **130**, the headend equipment **128** receives the RF-based video signal and converts it into light by processing the electrical analog signal and using it to modulate a laser which outputs the equivalent video photonic stream. This new video photonic stream is then combined with an initial feed **162** which results in a modified initial feed **164** that contains a photonic broadcast stream that contains the voice, video and data content traffic that is then fed into the optical distribution patch panel **172**. Of course in some instances the initial feed can contain digitized voice, video and data in which case no bypass of the OLT is necessary.

As shown in Figure 3, the premise router **140** can be the interface to each of the commercial carrier providers **114, 116, 118** through either a packet-switched or a leased-line Wide Area Network (WAN) interface in order to utilize the telecommunications services provided over carrier lines **120, 122, 124**. Logical circuits can make connections between the premise router **140** and carrier providers **114, 116, 118**, utilizing a shared-bandwidth connection

that may be shared with other carrier customers and could potentially affect quality of service and bandwidth availability. The leased-line connection provides a direct interface access to the carrier and eliminates the possibility of being affected by other carrier customers. The premise router **140** can be configured to run a routing table routine **412** that accesses the virtual routing table instantiations to create virtual routing tables **420, 422, 424, 426** for each Optical Network Unit (ONU) serving a tenant. This configuration provides for creation of multiple routing tables, one for each ONU, within the single premise router **140**. This capability supports the overlapping of IP addresses for any of the tenants because the routing instances are independent. In this way, data traffic intended for one tenant is automatically isolated from traffic intended for other tenants. Furthermore, queries emanating from one tenant are identified so that one tenant cannot mimic the identity of another. In other words, unique routing for each tenant effectively isolates its traffic from other tenants, vastly improving the networks defense against cyber-attack.

Thus, the premise router processor **410** gets and puts the tenant-specific routing information through the routing table routine **412** into the appropriate virtual routing tables **420, 422, 424, 426**. The updated virtual routing tables are used to uniquely VLAN-tag the voice, video, and data content traffic that is sent and received through the uplinks **142**, to the OLT **146**.

In this way, the overlapping IP address on a single PON infrastructure allows each tenant connected to the infrastructure to transmit and receive information to any of the carriers. Thus all the tenants in a building can simply connect to the PON infrastructure without the need for their own dedicated headend.

A configuration file loaded into the premise router contains the commands to implement the virtual routing tables for each of the ONUs providing service to the tenant users. By way of example, the following pseudo-code implements independent virtual routing tables for two ONUs serving two users, namely "Tenant A" and "Tenant B". Comment lines begin with an exclamation point ("!"):

!--- Begin gateway configuration and programming

!--- Configure gateway identity

!--- Establish express forwarding to optimize network performance and scalability

!--- For each tenant (1..n) Do

!--- Instantiate virtual route table for the Tenant

```
!--- Enable VPN (Virtual Private Network) for the Tenant
!--- Establish routing and forwarding for the virtual routing table
!--- Creates lists of import and export route-target extended communities
!--- End Do

!--- Set IP (Internet Protocol) address, netmask and enable IS-IS routing

!--- For each tenant (1..n) Do
!--- Establish loopback identifier for the Tenant
!--- Enable VRF (Virtual Routing and Forwarding) for the Tenant
!--- Associate the VRF instance with an interface or sub-interface.
!--- Loopbacks use the same IP address because they belong to different
    Tenant VRF's
!--- Broadcast to all hosts on the subnet
!--- End Do

!--- Define and configure the gateway ingress interface
!--- Set bandwidth
!--- Config IP address and netmask
!--- Enable MPLS (MultiProtocol Label Switching)

!--- Enables logging of BGP (Border Gateway Protocol) neighbor resets.
!--- Adds an entry to the BGP or multiprotocol BGP neighbor table
!--- Enables BGP sessions to use a specific operational interface for TCP
    (Transmission Control Protocol) connections

!--- Enter address family configuration mode

!--- Sends the community attribute to a BGP neighbor

!--- For each tenant (1..n) Do
!--- Set the address family for the tenant
!--- End Do

!--- Use longest prefix matching or default route

!--- end gateway configuration and programming
```

The above example shows that the premise router **140** can be programmed to create an independent virtual routing table for each user ONU. Thus, each user is effectively encased within its own separate routing environment, vastly restricting access by cyber attackers to the PON.

Figure 4 represents the Passive Optical Network infrastructure which is an optical distribution network used to convey the photonic broadcast stream feeds that contain the encrypted data packets such as VLAN-tagged ethernet frames **300, 302, 304, 306** that are

distributed back and forth between the various tenant spaces **102, 104, 106** and the OLT **146**. Essentially, the OLT can broadcast the combined encrypted VLAN-tagged ethernet frames **300, 302, 304, 306** over the distribution feeds **174, 176, 178, 180** to a number of splitters **308, 310, 312, 314**.

Each splitter **308** can replicate the incoming photonic broadcast stream equally over each of its drop lines **320, 322, 324**. The splitter **308** can attach to the simplex, single-mode fiber from the OLT **146** and can passively redistribute the incoming light stream up to 64 times. The splitter is a Planar Lightwave Circuit (PLC) that is constructed using silica glass waveguide circuits and aligned fiber optic pigtails that are all integrated inside of a single package. The attenuation of the light signal through the PLC of the splitter **308** is symmetrical in both directions. The signal loss from a 1x8 PLC splitter is expected to be less than one dB greater than what would be expected from a perfect splitter, approximately 10 dB. A typical 1x32 PLC splitter shall have approximately 17 dB or less.

Each of the outputs from the optical splitter can be an individual simplex, single-mode fiber called a drop line **320, 322, 324**. The drop lines can be routed and fed into the appropriate tenant physical space **102, 104, 106** and terminated into the tenant's dedicated Optical Network Unit (ONU) **330, 332, 334**.

Each ONU **330, 332, 334** is operated so that it utilizes the VLAN-tagging to select those of the incoming ethernet frames assigned to the particular tenant, and then removes the encryption from the selected ethernet frames. Thus, each ONU strips out or extracts only those incoming frames that are intended for the particular tenant. The decrypted ethernet frames **301, 303, 305** are then made available **340, 342, 344** for the tenant's IP/ethernet end-user equipment. Those frames not assigned to the particular tenant are ignored and cannot be decrypted by the particular tenant. In other words, a first subset of the frames can be associated with a first piece of end-user equipment and a second subset of the frames is associated with a second piece of end-user equipment. The first and second pieces of equipment can be common to a single tenant or can be split among separate tenants.

In other words, for example, tenant A **102** gets supplied to its ONU **330** all incoming encrypted frames **300, 302, 304, 306** via its drop line **320** including those frames that are intended for it **300, 306** and those frames that are unintended for it **302, 304**. The ONU strips out its intended encrypted frames **300, 306** and decrypts them to form its intended decrypted frames **301** which it makes available to Tenant A's dedicated, private data line **340**. The ONU also encrypts outgoing frames.

As shown in Figure 5, the OLT **146** that typically resides in the MPOE room **126** can be a key component of the headend equipment **128**. The OLT **146** can perform as the Layer-2 workgroup switching mechanism for voice, video and data content traffic that is sent and received from the individual tenants.

The OLT **146** equipment can be a chassis having multiple slots used to host circuit boards that perform various functions. Operations of the OLT are managed and controlled by a processor **500**. A backplane **502** of the OLT can provide the communication path for all of the control, management, and data signals between the circuit boards installed within the OLT. A network interface **504** provides the interface to/from the primary uplink **142** and backup uplink **144** connections to the premise router **140**. A switching fabric component **506** can be used to encrypts the VLAN-tagged ethernet frames using the appropriate symmetric key for a specific tenant and sends the result to an optical conversion component **508** for transmission to the tenant. The content traffic on the switching fabric component **506** is encrypted for each tenant location before being transmitted over the shared optical distribution network. Encryption of the layer-2 ethernet frames is used to provide the confidentiality of each tenant's signal traffic.

A symmetric-key algorithm can be used for the encryption of the ethernet frame data packets. This particular implementation utilizes a fixed block size of 128-bits and a key size of 128-bits that operate on a 4x4 column-major order matrix of bytes. It performs 10 cycles of transformation rounds that convert the input plaintext into the final output of ciphertext. Each round can consists of:

- a. First, a byte substitution function is performed where each byte in the state matrix is replaced using an 8-bit substitution.
- b. Next, each of the rows of the state are shifted by a certain number of steps. The first row is left unchanged. Each byte of the second row is shifted one to the left. Similarly, the third and fourth rows are shifted by offsets of two and three respectively. Row n is shifted left circular by n-1 bytes.
- c. Finally, the columns of the state are mixed by combining the four bytes in each column. The four bytes of each column of the state are combined using linear transformation. Encryption is used to specifically prevent man-in-the-middle attacks. Additionally, the PON configuration also supports IEEE 802.1x authentication in order to provide provide port based Network Access Control to limit network access, with features like IP//MAC address limiting to secure the network from unauthorized/malicious users.

The optical conversion component **508** of the OLT **146** can convert the electrical signals of the encrypted VLAN-tagged ethernet frames and output them over the initial feeds **162**, **166**, **168**, **170** as modulated optical signals.

In the case where a carrier provider **114** supplies an RF-based video signal **130** to the headend equipment **128**, the signal is connected to a laser transmitter **520** where the input broadband signal is used to modulate a laser. The modulated output of the laser is a low-level photonic light stream. The photonic light stream is sent to an erbium-doped fiber amplifier **522**, where the signal is increased to approximately 30 dBmV. The resulting amplified video signal is then overlayed on an initial feed **162** through the use of a wave division multiplexor combiner **524**. The output from the wave division multiplexor combiner **524** is a feed line **164** that contains encrypted VLAN-tagged ethernet frames and a laser-modulated, RF-based video signal.

As shown in Figure 6, each tenant can have one or more of an ONU **330** that accepts drop line **320** connections. The ONU **330** terminates optical fibers from a splitter **308** and sends/receives decrypted ethernet frames **340** to the tenant's IP/ethernet equipment, and RF video signals **656** to the tenant's television. The ONU has a processor **600** which controls and manages all activity of the ONU by directly communicating all of the control and management signals **602**, **604**, **606** to/from its internal components **610**, **612**, **640**. The ONU receives the photonic light stream transmitted over the drop line **320**. The optical converter **610** examines the encrypted photonic light stream that enters the component. If the VLAN-tagged ethernet frame has been encrypted with the same symmetric key, it indicates that the VLAN-tagged frame belongs to the tenant of that ONU. After the optical converter **610** performs the decryption, the VLAN-tagged ethernet frame is sent to the network interface **612** of the ONU via the direct communication path **608**. The network interface **612** demultiplexes the electrical signal to divide out baseband telephony/data signals from broadband video channels. The network interface sends/receives the VLAN-tagged ethernet frames to the appropriate physical connection interface **622**, **632**, **652**. The ONU can supply a basic 802.3 ethernet interface **622**, or an 802.3 ethernet interface that include power-over-ethernet (PoE) capability **632**, or an RF-based video F-Type interface **652** to transmit the RF-based video signal **656**. The PoE port injector **640** implements the Power-Over-Ethernet and Power-Over-Ethernet Plus based upon the IEEE 802.3af-2003 and IEEE 802.3at-2009 standards respectively.

In this way, the above described system empowers a multi-tenant building **100** with an environment to securely host individual tenant data traffic with overall network flexibility. This

ability of the system allows it to leverage the high bandwidth and energy efficiency of passive optical network equipment for the entire building. Because optical bandwidth is comparatively unlimited, existing systems often do not utilize this capacity. Thus, the high bandwidth capability of optical fiber can be leveraged to route all traffic optically and uniformly throughout the building on an aggregated feed. Each tenant can extract its share of the traffic from the feed. In this way, a single headend having reduced air conditioning requirements can be located at the building's main point of entry, and no additional air conditioning is needed at the individual tenant spaces for what would have been headend-type network equipment.

While the preferred embodiment of the invention has been described, modifications can be made and other embodiments may be devised without departing from the spirit of the invention and the scope of the appended claims.

What is claimed is:

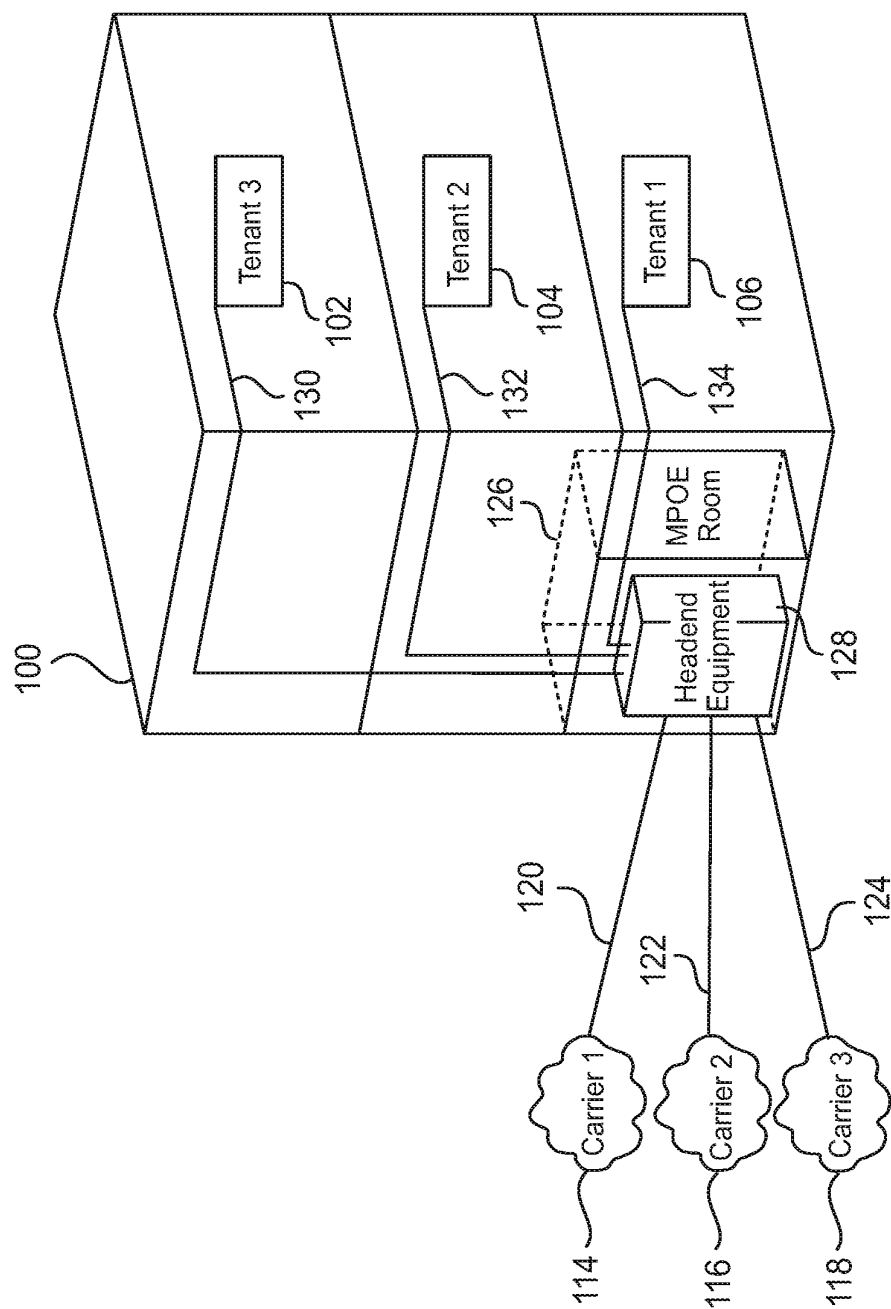


FIG. 1

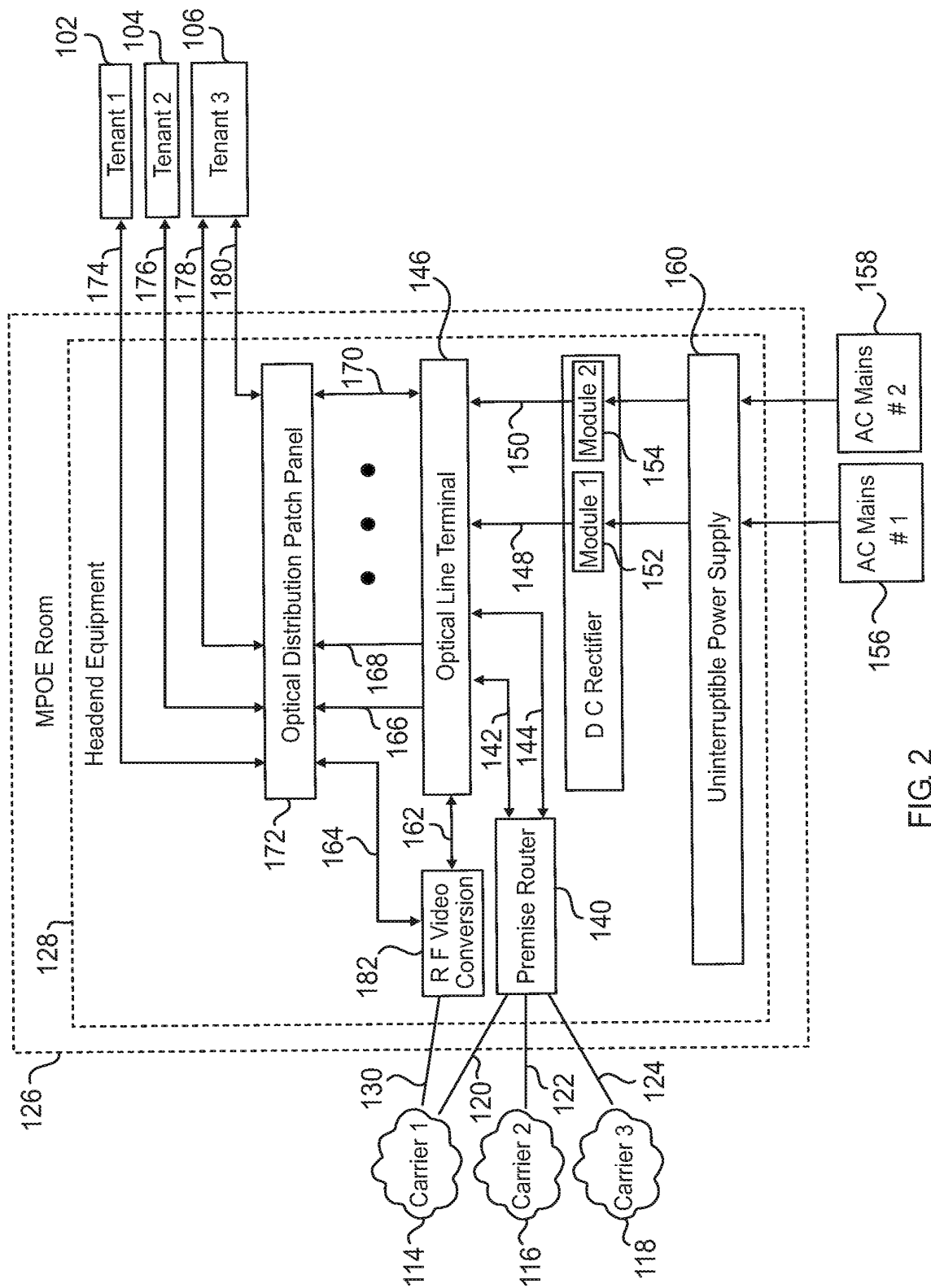


FIG. 2

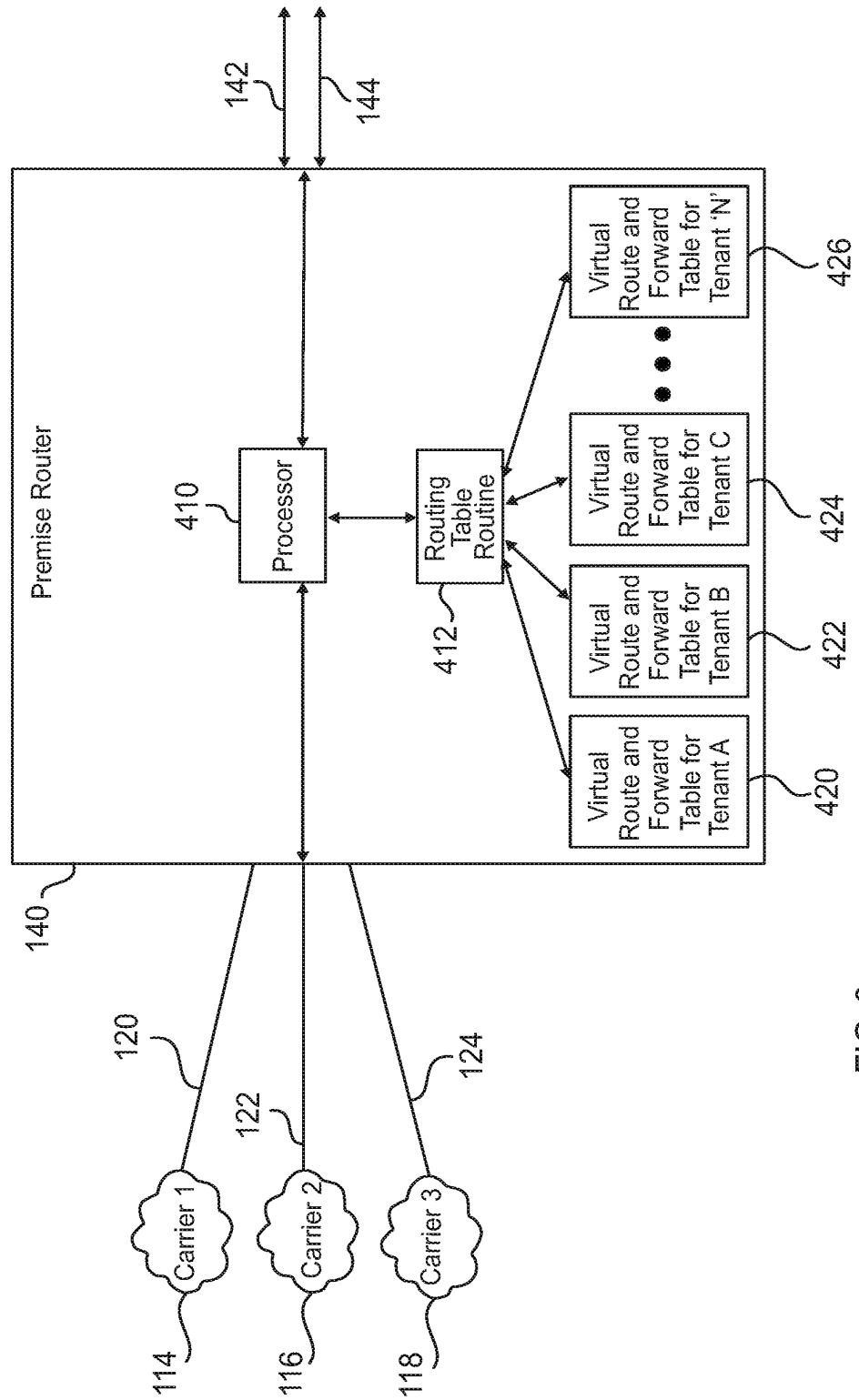
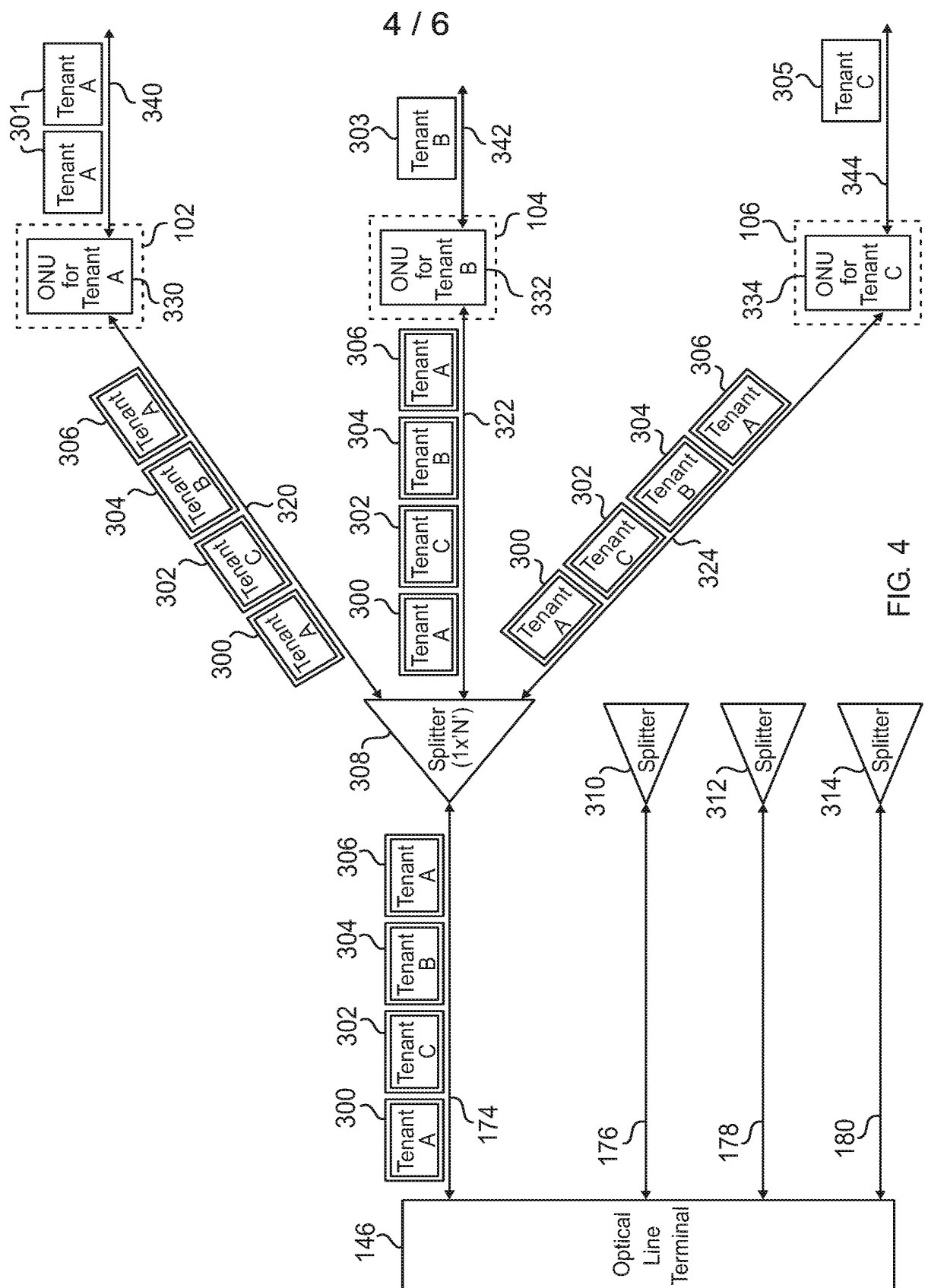


FIG. 3



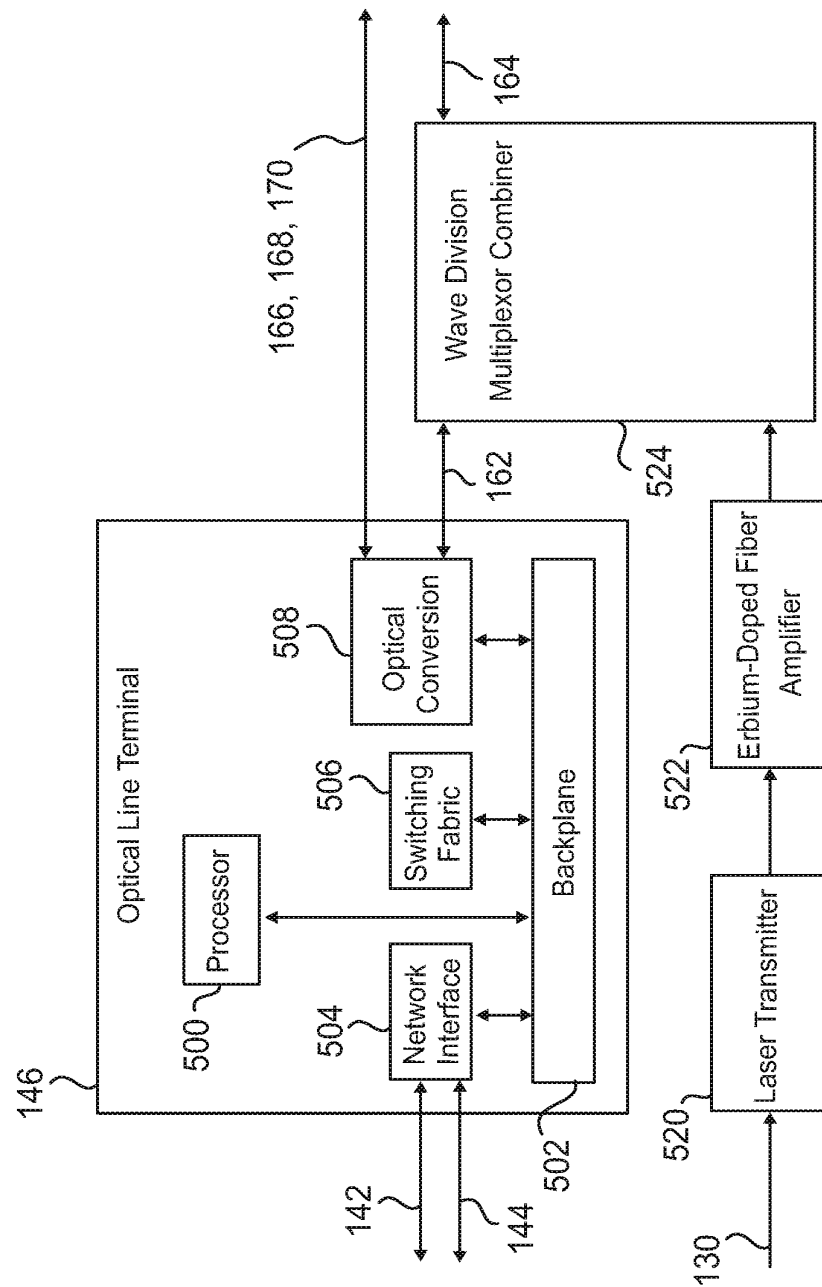


FIG. 5

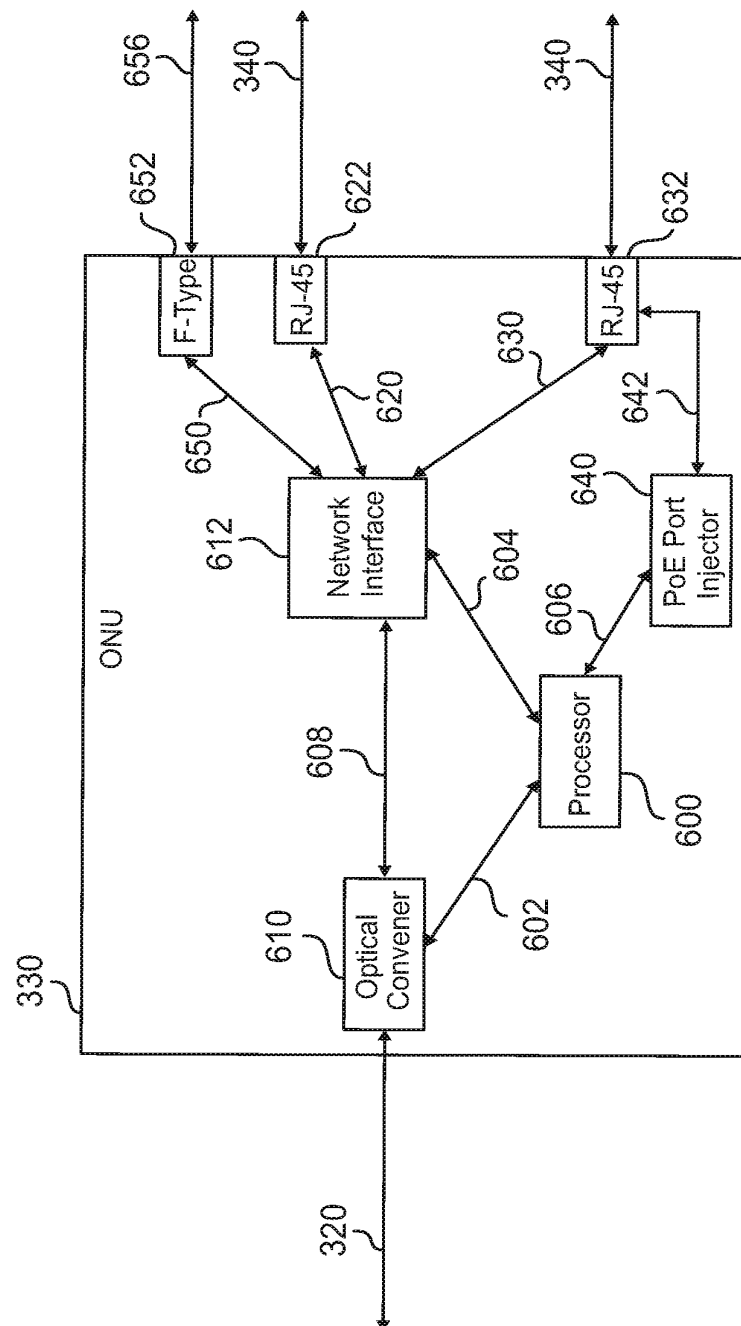


FIG. 6

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		Mutually secure optical data network and method		
First Named Inventor/Applicant Name:		Joseph L. Vilella		
Filer:		John David Buchaca		
Attorney Docket Number:		190071		
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Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
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Extension-of-Time:				
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1	Transmittal of New Application	2019-06-04_190071_Transmittal.pdf	145304	no	1
			391e860e12aea7492d0f058517a4858aab8d849		
Warnings:					
Information:					
2	Application Data Sheet	2019-06-04_190071_ADS.pdf	1256045	no	8
			057cb55bd25aa6248369c3d885b358ced9a01503		
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3		2019-06-04_190071_Specification.pdf	197404	yes	16
			eaeaa408d3ec122b2e49493930525d71751b15df		
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	Claims		13	15	
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4	Drawings-only black and white line drawings	2019-06-04_190071_Drawing.pdf	213266	no	6
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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 application search fee must be submitted.
- The application examination fee must be submitted.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
 - late submission of the basic filing fee, search fee, or examination fee,
 - late submission of inventor's oath or declaration,
 - filing an application that does not contain at least one claim on filing, or
 - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ **80** surcharge.
- \$ **330** search fee.
- \$ **380** examination fee.
- \$(**0**) previous unapplied payment amount.
- \$ **790** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's

oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
Joseph L. Vilella

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

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.

/dmnguyen/

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/431,602			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A			
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A			
TOTAL CLAIMS (37 CFR 1.16(ii))	13	minus 20 = *	x 50 =	0.00	OR				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 230 =	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					
			TOTAL	785		TOTAL			
* If the difference in column 1 is less than zero, enter "0" in column 2.									
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(ii))	*	Minus	**	=	x	=	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	x	=
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(ii))	*	Minus	**	=	x	=	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	x	=
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		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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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
16/431,602	06/04/2019	2636	75	190071	13	3

CONFIRMATION NO. 9342

FILING RECEIPT



24243
CHARMASSON, BUCHACA & LEACH, LLP
2635 Camino Del Rio South
Suite 102
SAN DIEGO, CA 92108

Date Mailed: 06/13/2019

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Joseph L. Vilella, San Diego, CA;

Applicant(s)

Joseph L. Vilella, San Diego, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CIP of 15/351,315 11/14/2016
which is a CIP of 14/419,092 02/02/2015 ABN
which is a 371 of PCT/US2013/053389 08/02/2013
which claims benefit of 61/678,977 08/02/2012

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

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 06/11/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/431,602**

Projected Publication Date: 09/19/2019

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Mutually secure optical data network and method

Preliminary Class

398

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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

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

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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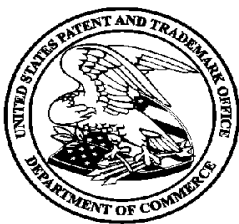
The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

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CHARMASSON, BUCHACA & LEACH, LLP
2635 Camino Del Rio South
Suite 102
SAN DIEGO, CA 92108



**Courtesy Reminder for
Application Serial No: 16/431,602**

Attorney Docket No: 190071
Customer Number: 24243
Date of Electronic Notification: 06/13/2019

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

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

To view your correspondence online or update your email addresses, please visit us anytime at <https://ppair-my.uspto.gov/pair/PrivatePair>.
If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov or call 1-866-217-9197.

Doc Code: TRAN.LET

Document Description: Transmittal Letter

PTO/SB/21 (07-09)

Approved for use through 11/30/2020. 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.

TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	16431602	
	Filing Date	2019-06-04	
	First Named Inventor	Joseph L. Vilella	
	Art Unit	2636	
	Examiner Name		
Total Number of Pages in This Submission	4	Attorney Docket Number	190071

ENCLOSURES (Check all that apply)		
☒ Fee Transmittal Form ☒ Fee Attached ☐ Amendment/Reply ☐ After Final ☐ Affidavits/declaration(s) ☐ Extension of Time Request ☐ Express Abandonment Request ☐ Information Disclosure Statement ☐ Certified Copy of Priority Document(s) ☐ Reply to Missing Parts/ Incomplete Application ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53	☐ Drawing(s) ☐ Licensing-related Papers ☐ Petition ☐ Petition to Convert to a Provisional Application ☐ Power of Attorney, Revocation Change of Correspondence Address ☐ Terminal Disclaimer ☐ Request for Refund ☐ CD, Number of CD(s) _____ ☐ Landscape Table on CD	☐ After Allowance Communication to TC ☐ Appeal Communication to Board of Appeals and Interferences ☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) ☐ Proprietary Information ☐ Status Letter ☒ Other Enclosure(s) (please identify below): Inventor's Declaration
Remarks Declaration - 1 sheet EFS-Web-generated Fee Sheet - 2 sheets This Transmittal - 1 sheet		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Charmasson, Buchaca & Leach, LLP		
Signature	/John Buchaca/		
Printed name	John D. Buchaca		
Date	2019-08-13	Reg. No.	37289

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:			
Signature	/John Buchaca/		
Typed or printed name	John D. Buchaca	Date	2019-08-13

This collection of information is required by 37 CFR 1.5. 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 2 hours 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.

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

Title of Invention	Mutually secure optical data network and method
-------------------------------	---

As the below named inventor, I hereby declare that:

This declaration is directed to: ☐ The attached application, or
☒ United States application or PCT international application number 16431602
filed on 06/04/2019

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

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

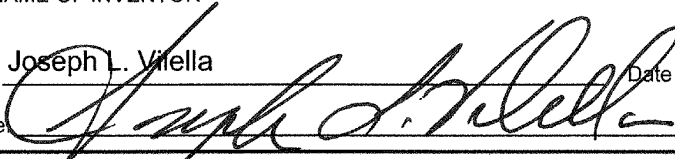
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

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

LEGAL NAME OF INVENTOR

Inventor: Joseph L. Viella Date (Optional): 8/13/19

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Patent Application Fee Transmittal				
Application Number:		16431602		
Filing Date:		04-Jun-2019		
Title of Invention:		Mutually secure optical data network and method		
First Named Inventor/Applicant Name:		Joseph L. Vilella		
Filer:		John David Buchaca		
Attorney Docket Number:		190071		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	80	80
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 (\$)				790

Electronic Acknowledgement Receipt	
EFS ID:	36865531
Application Number:	16431602
International Application Number:	
Confirmation Number:	9342
Title of Invention:	Mutually secure optical data network and method
First Named Inventor/Applicant Name:	Joseph L. Vilella
Customer Number:	24243
Filer:	John David Buchaca
Filer Authorized By:	
Attorney Docket Number:	190071
Receipt Date:	13-AUG-2019
Filing Date:	04-JUN-2019
Time Stamp:	19:26:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 790
RAM confirmation Number	E20198CJ27184782
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	2019-08-13_190071_Transmittal.pdf	157232	no	1
			cc692a0626beaa75df35b570c9003c93d0b01e6a		
Warnings:					
Information:					
2	Oath or Declaration filed	2019-08-13_190071_Declaration.pdf	155164	no	1
			c5284a895bdcfe5561c11b467947402c7bdf9fc9		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	35703	no	2
			ae8be13c9a26895e0cee1a93e6b5b2aee9582ba		
Warnings:					
Information:					
Total Files Size (in bytes):			348099		
<p>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.</p> <p><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.</p> <p><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.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/431,602	06/04/2019	2636	865	190071	13	3

CONFIRMATION NO. 9342

UPDATED FILING RECEIPT



24243
CHARMASSON, BUCHACA & LEACH, LLP
2635 Camino Del Rio South
Suite 102
SAN DIEGO, CA 92108

Date Mailed: 08/16/2019

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Joseph L. Vilella, San Diego, CA;

Applicant(s)

Joseph L. Vilella, San Diego, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CIP of 15/351,315 11/14/2016
which is a CIP of 14/419,092 02/02/2015 ABN
which is a 371 of PCT/US2013/053389 08/02/2013
which claims benefit of 61/678,977 08/02/2012

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

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

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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

If Required, Foreign Filing License Granted: 06/11/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/431,602**

Projected Publication Date: 09/19/2019

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Mutually secure optical data network and method

Preliminary Class

398

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

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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

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

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/431,602				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A				
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A				
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A				
TOTAL CLAIMS (37 CFR 1.16(ii))	13	minus 20 = *	x 50 =	0.00	OR					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 230 =	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						
			TOTAL	785		TOTAL				
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(ii))	*	Minus	**	=	x	=	OR	x	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(ii))	*	Minus	**	=	x	=	OR	x	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.</p>										



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United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/431,602	06/04/2019	Joseph L. Vilella	190071

CONFIRMATION NO. 9342

PUBLICATION NOTICE



24243
CHARMASSON, BUCHACA & LEACH, LLP
2635 Camino Del Rio South
Suite 102
SAN DIEGO, CA 92108

Title:Mutually secure optical data network and method

Publication No.US-2019-0289374-A1

Publication Date:09/19/2019

NOTICE OF PUBLICATION OF APPLICATION

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

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

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

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

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

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

Doc Code: FAI.REQ

Document Description: Request First Action Interview

PTO/SB/413C (05-11)

Approved for use through 11/30/2020. 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.

REQUEST FOR FIRST ACTION INTERVIEW (FULL PILOT PROGRAM)

Attorney Docket Number: 190071	Application Number (if known): 16431602	Filing date: 2019-10-11
First Named Inventor: Joseph L. Vilella	Title: Mutually secure optical data network and method	

APPLICANT HEREBY REQUESTS A FIRST ACTION INTERVIEW IN THE ABOVE-IDENTIFIED APPLICATION. See Instruction Sheet on page 2.

1. The application must contain three (3) or fewer independent claims and twenty (20) or fewer total claims.
2. The application must not contain any multiple dependent claims.
3. By filing this request:

Applicant is agreeing to make an election without traverse if the Office determines that the claims are not obviously directed to a single invention; and

Applicant is agreeing not to request for a refund of the search fee and any excess claims fee paid in the application after the mailing or notification of the pre-interview communication prepared by the examiner.

4. Other attachments: _____

Signature /John Buchaca/	Date 2019-10-11
Name (Print/Typed) John D. Buchaca	Registration Number 37289
Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.	
☐ *Total of _____ forms are submitted.	

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 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Acknowledgement Receipt	
EFS ID:	37440595
Application Number:	16431602
International Application Number:	
Confirmation Number:	9342
Title of Invention:	Mutually secure optical data network and method
First Named Inventor/Applicant Name:	Joseph L. Vilella
Customer Number:	24243
Filer:	John David Buchaca
Filer Authorized By:	
Attorney Docket Number:	190071
Receipt Date:	11-OCT-2019
Filing Date:	04-JUN-2019
Time Stamp:	18:26:21
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	First Action Interview - Enrollment Request	2019-10-11_190071_ReqForFirstActionInterview.pdf	139703	no	1
			71b2dd73215c7a18fd7d7568019accd282213987		
Warnings:					

Information:	
Total Files Size (in bytes):	139703
<p>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.</p> <p><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.</p> <p><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.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

Doc Code: PET.POA.WDRW

Document Description: Petition to withdraw attorney or agent (SB83)

PTO/AIA/83 (04-13)

Approved for use through 03/31/2021. OMB 0651-0035

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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**REQUEST FOR WITHDRAWAL
AS ATTORNEY OR AGENT AND
CHANGE OF
CORRESPONDENCE ADDRESS**

Application Number	16431602
Filing Date	2019-06-04
First Named Inventor	Joseph L. Vilella
Art Unit	2491
Examiner Name	FAROOQUI, QUAZI
Practitioner Docket Number	190071

**To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

Please withdraw me as attorney or agent for the above-identified patent application, and

- ☐ all the practitioners of record;
- ☐ the practitioners (with registration numbers) of record listed on the attached paper(s); or
- ☒ the practitioners of record associated with Customer Number: 24243

NOTE: The immediately preceding box should only be marked when the practitioners were appointed using the listed Customer Number.

The reason(s) for this request are those described in 37 CFR:

- | | | |
|--|---------------------------------------|---------------------------------------|
| ☐ 11.116(a)(1) | ☐ 11.116(a)(2) | ☐ 11.116(a)(3) |
| ☐ 11.116(b)(1) | ☐ 11.116(b)(2) | ☐ 11.116(b)(3) |
| ☐ 11.116(b)(4) | ☐ 11.116(b)(5) | ☐ 11.116(b)(6) |
| ☒ 11.116(b)(7) Please explain below: | | |

Because of the Covid-19 pandemic and the associated burdens it places on my family, I am unable to devote the time necessary to further represent the Applicant in this case.

Certifications

Check each box below that is factually correct. WARNING: If a box is left unchecked, the request will likely not be approved.

- ☒ I/We have given reasonable notice to the client, prior to the expiration of the response period, that the practitioner(s) intend to withdraw from employment.
- ☒ I/We have delivered to the client or a duly authorized representative of the client all papers and property (including funds) to which the client is entitled.
- ☒ I/We have notified the client of any responses that may be due and the time frame within which the client must respond.

Please provide an explanation, if necessary:

I have spoken with the client, and the client approves of my withdrawal.

[Page 1 of 2]

This collection of information is required by 37 CFR 1.36. 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 15 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.

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.

REQUEST FOR WITHDRAWAL AS ATTORNEY OR AGENT AND CHANGE OF CORRESPONDENCE ADDRESS

Complete the following section only when the correspondence address will change. Changes of address will only be accepted to an applicant.

Change the correspondence address and direct all future correspondence to:

A. ☐ The address of the applicant associated with Customer Number: _____

OR

B. ☒ Applicant

Address 2031 Second Avenue

City San Diego	State CA	Zip 92101	Country US
-----------------------	-----------------	------------------	-------------------

Telephone 619-884-8360	Email joevilella@gmail.com
-------------------------------	-----------------------------------

I am authorized to sign on behalf of myself and all withdrawing practitioners.

Signature **/John Buchaca/**

Name John D. Buchaca	Registration No. 37289
-----------------------------	-------------------------------

Address 2635 Camino Del Rio South, Suite 102

City San Diego	State CA	Zip 92108	Country US
-----------------------	-----------------	------------------	-------------------

Date 2020-10-08	Telephone No. 619-294-2922
------------------------	-----------------------------------

NOTE: Withdrawal is effective when approved rather than when received.

[Page 2 of 2]

This collection of information is required by 37 CFR 1.36. 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 15 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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Electronic Acknowledgement Receipt	
EFS ID:	40817966
Application Number:	16431602
International Application Number:	
Confirmation Number:	9342
Title of Invention:	Mutually secure optical data network and method
First Named Inventor/Applicant Name:	Joseph L. Vilella
Customer Number:	24243
Filer:	John David Buchaca
Filer Authorized By:	
Attorney Docket Number:	190071
Receipt Date:	12-OCT-2020
Filing Date:	04-JUN-2019
Time Stamp:	14:59:19
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	Petition to withdraw attorney or agent (SB83)	2020-10-12_190071_RequestForWithdrawal.pdf	436369	no	2
			3fb8c382604351447708dc6238881a3766c222ff		
Warnings:					

Information:	
Total Files Size (in bytes):	436369
<p>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.</p> <p><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.</p> <p><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.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/431,602	06/04/2019	Joseph L. Vilella	190071

24243
CHARMASSON, BUCHACA & LEACH, LLP
2635 Camino Del Rio South
Suite 102
SAN DIEGO, CA 92108

CONFIRMATION NO. 9342
IMPROPER CPOA LETTER



Date Mailed: 10/23/2020

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the power of attorney filed 10/12/2020. The power of attorney in this application is not accepted for the reason(s) listed below:

- No power of attorney has been established in the above-identified application. Accordingly, the withdrawal cannot be accepted because the practitioner seeking to withdraw is not of record. The change of correspondence address will be considered separately.

/ckhlok/

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





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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/431,602	06/04/2019	Joseph L. Vilella	190071	9342
24243	7590	11/16/2020	EXAMINER	
CHARMASSON, BUCHACA & LEACH, LLP			FAROOQUI, QUAZI	
2635 Camino Del Rio South				
Suite 102				
SAN DIEGO, CA 92108			ART UNIT	PAPER NUMBER
			2491	
			NOTIFICATION DATE	DELIVERY MODE
			11/16/2020	ELECTRONIC

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

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

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

john@charmason.com

Notice of Pre-AIA or AIA Status

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

Detail Action

This office action is response to the application 16/431,602 filed on 06/04/2019. Claims 1-13 are pending in this communication.

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

Examiner's Note

The Examiner used figures, paragraph and line numbers from the instant application's pre-grant publication or pdf copy of allowance.

Claim Rejections - 35 USC § 103

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

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the

time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under AIA 35 U.S.C. 103(a) as being unpatentable over Farmer; James O. et al. (hereinafter **FARMER**), Pat. No.: US 7,583,897 B2 in view of Dumitriu; Dan Mihai et al. (hereinafter **DUMITRIU**), Pat. No.: US 9,900,224 B2.

Regarding Claim 1, FARMER discloses *a multi-user optical data network apparatus comprises:*

a plurality of network service carrier lines {Fig. 3 element 340 – ‘Internet Router’ & element 345 ‘Telephone Switch’. Examiner’s note: internet router can receive multiple carrier lines} connected to a passive optical network interface router {Fig.3 element 355 - ‘Laser transceiver Node Routing Device’ and col.10 lines 42-45, “the laser transceiver node routing device 355 can comprise a conventional router that supports an interface protocol”.

Examiner’s note: a routing device can combine a conventional router and interfacing with internet router with multiple carrier lines. An optical interface passively connects to dark passive fiber};

at least one uplink connecting said interface router to an optical line terminal {Fig. 2 elements 120 – ‘Laser Transceiver Node’ and col. 10 lines 43-46, “the laser transceiver node routing device 355 can comprise a conventional router that supports an interface protocol for communicating with one or more laser transceiver nodes 120”. Examiner’s note: Interface

Router (355) connected to multiple claimed 'optical line terminals' or Laser Transceiver Nodes 120};

said optical line terminal being connected to a number of passive optical network feeds for carrying a common data feed to a plurality of optical network units {Fig. 3 element 365 – 'optical input output port device' & col. 11 lines 1-4, "upstream optical signals received from a respective laser transceiver node 120 can be fed into the bi-directional data input/output port 365 where the optical signals are then forwarded to the bi-directional splitter 360".

Examiner's note: element 365 is claimed 'Optical Network Unit'} *each supporting at least one of a plurality of private user devices {Fig. 6A col. 12 lines 40-49, "The optical tap routing device 435 can manage the interface with the data service hub optical signals and can route or divide or apportion the data service hub signals according to individual tap multiplexers 440 that communicate optical signals with one or more optical taps 130 and ultimately one or more subscriber optical interfaces 140. It is noted that tap multiplexers 440 operate in the electrical domain to modulate laser transmitters in order to generate optical signals that are assigned to groups of subscribers coupled to one or more optical taps".* Examiner's note: converted electrical signals of data are fed into subscriber upstream user devices};

FARMER, however, does not disclose

... [said interface router] being configured to have at least one virtual routing table for each one of said plurality of ... [optical] network units; and,
wherein each of said ... [optical] network units is adapted to extract data packets intended for a supported one of said devices.

In analogous teaching DUMITRIU discloses

... [said interface router] being configured to have at least one virtual routing table for each one of said plurality of ... [optical] network units {Fig. 8 element 201 –‘Internet connected Router’, elements 203, 204, 205 - ‘edge connector’ (edge router) & col. 28 lines 4-8, “looking up the IP addresses in a virtual routing table corresponding to a virtual router, selecting a destination (if more than one route is found), and forwarding the packet to the port corresponding to the route entry”}. Examiner’s note: packets received from Internet router 201 is routed to individual customer / site ‘edge connector’ devices 203-205 for end user VM 211-214 by look up of virtual routing tables for destination interfaces}; and,

wherein each of said ... [optical] network units is adapted to extract data packets intended for a supported one of said devices {Fig. 8 element 201 –‘Internet connected Router’, elements 203, 204, 205 - ‘edge connector’ (edge router) & col. 28 lines 3-4, “The routing method may comprise extracting the source and destination IP addresses”}. Examiner’s note: packets received from Internet router 201 is routed to individual customer / site ‘edge connector’ devices 203-205 for end user VM 211-214 by look up of virtual routing tables for destination interfaces}.

At the time the invention was made, it would have been obvious to one with ordinary skill in the art to modify FARMER’s technique of ‘an optical network router connecting to uplink optical carrier lines, distributing to multiple optical subscriber downlink ports for individual subscriber connected to different ports and the optical router mapping incoming and outgoing traffic by avoiding use of individual router for each subscriber’ of ‘having virtual routing tables for individual subscriber connected to different ports to map incoming and outgoing traffic, keeping individual subscriber’s data separate from other subscriber private, secured, and

managing all subscriber traffic to uplink data carrier network', as taught by DUMITRIU, in order to provide subscriber connectivity for services. The motivation is to provide multi-tenant network services with virtual routing tables by avoiding additional data center rack space, saving money on maintenance and management of individual router per tenant requirement.

All references are inventions in analogous area but each invention teaches specific claimed limitation specifically and other references mutually cure each other's deficiencies. When all claimed techniques are combined they teach claimed invention. The Examiner notes that this motivation applies to all dependent and/or otherwise subsequently addressed claims unless addressed separately.

Regarding Claim 2, FARMER as modified by DUMITRIU discloses all the features of claim

1. The combination further discloses

wherein said interface router is a premise router {FARMER: Fig.3 element 355 - 'Laser transceiver Node Routing Device' and col.10 lines 42-45, "the laser transceiver node routing device 355 can comprise a conventional router that supports an interface protocol".

Examiner's note: a routing device which can combine a conventional router and interfacing with internet router with multiple carrier lines is an example of premise router. See instant application's spec. fig. 3}.

Regarding Claim 3, FARMER as modified by DUMITRIU discloses all the features of claim

1. The combination further discloses

wherein said interface router is further configured to have a routing table routine generating said at least one virtual routing table for each one of said plurality of optical network units {DUMITRIU: Fig. 8 element 201 –‘Internet connected Router’, elements 203, 204, 205 - ‘edge connector’ (edge router) & col. 28 lines 4-8, “looking up the IP addresses in a virtual routing table corresponding to a virtual router, selecting a destination (if more than one route is found), and forwarding the packet to the port corresponding to the route entry”}. Examiner’s note: packets received from Internet router 201 is routed to individual customer / site ‘edge connector’ devices 203-205 for end user VM 211-214 by look up of virtual routing tables for destination interfaces}.

Regarding Claim 4, FARMER as modified by DUMITRIU discloses all the features of claim

1. The combination further discloses

wherein each of said optical network units provides service to a separate number of private users {FARMER: Fig. 6A col. 12 lines 40-49, “The optical tap routing device 435 can manage the interface with the data service hub optical signals and can route or divide or apportion the data service hub signals according to individual tap multiplexers 440 that communicate optical signals with one or more optical taps 130 and ultimately one or more subscriber optical interfaces 140. It is noted that tap multiplexers 440 operate in the electrical domain to modulate laser transmitters in order to generate optical signals that are assigned to groups of subscribers coupled to one or more optical taps”. Examiner’s note: converted electrical signals of data are fed into subscriber upstream user devices}.

Regarding Claim 5, FARMER as modified by DUMITRIU discloses all the features of claim

1. The combination further discloses

wherein said uplink carries data including digitized voice and video data {FARMER: col. 1 lines 23-28, “the invention relates to video, voice, and data communications. More particularly, the invention relates to a fiber-to-the-home (FTTH) system that is capable of supporting upstream radio-frequency (RF) return signals formatted according to a cable modem protocol that originate from a subscriber and are sent upstream to a data service provider”. Examiner’s note: optical network handles digital triple play or voice, video & data}.

Regarding claim 6, claim 6 is claim to an apparatus using the apparatus of claim 1.

Therefore, claim 6 is rejected for the reasons set forth for claim 1.

Regarding Claim 7, FARMER teaches a *digital data network communication method* comprises:

accepting a plurality of private data streams {Fig. 3 element 340 – ‘Internet Router’ & element 345 ‘Telephone Switch’. Examiner’s note: internet router can receive multiple carrier lines} *into a passive optical network interface router* {Fig.3 element 355 - ‘Laser transceiver Node Routing Device’ and col.10 lines 42-45, “the laser transceiver node routing device 355 can comprise a conventional router that supports an interface protocol”. Examiner’s note: optical router, which can combine a conventional router, is interfacing with internet router with multiple digital carrier lines. An optical interface passively connects to dark passive fiber} *serving a plurality of private users through a plurality of optical network units* { Fig. 6A col. 12

lines 40-49, “The optical tap routing device 435 can manage the interface with the data service hub optical signals and can route or divide or apportion the data service hub signals according to individual tap multiplexers 440 that communicate optical signals with one or more optical taps 130 and ultimately one or more subscriber optical interfaces 140. It is noted that tap multiplexers 440 operate in the electrical domain to modulate laser transmitters in order to generate optical signals that are assigned to groups of subscribers coupled to one or more optical taps”. Examiner’s note: converted electrical signals of data are fed into subscriber upstream user devices};

...

routing said data feed to at least two of said plurality of optical network units {Fig. 3 elements 365 – ‘optical input output port device’ & col. 11 lines 1-4, “upstream optical signals received from a respective laser transceiver node 120 can be fed into the bi-directional data input/output port 365 where the optical signals are then forwarded to the bi-directional splitter 360”. Examiner’s note: element 365 is claimed ‘Optical Network Unit’};

tagging ethernet frames {col. 10 lines 41-49, “the data service hub 110 can further comprise a logic interface 350 that is connected to a laser transceiver node routing device 355. The laser transceiver node routing device 355 can comprise a conventional router that supports an interface protocol for communicating with one or more laser transceiver nodes 120. This interface protocol can comprise one of gigabit or faster Ethernet, Internet Protocol (IP) or SONET protocols”} ...

FARMER does not explicitly disclose

aggregating said private data streams into a combined data feed;

...

extracting from said data feed a first one of said private data streams;

wherein said routing comprises:

generating an independently unique virtual routing table for each of said plurality of optical network units;

... intended for a first one of said plurality of optical network units according to entries in a first one of said virtual routing tables associated with a first one of said optical network units;

distributing said tagged ethernet frames according to said first one of said virtual routing tables.

In an analogous reference DUMITRIU discloses

aggregating said private data streams into a combined data feed {col. 20 lines 13-22,

“The node processes (e.g. aggregates) the routes advertised by the peer and adds them to the forwarding table of the virtual router after setting their egress port to the ID of the virtual port that has the routing-protocol session configuration. If the container or session fails, the node removes all such routes that it itself may have added to the forwarding table. The result is that the peer perceives the router's port as sending and receiving both regular (end-host) traffic and routing-protocol session traffic”};

extracting from said data feed a first one of said private data streams {Fig. 8 element 201 –‘Internet connected Router’, elements 203, 204, 205 - ‘edge connector’ (edge router) & col. 28 lines 3-4, “The routing method may comprise extracting the source and destination IP addresses};

wherein said routing comprises:

generating an independently unique virtual routing table for each of said plurality of ... [optical] network units {Fig. 8 element 201 –‘Internet connected Router’, elements 203, 204, 205 - ‘edge connector’ (edge router) & col. 28 lines 4-8, “looking up the IP addresses in a virtual routing table corresponding to a virtual router, selecting a destination (if more than one route is found), and forwarding the packet to the port corresponding to the route entry”}.

Examiner’s note: packets received from Internet router 201 is routed to individual customer / site ‘edge connector’ devices 203-205 for end user VM 211-214 by look up of virtual routing tables for destination interfaces};

... intended for a first one of said plurality of ... [optical] network units according to entries in a first one of said virtual routing tables associated with a first one of said ... [optical] network units {Fig. 8 element 201 –‘Internet connected Router’, elements 203, 204, 205 - ‘edge connector’ (edge router) & col. 28 lines 3-8, “The routing method may comprise extracting the source and destination IP addresses, looking up the IP addresses in a virtual routing table corresponding to a virtual router, selecting a destination (if more than one route is found), and forwarding the packet to the port corresponding to the route entry”}.

Examiner’s note: packets received from Internet router 201 is routed to individual customer / site ‘edge connector’ devices 203-205 for end user VM 211-214 by look up of virtual routing tables for destination interfaces};

distributing said tagged ethernet frames according to said first one of said virtual routing tables {col. 12 lines 56-60, “The method may also include recognizing IP packets and extracting the source IP address and the source MAC address of the encapsulating Ethernet frame and thus inferring the IP-MAC correspondence and adding the appropriate entry to the

ARP cache.” ... col. 28 lines 8-13, “The forwarding of the packet depends on whether the next hop of the matching route is an interior facing (logical) port or an exterior facing (materialized) port. Since virtual routers may be implemented as tables, routing between two virtual routers comprises a lookup in successive virtual router tables”}.

At the time the invention was made, it would have been obvious to one with ordinary skill in the art to modify FARMER’s technique of ‘an optical network router connecting to uplink optical carrier lines, distributing to multiple optical subscriber downlink ports for individual subscriber connected to different ports and the optical router mapping incoming and outgoing traffic by avoiding use of individual router for each subscriber’ of ‘having virtual routing tables for individual subscriber connected to different ports to map incoming and outgoing traffic, keeping individual subscriber’s data separate from other subscriber private, secured, and managing all subscriber traffic to uplink data carrier network’, as taught by DUMITRIU, in order to provide subscriber connectivity for services. The motivation is to provide multi-tenant network services with virtual routing tables by avoiding additional data center rack space, saving money on maintenance and management of individual router per tenant requirement.

All references are inventions in analogous area but each invention teaches specific claimed limitation specifically and other references mutually cure each other’s deficiencies. When all claimed techniques are combined they teach claimed invention. The Examiner notes that this motivation applies to all dependent and/or otherwise subsequently addressed claims unless addressed separately.

Regarding claim 8, claim 8 is a dependent claim of claim 7, claim 8 is claim to method using the apparatus of claim 3. Therefore, claim 8 is rejected for the reasons set forth for claim 3.

Regarding claim 9, claim 9 is a dependent claim of claim 7, claim 9 is claim to method using the apparatus of claim 4. Therefore, claim 9 is rejected for the reasons set forth for claim 4.

Regarding Claim 10, FARMER as modified by DUMITRIU discloses all the features of claim 7. The combination further discloses

wherein said accepting comprises: interfacing a plurality of service provider data lines through a single headend {FARMER: Fig. 3 element 350 & col. 10 lines 41-43, “the data service hub 110 can further comprise a logic interface 350 that is connected to a laser transceiver node routing device 355”. Examiner’s note: a single headend device 350 receives all carrier lines and feed into interface router 355}.

Regarding Claim 11, FARMER as modified by DUMITRIU discloses all the features of claims 10 & 7. The combination further discloses *wherein said interfacing comprises:*

utilizing at least one premise router and a radio frequency video converter; and, feeding an output of said at least one premise router through an optical line terminal {FARMER: col.10 lines 9-16, “to support data services or to support incidental services related to the downstream video services, a data-to-RF converter 307 that transforms RF return packets

back into their original RF analog electrical format can be coupled to an Internet Router 340.

Further details of RF converter 307 will be discussed below with respect to FIG. 8. The RF analog electrical signals generated by the data-to-RF converter 307 are demodulated by an RF receiver 309". Examiner's note: radio frequency converter is used for data conversion to appropriate form for uplink and downlink}.

Regarding Claim 12, FARMER as modified by DUMITRIU discloses all the features of claims 11, 10 & 7. The combination further discloses

wherein said interfacing further comprises: feeding an output of said converter through said optical line terminal {FARMER: col.10 lines 9-16, "to support data services or to support incidental services related to the downstream video services, a data-to-RF converter 307 that transforms RF return packets back into their original RF analog electrical format can be coupled to an Internet Router 340. Further details of RF converter 307 will be discussed below with respect to FIG. 8. The RF analog electrical signals generated by the data-to-RF converter 307 are demodulated by an RF receiver 309". Examiner's note: radio frequency converter is used for data conversion to appropriate form for uplink and downlink}.

Regarding Claim 13, FARMER as modified by DUMITRIU discloses all the features of claim 7. The combination further discloses

wherein said aggregating comprises using an enterprise aggregating switch {FARMER: Fig.3 & col.10 lines 42-48, "The laser transceiver node routing device 355 can comprise a conventional router that supports an interface protocol for communicating with one or more

laser transceiver nodes 120. This interface protocol can comprise one of gigabit or faster Ethernet, Internet Protocol (IP) or SONET protocols". Examiner's note: an interface router is an aggregation switch/ OSI Layer 3 router and is combining or aggregating carrier feeds for all customers}.

Conclusion

Following prior arts have been considered but not applied:

US 7,990,853 B2 (Brolin; Stephen J.) - Link aggregation with internal load balancing;

US 8,107,476 B2 (MacLean; Mark D. et al.) - System and method for switching packet traffic over an optical transport network;

US 8,606,105 B2 (Ong; Lyndon Y.) - Virtual core router and switch systems and methods with a hybrid control architecture and

US 9,306,910 B2 (Lambeth; W. Andrew et al.) - Private allocated networks over shared communications infrastructure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUAZI FAROOQUI whose telephone number is (571) 270-1034. The examiner can normally be reached on M-F 8:30AM-5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ashok B. Patel can be reached on 571-272-3972. The fax phone number for Examiner Farooqui assigned is 571-270-2034.

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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.

/QUAZI FAROOQUI/

Examiner, Art Unit 2491

<i>Notice of References Cited</i>	Application/Control No. 16/431,602		Applicant(s)/Patent Under Reexamination Vilella, Joseph L.	
	Examiner QUAZI FAROOQUI		Art Unit 2491	Page 1 of 1

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*	B	US-9900224-B2	02-2018	Dumitriu; Dan Mihai	H04L41/5038	1/1
*	C	US-7990853-B2	08-2011	Brolin; Stephen J.	H04L41/024	370/229
*	D	US-8107476-B2	01-2012	MacLean; Mark D.	H04Q11/0062	370/392
*	E	US-8606105-B2	12-2013	Ong; Lyndon Y.	H04L49/357	398/51
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

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Part of Paper No. 20201027

Search Notes 	Application/Control No. 16/431,602	Applicant(s)/Patent Under Reexamination Vilella, Joseph L.
	Examiner QUAZI FAROOQUI	Art Unit 2491

CPC - Searched*		
Symbol	Date	Examiner
H04Q11/0067 or H04L63/0414 or H04B10/27 or H04Q2011/0086 or H04Q2011/0073 or H04L63/0428 or H04L63/0272	10/28/2020	QF
H04Q11/00 H04L29/06 H04B10/27	10/28/2020	QF

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
398	70, 71, 72, 256,	10/28/2020	QF

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

Search Notes		
Search Notes	Date	Examiner
inventor and assignee search	10/28/2020	QF
classification and text search in EAST	10/28/2020	QF
Google Scholar search for NPL with inventive concept	10/28/2020	QF
IP.com search with inventive concept	10/28/2020	QF

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/QUAZI FAROOQUI/ Examiner, Art Unit 2491	
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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	"9900224" and local with virtual with table	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 16:12
L2	4	"9900224" and virtual with table	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 16:13
L3	2	"9900224" and (local global) with virtual with table	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 16:13
L4	0	"9900224" and (local) with virtual with table	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 16:13
L5	1	"9900224" and device with virtual with table	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 16:14
L6	2,040	"20160112307" "10116556" "20190007312" "20110194567" "20040240429" "20040233913" "9246791" "20120039333" "20040013120" "20040240455" "8472451" "7948994" "8045547" "7715381" "6907039" "20110016215" "20030169747" "8606105" "20130071116" "8427972" "7801155"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 16:59

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L8	0	7 and virtual near5 (rout\$3 table) and optical	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 17:03
L9	0	7 and virtual near5 (rout\$3 table)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 17:04
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S1	24,961	(aggregat\$3 near5 encrypt\$3) optical near5 data near5 stream	US-PGPUB; USPAT;	OR	ON	2016/02/11 14:03

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S2	2	(aggregat\$3 near5 encrypt\$3) SAME (optical near5 data near5 stream)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/11 14:04
S3	333	(radio adj frequency) same (video near5 converter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/11 14:06
S4	5	(radio adj frequency) same (video near5 converter) same router	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/11 14:07
S5	51	(radio adj frequency) same (video near5 converter) same (router switch)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/11 14:07
S6	3	S5 and (optical adj splitter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/11 14:09
S7	3	"6751302".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/11 14:50
S8	0	"SPADA INNOVATIONS, INC.".as.	US-PGPUB; USPAT; USOCR;	OR	ON	2016/02/16 11:13

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S9	0	"SPADA INNOVATIONS, INC.".asn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:13
S10	133	"SPADA".asn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:13
S11	2	S10 and optical and encrypt\$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:14
S12	34	((VILELLA near2 JOSEPH) OR (REYNANTE near4 JAMES)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:16
S13	2	S12 and encrypt\$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:16
S14	520	"3" AND H04L9/0852.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:24
S15	52	"S3" AND H04L9/0852.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2016/02/16 11:24

			JPO; DERWENT; IBM_TDB			
S16	37	"S3" AND 380/256.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/02/16 11:25
S17	0	"20170063542".pn.	USPAT	OR	ON	2018/06/29 11:31
S18	3	"20170063542".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/06/29 11:39
S19	403	(Optical adj2 data adj2 network)	USPAT	OR	OFF	2018/06/29 13:33
S20	0	(Optical adj2 data adj2 network) same3 (virtual near5 rout\$3 near5 table)	USPAT	OR	OFF	2018/06/29 13:35
S21	0	(Optical adj2 data adj2 network) and (virtual near5 rout\$3 near5 table)	USPAT	OR	OFF	2018/06/29 13:36
S22	2	(Optical adj2 data adj2 network) and ((virtual many multiple plural\$3) near5 rout\$3 near5 table)	USPAT	OR	OFF	2018/06/29 13:36
S23	3,346	((virtual many multiple plural\$3) near5 rout\$3 near5 table)	USPAT	OR	OFF	2018/06/29 13:39
S24	448	(virtual many multiple plural\$3) adj2 rout\$3 adj2 table	USPAT	OR	OFF	2018/06/29 13:39
S25	21	S24 and (optical adj5 network)	USPAT	OR	OFF	2018/06/29 13:40
S26	24	S24 and (optical adj5 (network router switch))	USPAT	OR	OFF	2018/06/29 13:42
S27	24	S26 AND (@ad @pd @prad @rlad @ptad < "20120801")	USPAT	OR	OFF	2018/06/29 13:42
S28	24	S26 AND (@ad @pd < "20120801")	USPAT	OR	OFF	2018/06/29 13:43
S29	1,203	398/70-72.ccls. (H04B10/00).cpc.	USPAT	OR	OFF	2018/06/29 16:39
S30	403	(Optical adj2 data adj2 network)	USPAT	OR	OFF	2018/06/29 16:40
S31	13	S30 and S29	USPAT	OR	OFF	2018/06/29 16:40

S32	122	S29 and virtual	USPAT	OR	OFF	2018/06/29 16:40
S33	64	"pluris".asn.	USPAT	OR	OFF	2018/06/30 14:45
S34	41	"sycamore networks".asn.	USPAT	OR	OFF	2018/06/30 14:46
S35	3	"sycamore networks".asn. and frequency and splitter	USPAT	OR	OFF	2018/06/30 14:46
S36	54,148	"pluris"" .asn.and" frequency and splitter	USPAT	OR	OFF	2018/06/30 14:47
S37	54,148	"pluris"" .asn.and" frequency and splitter	USPAT	OR	OFF	2018/06/30 14:47
S38	0	S33 and frequency and splitter	USPAT	OR	OFF	2018/06/30 14:47
S39	17	S33 and aggrega\$4	USPAT	OR	OFF	2018/06/30 14:48
S40	19	S33 and optical	USPAT	OR	OFF	2018/06/30 14:48
S41	8	S33 and optical and router	USPAT	OR	OFF	2018/06/30 14:49
S42	3	S33 and (optical same2 router)	USPAT	OR	OFF	2018/06/30 14:49
S43	30,913	(aggregat\$3 near5 encrypt\$3) optical near5 data near5 stream	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/06/30 15:00
S44	1,285	S43 and (encrypt\$4 same2 decrypt\$4)	USPAT	OR	OFF	2018/06/30 15:00
S45	1,198	S43 and (encrypt\$4 with decrypt\$4)	USPAT	OR	OFF	2018/06/30 15:01
S46	45	S43 and (encrypt\$4 with decrypt\$4) and splitter	USPAT	OR	OFF	2018/06/30 15:01
S47	574,634	(H04L9/00 H04L9/32-3297 H04L63/04-0492 H04L63/08-0892 H04L63/10 H04L63/1408 H04L63/1416 H04L67/12 G06F15/16-18 G06F21/00 G06F21/30-46 G06F21/60-645 G06F21/554 G06F2221/033 G06F9/00 H04N7/167 H04W12/00-12).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/07/02 15:11
S48	598,937	(H04L9/00 H04L9/32-3297 H04L63/04-0492 H04L63/08-0892 H04L63/10 H04L63/1408 H04L63/1416 H04L67/12 G06F15/16-18 G06F21/00 G06F21/30-	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2018/07/02 15:13

		46 G06F21/60-645 G06F21/554 G06F2221/033 G06F9/00 H04N7/167 H04W12/00-12).CPC. (H04L9/06,08 H04Q11/00, H04B10/27).CPC.(H04L9/0852 or H04Q11/0003 or H04B10/27 or H04L9/065 or H04Q11/0062 or H04Q2011/0079 or H04Q2011/0073 or H04B10/00).cpc.	JPO; DERWENT; IBM_TDB			
S49	660,848	(H04L9/00 H04L9/32-3297 H04L63/04- 0492 H04L63/08-0892 H04L63/10 H04L63/1408 H04L63/1416 H04L67/12 G06F15/16-18 G06F21/00 G06F21/30- 46 G06F21/60-645 G06F21/554 G06F2221/033 G06F9/00 H04N7/167 H04W12/00-12).CPC. (H04L9/06,08 H04Q11/00, H04B10/27).CPC.(H04L9/0852 or H04Q11/0003 or H04B10/27 or H04L9/065 or H04Q11/0062 or H04Q2011/0079 or H04Q2011/0073 or H04B10/00).cpc. (380/26,28-30,44- 47,255-286 713/150-154,160-168,189- 193 726/1-33).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/07/02 15:15
S50	2	(Optical adj2 data adj2 network) and ((virtual many multiple plural\$3) near5 rout\$3 near5 table)	USPAT	OR	OFF	2018/07/02 15:16
S51	0	S50 and S49	USPAT	OR	OFF	2018/07/02 15:16
S52	392	(Optical adj2 data adj2 network) and (virtual many multiple plural\$3)	USPAT	OR	OFF	2018/07/02 15:17
S53	60	S52 and S49	USPAT	OR	OFF	2018/07/02 15:17
S54	47	S53 AND ((@ad @pd @prad @rlad @ptad) <"20120801")	USPAT	OR	OFF	2018/07/02 15:20
S55	41	S53 AND ((@ad @pd) <"20120801")	USPAT	OR	OFF	2018/07/02 15:21
S56	10	(Optical adj2 data adj2 network) and (virtual same (many multiple plural\$3) same rout\$5)	USPAT	OR	OFF	2018/07/02 15:23
S57	3	S54 and S56	USPAT	OR	OFF	2018/07/02 15:23
S58	6	S56 AND ((@ad @pd) <"20120801")	USPAT	OR	OFF	2018/07/02 15:24
S59	2	(Optical adj2 data adj2 network) and ((virtual many multiple plural\$3) near5 rout\$3 near5 table)	USPAT	OR	OFF	2018/07/02 18:28

S60	1	(optical adj data adj network) near5 (traffic adj rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 15:20
S61	3	(optical adj data adj network) with (traffic near3 rout\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 15:21
S62	35	((VILELLA near2 JOSEPH) OR (REYNANTE near4 JAMES)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/01/31 15:22
S63	0	"SPADA INNOVATIONS, INC.".asn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/01/31 15:22
S64	698,408	(H04L9/00 H04L9/32-3297 H04L63/04- 0492 H04L63/08-0892 H04L63/10 H04L63/1408 H04L63/1416 H04L67/12 G06F21/00 G06F21/30-46 G06F21/60- 645 G06F21/554 G06F2221/033 G06F9/00 H04N7/167 H04W12/00- 12).CPC. (H04L9/06,08 H04Q11/00, H04B10/27).CPC.(H04L9/0852 or H04Q11/0003 or H04B10/27 or H04L9/065 or H04Q11/0062 or H04Q2011/0079 or H04Q2011/0073 or H04B10/00).cpc. (380/26,28-30,44- 47,255-286 713/150-154,160-168,189- 193 726/1-33).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 15:23
S65	1	S61 AND ((@ad @pd @prad @riad @ptad) <"20120801")	USPAT	OR	OFF	2019/01/31 15:25
S66	2	S61 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/01/31 15:27

			DERWENT; IBM_TDB			
S67	7	(global adj rout\$3 adj table) same (virtual adj rout\$3 adj table) same router	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 15:37
S68	3	S67 AND ((@ad @pd @prad @rlad @ptad) <"20120801")	USPAT	OR	OFF	2019/01/31 15:37
S69	240	(Optical NEAR5 network) and ((virtual many multiple plural\$3) near5 rout\$3 near5 table)	USPAT	OR	OFF	2019/01/31 16:28
S70	26	S64 AND S69	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 16:28
S71	22	S70 AND ((@ad @pd @prad @rlad @ptad) <"20120801")	USPAT	OR	OFF	2019/01/31 16:29
S72	22	S64 AND S71	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 16:29
S73	115	(Optical NEAR5 network) and ((virtual) near5 rout\$3 near5 table)	USPAT	OR	OFF	2019/01/31 17:56
S74	0	(Optical NEAR5 network) same ((virtual) near5 rout\$3 near5 table)	USPAT	OR	OFF	2019/01/31 17:56
S75	115	(Optical NEAR5 network) and ((virtual) near5 rout\$3 near5 table)	USPAT	OR	OFF	2019/01/31 17:57
S76	95	S75 AND ((@ad @pd @prad @rlad @ptad) <"20120801")	USPAT	OR	OFF	2019/01/31 17:57
S77	15	S64 and S76	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 17:57
S78	10,467	Optical and (virtual near5 rout\$3)	USPAT	OR	OFF	2019/01/31 18:06

S79	301	Optical same (virtual near5 rout\$3)	USPAT	OR	OFF	2019/01/31 18:06
S80	67	S64 and S79	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 18:07
S81	9	Optical same (virtual near5 rout\$3 near5 table)	USPAT	OR	OFF	2019/01/31 18:08
S82	8	S81 AND ((@ad @pd @prad @rlad @ptad) <"20120801")	USPAT	OR	OFF	2019/01/31 18:08
S83	0	S64 and S82	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 18:09
S84	2	optical with (virtual near3 routing near3 table)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/01/31 18:56
S85	98,678	(encrypt\$3 near5 data) same3 (decrypt\$3 near5 data)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/02/01 16:10
S86	23	(encrypt\$3 near5 data near3 voice near3 video) same3 (decrypt\$3 near5 data near3 voice near3 video)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/02/01 16:12
S87	4	S86 AND ((@ad @pd @prad @rlad @ptad) <"20120801")	USPAT	OR	OFF	2019/02/01 16:13
S88	2	("20190289374").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	2020/10/27 17:00

S89	206,479	(H04Q11/0067 or H04L63/0414 or H04B10/27 or H04Q2011/0086 or H04Q2011/0073 or H04L63/0428 or H04L63/0272).cpc. (H04Q11/00 H04L29/06 H04B10/27).cpc. 380/256.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 17:12
S90	207,700	(H04Q11/0067 or H04L63/0414 or H04B10/27 or H04Q2011/0086 or H04Q2011/0073 or H04L63/0428 or H04L63/0272).cpc. (H04Q11/00 H04L29/06 H04B10/27).cpc. (398/72 380/256 398/71 398/70).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 17:15
S91	109	(aggregat\$3) with optical near5 data near5 stream	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 17:49
S92	33	S91 AND ((@ad @prad @rlad) <"20120801")	USPAT	OR	OFF	2020/10/27 17:51
S93	1	S90 and S92	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 17:51
S94	3	"SPADA".asn. and optical	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 17:52
S95	5	((VILELLA near2 JOSEPH) OR (REYNANTE near4 JAMES)).inv. and optical	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 17:53
S96	24	Optical same (virtual near5 rout\$3 near5 table)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2020/10/27 18:05

			DERWENT; IBM_TDB			
S97	8	S96 AND ((@ad @prad @rlad) <"20120801")	USPAT	OR	OFF	2020/10/27 18:05
S98	0	S90 and S97	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/27 18:05
S99	1	"20190289374".did.	DERWENT	OR	ON	2020/10/27 18:17
S100	21	optical near5 (switch router) with aggregat\$3 near5 interface	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:48
S101	1	optical near5 (switch router) with aggregat\$3 near5 interface same forward\$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:49
S102	12	optical near5 (switch router) with aggregat\$3 near5 interface and forward\$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:49
S103	5	S102 AND ((@ad @prad @rlad) <"20120801")	USPAT	OR	OFF	2020/10/28 12:49
S104	207,700	(H04Q11/0067 or H04L63/0414 or H04B10/27 or H04Q2011/0086 or H04Q2011/0073 or H04L63/0428 or H04L63/0272).cpc. (H04Q11/00 H04L29/06 H04B10/27).cpc. (398/72 380/256 398/71 398/70).cccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:55
S105	1	S104 and S103	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2020/10/28 12:55

			DERWENT; IBM_TDB			
S106	6	S104 and S100	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:56
S107	3	S106 AND ((@ad @prad @rlad) <"20120801")	USPAT	OR	OFF	2020/10/28 12:56
S108	5	optical near5 (switch router) with aggregat\$3 same virtual near5 (rout\$3 forward\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:58
S109	0	S108 AND ((@ad @prad @rlad) <"20120801")	USPAT	OR	OFF	2020/10/28 12:59
S110	93	optical near5 (switch router) with virtual near5 (rout\$3 forward\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 12:59
S111	6	optical near5 (switch router) with virtual near5 (rout\$3 forward\$3) near5 table	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/10/28 13:00
S112	2	S111 AND ((@ad @prad @rlad) <"20120801")	USPAT	OR	OFF	2020/10/28 13:00

10/28/2020 5:06:57 PM

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Bibliographic Data

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Foreign Priority claimed: ☐ Yes ☒ No

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Verified and Acknowledged: /QUAZI FAROOQUI/

Examiner's Signature

Initials

Title:

Mutually secure optical data network and method

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/04/2019	380	2491	190071
RULE			

APPLICANTS

INVENTORS

Joseph L. Vilella, San Diego, CA, UNITED STATES

CONTINUING DATA

This application is a CIP of 15351315 11/14/2016ABN

15351315 is a CIP of 14419092 02/02/2015ABN

14419092 is a 371 of PCT/US2013/053389 08/02/2013

PCT/US2013/053389 has PRO of 61678977 08/02/2012

FOREIGN APPLICATIONS

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Dense virtual router packet switching

SM Alfieri, CT Tingley - US Patent 7,039,720, 2006 - Google Patents

... the **routing** tasks to the different context areas of the memory, thereby realizing a set of **virtual routers** for all the VPRNs supported by the dense **virtual routing** system ... For example, if one million **routes** are supported in a non-segmented network, the processing load is on the ...

☆ 77 Cited by 131 Related articles All 4 versions 22

Hardware-accelerated packet multicasting in a virtual routing system

J Cheng, Z Hussain, T Millet - US Patent 7,933,269, 2011 - Google Patents

US7933269B2 - Hardware-accelerated packet multicasting in a **virtual routing** system - Google Patents. Hardware-accelerated packet multicasting in a **virtual routing** system.

Download PDF Info. Publication number US7933269B2 ...

☆ 77 Cited by 72 Related articles All 4 versions 22

Resource allocation in virtual routers

Y Wang - US Patent 8,427,972, 2013 - Google Patents

... Line card processor 524 uses its forwarding **table**, stored in memory 526, when transmitting ... mentioned, **router** systems 300 or 400 may share resources among the **virtual routers** of the ... Two logical resources will be considered: (a) **routing** processes and (b) forwarding processes ...

☆ 77 Cited by 149 Related articles All 4 versions 22

Virtual routers on the move: live router migration as a network-management primitive

Y Wang, E Keller, B Biskeborn... - ACM SIGCOMM ..., 2008 - dl.acm.org

... ATM switches are partitioned to enable dynamic creation of **virtual networks** [31] ... that neither solution is satisfactory, since maintenance of physical **routers** still requires ... network topology, and requires (often human interactive) reconfigurations and **routing** protocol reconvergence ...

☆ 77 Cited by 511 Related articles All 28 versions 22

System and method for hardware accelerated packet multicast in a virtual routing system

J Cheng, Z Hussain, T Millet - US Patent 7,266,120, 2007 - Google Patents

... H04L45/58—Association of **routers**; H04L45/586—**Virtual routers**. H—ELECTRICITY; H04—ELECTRIC COMMUNICATION TECHNIQUE; H04L ... finding of packets in data switching networks; H04L45/74—Address processing for **routing**; H04L45/745—Address **table** lookup or ...

☆ 77 Cited by 153 Related articles All 4 versions 22

Resource allocation in virtual routers

Y Wang - US Patent 7,801,155, 2010 - Google Patents

... Line card processor 524 uses its forwarding **table**, stored in memory 526, when transmitting ... mentioned, **router** systems 300 or 400 may share resources among the **virtual routers** of the ... Two logical resources will be considered: (a) **routing** processes and (b) forwarding processes ...

☆ 77 Cited by 88 Related articles All 4 versions 22

Method and apparatus for routing data using router identification information

Z Zhang - US Patent 6,275,492, 2001 - Google Patents

... necessary for network device 20 to properly transmit and receive data, and to identify **routes** through a network ... en) *, 2002-07-16, 2004-04-15, Folkes Ronald P. Method to enable **routing** protocol communication and transit packet forwarding between **virtual routers** ...

☆ 77 Cited by 81 Related articles All 2 versions 22

Hierarchical metering in a virtual router-based network switch

Z Hussain, S Desai, N Alam, J Cheng... - US Patent 7,668,087, 2010 - Google Patents

... Conventional **routers** attempt to solve this problem by performing packet metering/rate limiting on **each** ... 2 is a functional block diagram of a **virtual routing** platform in accordance with an embodiment of the ... 4 is a flow **chart** of a packet processing procedure in accordance with an ...

☆ 77 Cited by 92 Related articles All 4 versions 22

Virtual core router and switch systems and methods with a hybrid control architecture

LY Ong - US Patent 8,606,105, 2013 - Google Patents

... B2 US 8606105B2 US 201113233603 A US201113233603 A US 201113233603A US 8606105 B2 US8606105 B2 US 8606105B2 Authority US United States Prior art keywords packet plurality edge **routers** network **virtual** Prior art date ... 230000003287 **optical** Effects 0 ...

☆ 77 Cited by 35 Related articles All 4 versions 22

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C47&q=virtual+routing+table+for+each+virtual+optical+router&btnG=

1/2

System and method for router virtual networking

TL Watson, LA Visser - US Patent 7,441,017, 2008 - Google Patents

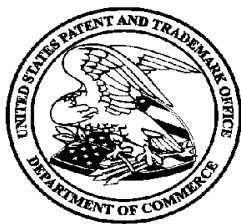
System and method for **router virtual** networking. Download PDF Info ... Authority US United States
Prior art keywords net domain domains host **router** system Prior art ... 230000003287 **optical** Effects
0 description 4; 238000005365 production Methods 0 description 4; 238000004458 ...

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**Courtesy Reminder for
Application Serial No: 16/431,602**

Attorney Docket No: 190071
Customer Number: 24243
Date of Electronic Notification: 11/16/2020

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

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

To view your correspondence online or update your email addresses, please visit us anytime at <https://ppair-my.uspto.gov/pair/PrivatePair>.
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APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
16/431,602		2491	



Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 175346 on 12/02/2020

- Correspondence Address
- Maintenance Fee Address

The address of record for Customer Number 175346 is:

175346
Joseph L. Vilella
2031 Second Avenue
San Diego, CA 92101

PART 1 - ATTORNEY/APPLICANT COPY

page 1 of 1

Nokia Exhibit No. 1007
Nokia v. SPADA
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/431,602	06/04/2019	Joseph L. Vilella	190071	9342
175346	7590	07/13/2021	EXAMINER FAROOQUI, QUAZI	
Joseph L. Vilella 2031 Second Avenue San Diego, CA 92101			ART UNIT 2491	PAPER NUMBER
			MAIL DATE 07/13/2021	DELIVERY MODE PAPER

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

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

Notice of Abandonment	Application No.	Applicant(s)
	16/431,602	Vilella, Joseph L.

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

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 16 November 2020.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) if this is utility or plant application, a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. Note that RCEs are not permitted in design applications.)
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a *bona fide* attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 8 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$ _____ is insufficient. A balance of \$ _____ is due.
The issue fee required by 37 CFR 1.18 is \$ _____. The publication fee, if required by 37 CFR 1.18(d), is \$ _____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33(b). See 37 CFR 1.138(b).
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.
6. ☐ The decision by the Patent Trial and Appeal Board rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The dismissal of the appeal in an application having no allowed claims. (When an appeal is dismissed in an application having no allowed claims the application stands abandoned. See MPEP 1215.04 subsections I-V for an explanation of the reasons why an appeal is dismissed.)
8. ☐ The reason(s) below:

/ADRIENE D. SELLMAN/

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

U.S. Patent and Trademark Office

PTOL-1432 (Rev. 04-19)

Notice of Abandonment

Part of Paper No. 20210713