

## Tunnel Provisioning with Link Aggregation

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### CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of, and claims priority to copending U.S. nonprovisional patent application entitled "Tunnel Provisioning With Link Aggregation," having serial number 13/116,696, filed May 26, 2011, which is a continuation of, and claims priority to U.S. patent number 7,974,202, filed May 6, 2005, each of which are hereby incorporated by reference in their entirety.

### FIELD OF THE INVENTION

The present invention relates generally to communication networks, and particularly to methods and systems for performing link aggregation in tunneled networks.

### BACKGROUND OF THE INVENTION

#### Multiprotocol Label Switching

Multiprotocol Label Switching (MPLS) has gained popularity as a method for efficient transportation of data packets over connectionless networks, such as Internet Protocol (IP) networks. MPLS is described in detail by Rosen et al., in Request for Comments (RFC) 3031 of the Internet Engineering Task Force (IETF), entitled "Multiprotocol Label Switching Architecture" (January, 2001), which is incorporated herein by reference. This RFC, as well as other IETF RFCs cited herein below, is available at [www.ietf.org/rfc](http://www.ietf.org/rfc).

In MPLS, each packet is assigned to a Forwarding Equivalence Class (FEC) when it enters the network, depending on its destination address. The packet receives a fixed-length label, referred to as an "MPLS label" identifying the FEC to which it belongs. All packets in a

given FEC are passed through the network over the same path by label-switching routers (LSRs). The flow of packets along a label-switched path (LSP) under MPLS is completely specified by the label applied at the ingress node of the path. Therefore, an LSP can be viewed as a tunnel through the network.

MPLS defines a label distribution protocol (LDP) by which one LSR informs another of the meaning of labels used to forward traffic between and through them. Another example is RSVP-TE, which is described by Awduche et al., in IETF RFC 3209 entitled "RSVP-TE: Extensions to RSVP for LSP Tunnels" (December, 2001), which is incorporated herein by reference. RSVP-TE extends the well-known Resource Reservation Protocol (RSVP), allowing the establishment of explicitly-routed LSPs using RSVP as a signaling protocol. RSVP itself is described by Braden et al., in IETF RFC 2205, entitled "Resource ReSerVation Protocol (RSVP)--Version 1 Functional Specification" (September, 1997), which is incorporated herein by reference.

Section 1 of RFC 2205 defines an "admission control" decision module, which is used during reservation setup to determine whether a node has sufficient available resources to supply the requested quality of service. The admission control module is used in RSVP-TE for setting up MPLS tunnels.

U.S. Patent Application Publication US 2002/0110087 A1, entitled "Efficient Setup of Label-Switched Connections," whose disclosure is incorporated herein by reference, describes methods and systems for carrying layer 2 services, such as Ethernet frames, through label-switched network tunnels.

#### Ethernet Link Aggregation

Link aggregation (LAG) is a technique by which a group of parallel physical links between two endpoints in a data network can be joined together into a single logical link (referred to as a "LAG group"). Traffic transmitted between the endpoints is distributed among the physical links in a manner that is transparent to the clients that send and receive the traffic. For Ethernet networks, link aggregation is defined by Clause 43 of IEEE Standard 802.3ad, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications (2002 Edition), which is incorporated herein by reference. Clause 43 defines a link aggregation protocol sub-layer, which interfaces between the standard Media Access Control (MAC) layer functions of the physical links in a link aggregation group and the MAC clients that transmit and receive traffic over the aggregated links.

U.S. Patent Application Publication US 2004/0228278 A1, entitled "Bandwidth Allocation for link Aggregation," the disclosure of which is incorporated herein by reference, describes methods for bandwidth allocation in a link aggregation system. The methods described in this publication are meant to ensure that sufficient bandwidth will be available on the links in the group in order to meet service guarantees, notwithstanding load fluctuations and link failures.

#### SUMMARY OF THE INVENTION

Embodiments of the present invention provide tunnel provisioning with link aggregation. Briefly described, a first aspect of the present invention is directed to a method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network. The method includes the steps of selecting, by a first MPLS / LAG switch, from a plurality of physical data ports in said first MPLS / LAG switch, a single physical tunnel port which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number, assigning, by said first MPLS /

LAG switch, said single physical tunnel port to said network tunnel, preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified, receiving, by said first MPLS / LAG switch, a data packet including said data packet label at said first MPLS / LAG switch, and switching, by said first MPLS / LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MPLS / LAG switch via said single physical tunnel port.

A second aspect of the present invention includes a method for tagging a packet for transport through an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning. The method includes the steps of sending downstream to a MPLS / LAG switch, by the preceding node, an RSVP-TE PATH message, the RSVP-TE PATH message including a LABEL\_REQUEST object requesting a network tunnel, and a bandwidth requirement, receiving, by the preceding node, a packet label sent by the MPLS / LAG switch, said packet label including a serial number of a single physical tunnel port in the MPLS / LAG switch, and wherein the single physical tunnel port meets the bandwidth requirement, attaching by the preceding node, said data packet label to a data packet sent by the preceding node, wherein the data packet is intended to be forwarded via the single physical tunnel port, and sending downstream to the MPLS / LAG switch, by the preceding node, a data packet including said data packet label.

A third aspect of the present invention includes an apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel

employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS / LAG switch and a second MPLS / LAG switch. The apparatus includes a processor, which is configured to receive a tunnel configuration request message from the preceding node make a selection from a plurality of physical data ports in said first MPLS / LAG switch, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number, assign said single physical tunnel port to the network tunnel, prepare a data packet label, by which said single physical tunnel port may be identified, dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port, and publish said packet label upstream.

The apparatus includes a mapper configured to receive a data packet from an upstream node, detect said data packet label in said data packet, and if said data packet contains said data packet label, to direct the first MPLS / LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS / LAG switch via said single physical tunnel port.

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

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a block diagram that schematically illustrates an MPLS communication network, in accordance with an embodiment of the present invention;

FIG. 1B is a block diagram that schematically illustrates an MPLS/LAG switch, in accordance with an embodiment of the present invention;

FIG. 2 is a block diagram that schematically illustrates an encapsulated MPLS packet, in accordance with an embodiment of the present invention;

FIG. 3 is a flow chart that schematically illustrates a method for port allocation, in accordance with an embodiment of the present invention; and

FIG. 4 is a flow chart that schematically illustrates a method for port allocation, in accordance with another embodiment of the present invention.

#### DETAILED DESCRIPTION OF EMBODIMENTS

FIG. 1A is a block diagram that schematically illustrates a computer communication network 20, in accordance with an embodiment of the present invention. System 20 includes two MPLS networks 22, labeled A and B, i.e., networks containing MPLS-capable switches. (Typically, these networks may also carry non-MPLS traffic, as in MPLS-capable IP networks that are known in the art.) MPLS networks A and B are connected via MPLS/LAG switches 26, using N physical Ethernet ports 24. Ports 24 are aggregated into a LAG group 25 using link aggregation (LAG) methods defined in the IEEE 802.3ad specification cited above. The two MPLS/LAG switches 26, which also function as LSRs, perform link aggregation and other packet routing/switching functions, according to methods which will be described below.

An MPLS tunnel 28 (a label switched path, or LSP, according to the MPLS specification cited above) is established from an ingress node in MPLS network A, through the two switches and the LAG group, to an egress node in MPLS network B. (The ingress and egress nodes are not shown in the figure.) The tunnel forms a path over which data frames traverse from the ingress node to the egress node. In the exemplary configuration of FIG. 1A, the MPLS tunnel is

switched through one of ports 24, labeled "PORT 3." The term "downstream" typically denotes the direction of packet flow from the ingress node to the egress node along the tunnel. The term "upstream" denotes the opposite direction. The term "hop" denotes a part of the tunnel that connects two consecutive LSRs.

As part of the MPLS tunnel provisioning process (which is described in RFC 3031) each LSR along tunnel 28 attaches an MPLS label to the packets it transmits downstream to the next LSR, identifying the packets that belong to tunnel 28. Thus, in the example shown in FIG. 1A, MPLS/LAG switch A receives packets to which MPLS labels have been attached at a preceding node 29, which is an LSR located in MPLS network A, upstream from MPLS/LAG switch A. In most MPLS implementations, a given MPLS label is used within a single hop along the tunnel. In this case node 29 is the LSR that immediately precedes MPLS/LAG switch A in tunnel 28. In other MPLS implementations, the same label may be used for several adjacent hops of the tunnel, so that there may be one or more additional LSRs located between node 29 and switch A.

The exemplary network configuration shown in FIG. 1A was chosen for the sake of conceptual clarity. Other tunneled network configurations with link aggregation may use the methods and systems disclosed herein, as will be apparent to those skilled in the art. As noted earlier, these configurations may use MPLS and Ethernet LAG or other tunneling and link aggregation protocols known in the art.

FIG. 1B is a block diagram that schematically shows details of MPLS/LAG switch 26, in accordance with an embodiment of the present invention. On the transmitting side of the LAG group, the switch typically receives an MPLS payload, encapsulated in Ethernet frames from the ingress node (either directly or via other LSRs in MPLS network A). Switch 26 switches the MPLS payload according to the MPLS label and re-encapsulates the MPLS payload into an

Ethernet frame destined to the LAG group. Following the MPLS switching process, the MPLS switch performs the LAG function and maps the Ethernet frame to one of the physical Ethernet ports 24 of LAG group 25. On the receiving side of the LAG group, the switch collects the Ethernet frames from the ports of LAG group 25 and sends them to the egress node (either directly or via other LSRs, as defined by the tunnel).

Switch 26 has an RSVP-TE processor 30 and a CAC (Connection Admission Control) processor 32, which handle MPLS tunnel provisioning and the associated signaling. Although processors 30 and 32 are shown, for the sake of conceptual clarity, as separate functional units, in practice these two functions are typically implemented as software processes on the same processor. Practically speaking, they may generally be regarded as a single processor, regardless of implementation. Switch 26 also has a mapper 34, which maps each MPLS payload to a specific physical Ethernet port 24 (following the payload encapsulation into an Ethernet frame), according to methods which will be described below.

The methods described herein typically address a unidirectional packet flow, i.e., packets flowing from MPLS network A to MPLS network B. The methods are presented in this way because MPLS tunnels are unidirectional by definition. This fact does not limit the disclosed methods in any way to unidirectional message flows. Bidirectional packet flow is typically implemented by setting up two separate, independent MPLS tunnels.

MPLS/LAG switch 26 may be implemented using a network processor, which is programmed in software to carry out the functions described herein and is coupled to suitable hardware for interfacing with the MPLS network and Ethernet ports. Switch 26 may either include a standalone unit or may alternatively be integrated with other computing functions of the network processor. Some or all of the functions of switch 26 can also be implemented using a

suitable general-purpose computer, a programmable logic device, an application-specific integrated circuit (ASIC) or a combination of such elements.

FIG. 2 is a block diagram that schematically illustrates an MPLS packet encapsulated into an Ethernet II format, in accordance with an embodiment of the present invention. The Ethernet frame includes a MAC (Media Access Control) destination address field 40, a MAC source address field 42, and an Ethertype identifier field 46 used to identify the specific protocol. The frame ends with a frame check sequence (FCS) field 48 used for error detection. The encapsulated MPLS packet include an MPLS header 50, which has an MPLS label field 52. An MPLS payload field 54 includes the message body, containing information transmitted by the MPLS packet. In some implementations, the frame also includes optional VLAN Ethertype and VLAN tag fields.

Mapper 34 of switch 26 performs a mapping function that uses information carried in one or more fields of the encapsulated MPLS packet to select the physical Ethernet port for mapping the packet. The IEEE 802.3ad standard cited above does not dictate any particular mapping method for link aggregation, other than forbidding frame duplication and requiring that frame ordering be maintained over all frames in a given flow. In practice, to meet these requirements, the mapper typically maps all frames in a given MPLS tunnel to the same physical port.

The mapping function typically uses MPLS label 52 for mapping, since the MPLS label uniquely identifies MPLS tunnel 28, and it is required that all MPLS packets belonging to the same tunnel be switched through the same physical port 24. Additionally or alternatively, the mapping function uses a "PW" label (pseudo wire label, formerly known as a virtual connection, or VC label), which is optionally added to MPLS header 50. The PW label includes information that the egress node requires for delivering the packet to its destination, and is optionally added

during the encapsulation of MPLS packets. Additional details regarding the VC label can be found in an IETF draft by Martini et al. entitled "Encapsulation Methods for Transport of Ethernet Frames Over IP/MPLS Networks" (IETF draft-ietf-pwe3-ethernet-encap-07.txt, May, 2004), which is incorporated herein by reference. In some embodiments, mapper 34 applies a hashing function to the MPLS and/or PW label, as will be described below.

#### Port Coding

FIG. 3 is a flow chart that schematically illustrates a method for port allocation using port coding, in accordance with an embodiment of the present invention. This method, as well as the method of FIG. 4 described below, is used to provision MPLS tunnel 28 by allocating bandwidth on one of the physical ports of LAG group 25.

The method of FIG. 3 begins when the preceding node asks to establish a part of tunnel 28 (having one or more hops) for sending MPLS packets to MPLS/LAG switch 26 A. The preceding node requests and then receives the MPLS label, which it will subsequently attach to all packets that are sent to MPLS/LAG switch 26 labeled A. The preceding node sends downstream an RSVP-TE PATH message augmented with a LABEL\_REQUEST object, as defined by RSVP-TE, to MPLS/LAG switch A, at a label requesting step 60. The PATH message typically includes information regarding service properties that are requested for tunnel 28. The service properties may include a guaranteed bandwidth (sometimes denoted CIR--Committed Information Rate) and a peak bandwidth (sometimes denoted PIR--Peak Information Rate), as well as a requested CoS (Class of Service--a measure of packet priority).

CAC processor 32 of switch A receives the PATH message and extracts the requested service properties. The CAC processor examines the available bandwidth of all ports 24 in LAG group 25 and selects a single physical port ("the selected physical port") on which to allocate

bandwidth for MPLS tunnel 28, responsively to the requested service properties, at a port selection step 62. The selected physical port should be capable of providing sufficient peak and average bandwidths, as requested by the preceding node (and, originally, by the ingress node).

In one embodiment the CAC processor selects the physical port having a maximum available bandwidth out of the ports of LAG group 25. This approach attempts to distribute the packet flows evenly among the physical ports. In an alternative embodiment, the CAC processor may follow a "first-to-fill" strategy, i.e., select a physical port that will reach the highest utilization after allocating the requested bandwidth to tunnel 28. Any other suitable selection criteria may be applied by CAC processor 32. In the event that none of physical ports 24 has sufficient available bandwidth to comply with the requested service properties, the CAC processor returns an error message to the preceding node and denies the provisioning of tunnel 28. After successfully selecting the physical port, the CAC processor allocates and reserves the requested bandwidth for tunnel 28.

Regardless of the selection criterion used, the results of step 62 are that (1) a single physical port is explicitly selected and assigned to MPLS tunnel 28, and (2) sufficient bandwidth is allocated to tunnel 28, considering only the available bandwidth of the selected physical port, rather than the total available bandwidth of LAG group 25. All packets belonging to tunnel 28 will be switched through the same selected physical port, using the port coding technique described herein below.

Having selected a physical port, RSVP-TE processor 30 of switch A now generates a suitable MPLS label, at a label generation step 64. The preceding node upstream of switch A will subsequently attach this MPLS label to all MPLS packets transmitted through tunnel 28 to switch A. The label is assigned, in conjunction with the mapping function of mapper 34, so as to ensure

that all MPLS packets carrying this label are switched through the physical port that was selected for this tunnel at step 62. For this purpose, RSVP-TE processor 30 of switch A dedicates a sub-set of the bits of MPLS label 52 to encode the serial number of the selected physical port. For example, the four least-significant bits of MPLS label 52 may be used for encoding the selected port number. This configuration is suitable for representing LAG groups having up to 16 physical ports ( $N < 16$ ). The remaining bits of MPLS label 52 may be chosen at random or using any suitable method known in the art.

RSVP-TE processor of switch 26 sends the generated MPLS label upstream to the preceding node, using an RSVP-TE RESV message augmented with a LABEL object, at a label sending step 66. At this stage, the part of tunnel 28 between the preceding node and switch A is provisioned and ready for use. The preceding node attaches the aforementioned MPLS label to all subsequent MPLS packets that it sends downstream through tunnel 28 to MPLS/LAG switch A, at a packet sending step 68.

Mapper 34 of switch A maps the received packets belonging to tunnel 28 to the selected physical Ethernet port at a mapping step 70. For this purpose, mapper 34 extracts the MPLS label from each received packet and decodes the selected physical port number from the dedicated sub-set of bits, such as the four LSB, as described in step 64 above. The decoded value is used for mapping the packet to the selected physical port, which was allocated by the CAC processor at step 62 above. In the four-bit example described above, the mapping function may be written explicitly as: Selected port number = ((MPLS label) and (0x0000F)), wherein "and" denotes the "bitwise and" operator.

In an alternative embodiment, RSVP-TE processor 30 generates an arbitrary MPLS label at step 64 and stores this label together with the corresponding serial number of the selected

physical port in a lookup table or other data structure. At step 70, the mapper extracts the MPLS label from each received MPLS packet and queries the lookup table with the MPLS label value to determine the physical port through which to switch the packet.

#### Inverse Hashing

FIG. 4 is a flow chart that schematically illustrates an alternative method for port allocation, in accordance with another embodiment of the present invention. Similar to the method shown in FIG. 3 above, the method begins with the preceding node in MPLS network A asking to establish a part of MPLS tunnel 28 for sending MPLS packets to switch A. The preceding node sends downstream an RSVP-TE PATH message, at a label requesting step 80, which is identical to label requesting step 60 of FIG. 3 above. CAC processor 32 of switch A receives the PATH message, extracts the requested service properties, and selects a physical port out of group 25, at a port selection step 82. Step 82 is identical to port selection step 62 of FIG. 3 above.

In this method, the mapping function used by mapper 34 of switch A is a hashing function. Various hashing functions are known in the art, and any suitable hashing function may be used in mapper 34. Since the hashing operation is performed for each packet, it is desirable to have a hashing function that is computationally simple.

As mentioned above, the hashing function typically hashes the value of MPLS label 52 to determine the selected physical port, as the MPLS label uniquely identifies tunnel 28. For example, the following hashing function may be used by mapper 34: Selected port number =  $1 + ((\text{MPLS label}) \bmod N)$ , wherein N denotes the number of physical Ethernet ports in LAG group 25, and "mod" denotes the modulus operator. Assuming the values of MPLS labels are distributed uniformly over a certain range, this function achieves a uniform distribution of

port allocations for the different MPLS labels. It can also be seen that all packets carrying the same MPLS label (in other words--belonging to the same MPLS tunnel) will be mapped to the same physical port.

Returning to the description of FIG. 4, RSVP-TE processor 30 of switch A takes the serial number of the selected physical port (selected at step 82) and generates MPLS label 52 by calculating an inverse of the hashing function, at an inverse calculation step 84. The purpose of this step is to choose an MPLS label in a way that would cause the hashing function of mapper 34 to output the selected physical port (so that all subsequent packets carrying this label will be switched through this port). The following numerical example, which uses the hashing function given above, demonstrates the inverse hashing process:

The inverse of the hashing function given above is:  $\text{MPLS label} = (\text{Selected port number} - 1) + N * \text{MPLS.sub.p}$ , wherein N denotes the number of physical ports in group 25, and MPLS.sub.p denotes a predetermined number, which is assigned by RSVP-TE processor 30 for each MPLS tunnel. Note that the value of MPLS.sub.p does not affect the hashing function, since different values of MPLS.sub.p only add integer multiples of N to the value of the MPLS label. The modulus operator of the hashing function eliminates this effect. This mechanism enables the same hashing/inverse-hashing functions to generate multiple MPLS labels to support multiple tunnels.

Assume that  $\text{MPLS.sub.p} = 21882$ . Assume also that the LAG group has 3 ports ( $N=3$ ) and that the CAC processor has selected physical port number 2 at step 82. The MPLS label calculated by the RSVP-TE processor at step 84 is thus given by:  $\text{MPLS label} = (2-1) + 3 * 21882 = 65647$

Having generated the MPLS label, RSVP-TE processor of switch A sends the MPLS label upstream to the preceding node, at a label sending step 86, which is identical to label sending step 66 of FIG. 3 above. At this stage, the part of tunnel 28 between the preceding node and switch A is provisioned and ready for use. The preceding node attaches the aforementioned MPLS label to all subsequent MPLS packets, belonging to tunnel 28, that are sent downstream to MPLS/LAG switch A, at a packet sending step 88.

Mapper 34 of switch A maps each received packet to the selected physical port of LAG group 25 using the hashing function, at a hashing step 90. Mapper 34 extracts the MPLS label from each received packet and uses the hashing function to calculate the serial number of the selected physical port, which was selected by the CAC processor at step 82. Following the numerical example given above, the mapper extracts MPLS label=65647 from the packet. Substituting this value and  $N=3$  into the hashing function gives: Selected port number= $1+(65647 \bmod 3)=2$ , which is indeed the port number selected in the example above.

#### Lag Protection

The IEEE 802.3ad standard cited above describes a protection mechanism for cases in which one of ports 24 fails or is intentionally taken out of service for any reason. In this case, the mapping function should distribute the data packets among the remaining ports. When using link aggregation in conjunction with tunneling methods such as MPLS, all packets belonging to a given tunnel should be switched through a single port 24. This property should be maintained in case of failure or port reconfiguration.

In an embodiment of the present invention, one of the  $N$  ports 24 of LAG group 25 is not used under normal network conditions and is maintained as a backup port. In the event that one of the active  $N-1$  ports 24 fails or is taken out of service, switch A replaces the failed port with

the backup port. As all ports 24 typically have equal bandwidths, the service properties required by tunnel 28 can be maintained.

In one embodiment, switch A may revert to the original port as soon as it recovers or returned into service. In an alternative embodiment, once the backup port has replaced a failed port, it continues to function as an ordinary port. The failed port, once recovered, begins to function as a backup port.

Although the methods and systems described hereinabove address mainly MPLS and Ethernet link aggregation, the principles of the present invention may also be used in conjunction with other communication protocols. For example, the methods described above may be adapted for use with other types of labeled traffic flows, such as flows labeled in accordance with other tunneling methods, and other link aggregation methods.

It will thus be appreciated that the embodiments described above are cited by way of example, and that the present invention is not limited to what has been particularly shown and described hereinabove. Rather, the scope of the present invention includes both combinations and sub-combinations of the various features described hereinabove, as well as variations and modifications thereof which would occur to persons skilled in the art upon reading the foregoing description and which are not disclosed in the prior art.

## CLAIMS

What is claimed is:

1. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:

selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of the LAG which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number;

assigning, by said first MPLS/LAG switch, said single physical tunnel port to said network tunnel;

preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified;

sending, by said first MPLS/LAG switch, a message comprising said data packet label to a preceding node;

receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label; and

switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel port.

2. The method of claim 1, further comprising the step of receiving from a preceding node located upstream from said first MPLS/LAG switch, by said first MPLS/LAG switch, a request message requesting configuration of said network tunnel, the message further requesting said data packet label associated with said network tunnel.

3. The method of claim 2, wherein said request message comprises an RSVP-TE PATH message augmented with a LABEL\_REQUEST object.

4. The method according to claim 3, wherein said request comprises an indication of a service property, and wherein said selecting comprises identifying a physical port in compliance with said service property.
5. The method according to claim 4, wherein said service property comprises at least one of: a guaranteed bandwidth; a peak bandwidth; and a class of service.
6. The method according to claim 1, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports.
7. The method according to claim 1, wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of physical data ports which is not less than said bandwidth requirement of the network tunnel.
8. The method according to claim 1, wherein said switching said data packet is according to a mapping function.
9. The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits that identify said single physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.
10. The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.
11. The method according to claim 1, further comprising the steps of: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single

physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.

12. The method according to claim 11, further comprising the step of responsive to a restoral of said service interruption of said single physical tunnel port, reverting switching of said data packet from said backup port and sending said data packet to said second MPLS/LAG switch via said single physical tunnel port.

13. The method according to claim 1, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).

14. The method of claim 1, further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port.

15. An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising:

a processor, which is configured to:

receive a tunnel configuration request message from the preceding node;

make a selection from a plurality of physical data ports in said first MPLS/LAG switch, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number;

assign said single physical tunnel port to the network tunnel;

prepare a data packet label, by which said single physical tunnel port may be identified;

dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; and  
publish said packet label upstream; and  
a mapper, which is configured to:  
receive a data packet from an upstream node;  
detect said data packet label in said data packet; and  
if said data packet contains said data packet label, to direct the first MPLS/LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS/LAG switch via said single physical tunnel port.

16. The apparatus according to claim 15, wherein the processor is configured to make said selection in compliance with a service property.

17. The apparatus according to claim 16, wherein said service property comprises at least one of the group consisting of a guaranteed bandwidth, a peak bandwidth, and a class of service.

18. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.

19. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.

20. The apparatus according to claim 15, wherein said processor is configured to insert into said data packet label a set of bits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.

21. The apparatus according to claim 15, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said mapper is configured to retrieve said identifier from said memory responsively to said data packet label.

22. The apparatus according to claim 15, wherein said processor is further configured to select a backup port from among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.

23. The apparatus according to claim 15, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).

24. The apparatus according to claim 15, wherein said processor comprises a network processor.

25. The apparatus according to claim 15, wherein said plurality of physical data ports are selected from a single logical port.

26. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:

receiving from a preceding node located upstream from a first MPLS/LAG switch, at said first MPLS/LAG switch, a request message requesting configuration of a network tunnel, the message further requesting a data packet label associated with said network tunnel, said request message specifying a bandwidth requirement;

selecting, at the first MPLS/LAG switch, from a plurality of physical data ports associated with said first MPLS/LAG switch, a single physical tunnel of the LAG, which

meets the bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number;

assigning, at the first MPLS/LAG switch, said single physical tunnel of the LAG to said network tunnel;

preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel may be identified;

sending, by said first MPLS/LAG switch, a message that includes said data packet label to the preceding node;

receiving from the preceding node, at said first MPLS/LAG switch, a data packet that includes said data packet label; and

switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel associated with said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel.

## ABSTRACT

A method for processing data packets in a communication network includes establishing a path for a flow of the data packets through the communication network. At a node along the path having a plurality of aggregated ports, a port is selected from among the plurality to serve as part of the path. A label is chosen responsively to the selected port. The label is attached to the data packets in the flow at a point on the path upstream from the node. Upon receiving the data packets at the node, the data packets are switched through the selected port responsively to the label.

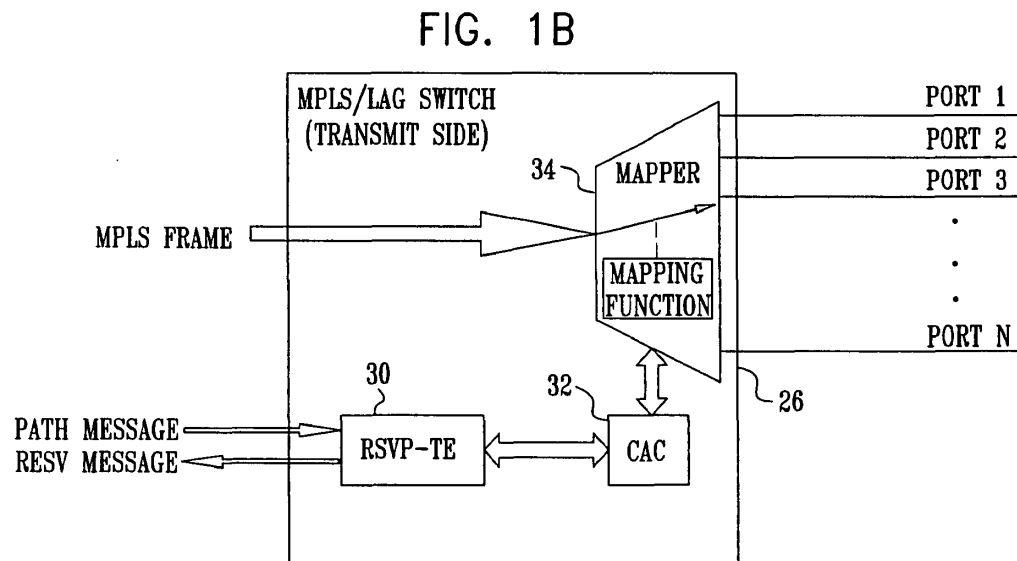
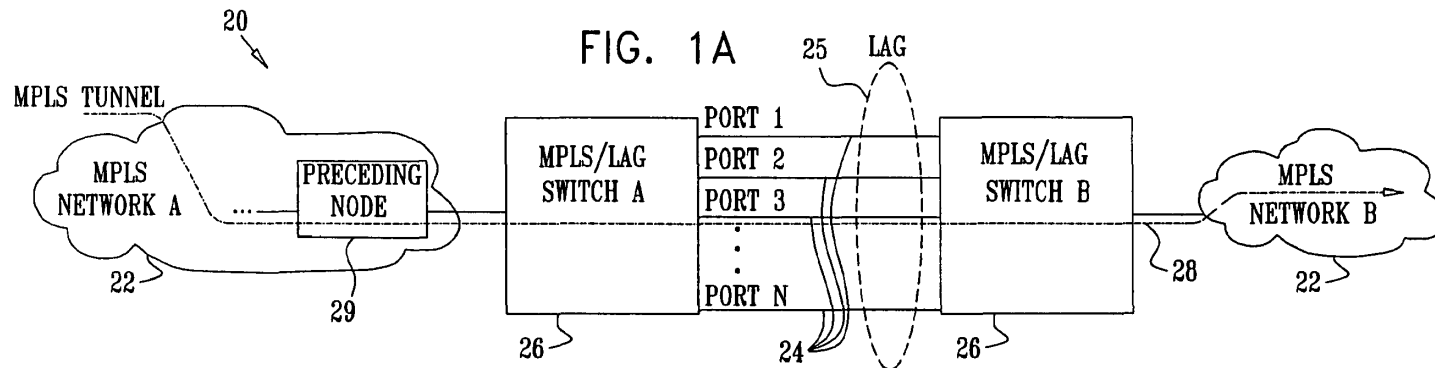
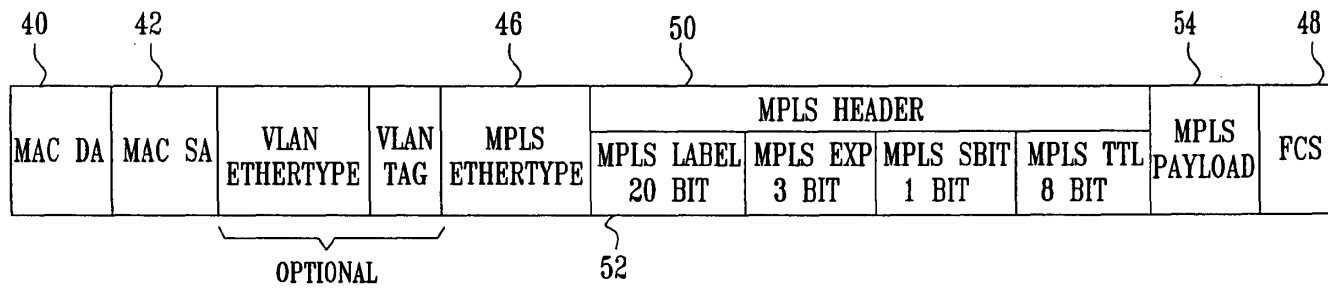


FIG. 2



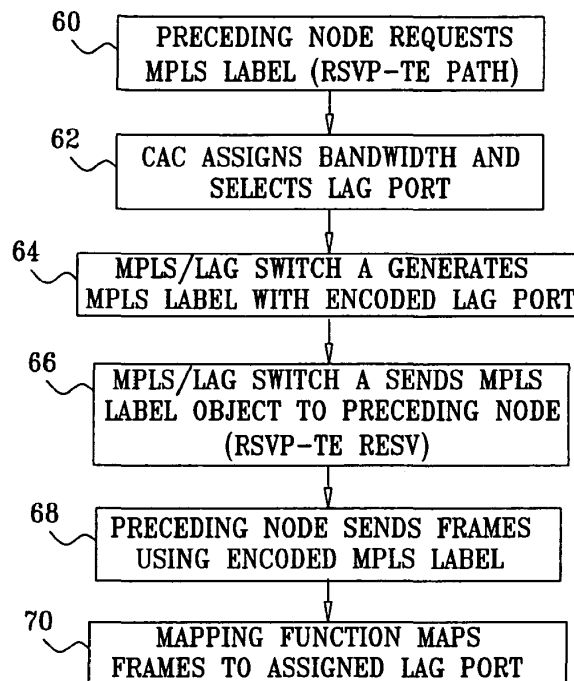


FIG. 3

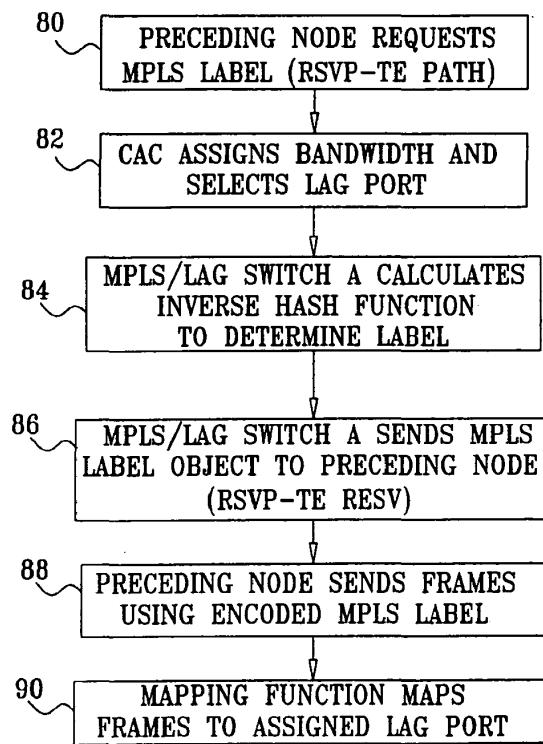


FIG. 4

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           |                        |             |
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| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           | Attorney Docket Number | 40552-6175P |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           | Application Number     |             |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |             |
| <p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p> |                                           |                        |             |

**Secrecy Order 37 CFR 5.2**

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| <input type="checkbox"/> | 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:**

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| Inventor 1 <span style="float: right;">Remove</span>                                                                                                                        |            |                        |             |        |
| Legal Name                                                                                                                                                                  |            |                        |             |        |
| Prefix                                                                                                                                                                      | Given Name | Middle Name            | Family Name | Suffix |
|                                                                                                                                                                             | Ronen      |                        | Solomon     |        |
| Residence Information (Select One) <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service    |            |                        |             |        |
| City                                                                                                                                                                        | Ramat Gan  | Country of Residence i | IL          |        |
| Mailing Address of Inventor:                                                                                                                                                |            |                        |             |        |
| Address 1                                                                                                                                                                   |            | 23 Rozen Street        |             |        |
| Address 2                                                                                                                                                                   |            |                        |             |        |
| City                                                                                                                                                                        | Ramat Gan  | State/Province         |             |        |
| Postal Code                                                                                                                                                                 | 52224      | Country i              | IL          |        |
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| Email Address                                                                                                                      | ipadm@sheehan.com | Add Email | Remove Email |

**Application Information:**

|                                         |                                           |                                           |                                     |
|-----------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------|
| Title of the Invention                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |                                           |                                     |
| Attorney Docket Number                  | 40552-6175P                               | Small Entity Status Claimed               | <input checked="" type="checkbox"/> |
| Application Type                        | Nonprovisional                            |                                           |                                     |
| Subject Matter                          | Utility                                   |                                           |                                     |
| Total Number of Drawing Sheets (if any) | 3                                         | Suggested Figure for Publication (if any) |                                     |

|                                           |                                           |                        |             |
|-------------------------------------------|-------------------------------------------|------------------------|-------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | 40552-6175P |
|                                           |                                           | Application Number     |             |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |             |

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| <input type="checkbox"/> Request Early Publication (Fee required at time of Request 37 CFR 1.219)                                                                                                                                                                                                                                                                                                                      |
| <input type="checkbox"/> <b>Request Not to Publish.</b> 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 <b>has not and will not</b> be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing. |

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### Domestic Benefit/National Stage Information:

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| This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78. |                 |                          |                          |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                             | Pending         |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                   | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) |               |                         |
|                                                                                                                                                                                                                                                                                                                      | Continuation of | 13116696                 | 2011-05-26               |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                             | Patented        |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                   | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) | Patent Number | Issue Date (YYYY-MM-DD) |
| 13116696                                                                                                                                                                                                                                                                                                             | Continuation of | 11123801                 | 2005-05-06               | 7974202       | 2011-07-05              |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                           |                                           |                        |             |
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| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | 40552-6175P |
|                                           |                                           | Application Number     |             |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |             |

|                                                                                                 |                      |                          |                                                            |
|-------------------------------------------------------------------------------------------------|----------------------|--------------------------|------------------------------------------------------------|
| Application Number                                                                              | Country <sup>i</sup> | Filing Date (YYYY-MM-DD) | <div>Remove</div> Access Code <sup>j</sup> (if applicable) |
|                                                                                                 |                      |                          |                                                            |
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## Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> 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.<br>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. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Authorization to Permit Access:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Authorization to Permit Access to the Instant Application by the Participating Offices                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p> |

## Applicant Information:

|                                                                                                                                                                                     |
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|                                           |                                           |                        |             |
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| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | 40552-6175P |
|                                           |                                           | Application Number     |             |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |             |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                |                                                                        |                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------|------------------------|
| <b>Applicant 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                |                                                                        | <a href="#">Remove</a> |
| <p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p> |                                                                |                                                                        |                        |
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| <input checked="" type="radio"/> Assignee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="radio"/> Legal Representative under 35 U.S.C. 117 | <input type="radio"/> Joint Inventor                                   |                        |
| <input type="radio"/> Person to whom the inventor is obligated to assign.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                | <input type="radio"/> Person who shows sufficient proprietary interest |                        |
| If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                |                                                                        |                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                |                                                                        |                        |
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| If the Applicant is an Organization check here. <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                                                        |                        |
| Organization Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Orckit-Corrigent Ltd.                                          |                                                                        |                        |
| <b>Mailing Address Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |                                                                        |                        |
| Address 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 126 Yigal Allon Street                                         |                                                                        |                        |
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| City                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tel Aviv                                                       | State/Province                                                         |                        |
| Country <sup>i</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | IL                                                             | Postal Code                                                            | 67443                  |
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| <b>Assignee 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
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| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | 40552-6175P |
|                                           |                                           | Application Number     |             |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |             |

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| NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications |                   |           |                   |                                    |       |
| Signature                                                                                                                   | /Peter A. Nieves/ |           | Date (YYYY-MM-DD) | 2013-08-17                         |       |
| First Name                                                                                                                  | Peter             | Last Name | Nieves            | Registration Number                | 48173 |
| Additional Signature may be generated within this form by selecting the Add button.                                         |                   |           |                   |                                    |       |
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|-----------------------------------------------|----------|-------------------------------------------|--------|----------------------|
| Application Number:                           |          |                                           |        |                      |
| Filing Date:                                  |          |                                           |        |                      |
| Title of Invention:                           |          | Tunnel Provisioning with Link Aggregation |        |                      |
| First Named Inventor/Applicant Name:          |          | Ronen Solomon                             |        |                      |
| Filer:                                        |          | Peter Anthony Nieves                      |        |                      |
| Attorney Docket Number:                       |          | 40552-6175                                |        |                      |
| Filed as Small Entity                         |          |                                           |        |                      |
| Utility under 35 USC 111(a) Filing Fees       |          |                                           |        |                      |
| Description                                   | Fee Code | Quantity                                  | Amount | Sub-Total in USD(\$) |
| Basic Filing:                                 |          |                                           |        |                      |
| Utility filing Fee (Electronic filing)        | 4011     | 1                                         | 70     | 70                   |
| Utility Search Fee                            | 2111     | 1                                         | 300    | 300                  |
| Utility Examination Fee                       | 2311     | 1                                         | 360    | 360                  |
| Pages:                                        |          |                                           |        |                      |
| Claims:                                       |          |                                           |        |                      |
| Claims in excess of 20                        | 2202     | 6                                         | 40     | 240                  |
| Miscellaneous-Filing:                         |          |                                           |        |                      |
| Petition:                                     |          |                                           |        |                      |

| Description                       | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-----------------------------------|----------|----------|--------|----------------------|
| Patent-Appeals-and-Interference:  |          |          |        |                      |
| Post-Allowance-and-Post-Issuance: |          |          |        |                      |
| Extension-of-Time:                |          |          |        |                      |
| Miscellaneous:                    |          |          |        |                      |
| Total in USD (\$)                 |          |          |        | 970                  |

| Electronic Acknowledgement Receipt          |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 16617722                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | Tunnel Provisioning with Link Aggregation |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | Peter Anthony Nieves                      |
| <b>Filer Authorized By:</b>                 |                                           |
| <b>Attorney Docket Number:</b>              | 40552-6175                                |
| <b>Receipt Date:</b>                        | 17-AUG-2013                               |
| <b>Filing Date:</b>                         |                                           |
| <b>Time Stamp:</b>                          | 11:54:05                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### Payment information:

|                                                                                                                                                                                                                                                                                                                                                                                          |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Submitted with Payment                                                                                                                                                                                                                                                                                                                                                                   | yes             |
| Payment Type                                                                                                                                                                                                                                                                                                                                                                             | Deposit Account |
| Payment was successfully received in RAM                                                                                                                                                                                                                                                                                                                                                 | \$ 970          |
| RAM confirmation Number                                                                                                                                                                                                                                                                                                                                                                  | 6854            |
| Deposit Account                                                                                                                                                                                                                                                                                                                                                                          | 501304          |
| Authorized User                                                                                                                                                                                                                                                                                                                                                                          |                 |
| <p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p> |                 |

|                                                                                                   |                                             |                             |                                          |                  |                  |
|---------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------|------------------------------------------|------------------|------------------|
| Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)           |                                             |                             |                                          |                  |                  |
| Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)             |                                             |                             |                                          |                  |                  |
| Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges) |                                             |                             |                                          |                  |                  |
| File Listing:                                                                                     |                                             |                             |                                          |                  |                  |
| Document Number                                                                                   | Document Description                        | File Name                   | File Size(Bytes)/ Message Digest         | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                 | Abstract                                    | abstracttofile6175.pdf      | 14254                                    | no               | 1                |
|                                                                                                   |                                             |                             | f3a1144086bac1bf86f0c3757fc389cd654c8f0  |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 2                                                                                                 | Specification                               | specificationtofile6175.pdf | 685250                                   | no               | 16               |
|                                                                                                   |                                             |                             | ad69faa0b8531ce4ee5ca3751a530ea52fdeaf76 |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 3                                                                                                 | Claims                                      | claimstofile6175.pdf        | 215283                                   | no               | 6                |
|                                                                                                   |                                             |                             | 7abedf8a1ccff3ff34cb5c664a40ecfb7750f11d |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 4                                                                                                 | Drawings-only black and white line drawings | FigsToFile.pdf              | 55901                                    | no               | 3                |
|                                                                                                   |                                             |                             | 6c1d97531ffd4691ae945b29b77da6901d5265a6 |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 5                                                                                                 | Application Data Sheet                      | S0245721.pdf                | 1505423                                  | no               | 6                |
|                                                                                                   |                                             |                             | bfbba2e2c0d19e96c8d7105626ef61bf52ff54fb |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 6                                                                                                 | Fee Worksheet (SB06)                        | fee-info.pdf                | 36012                                    | no               | 2                |
|                                                                                                   |                                             |                             | 76defb226f877714044c20cffb5c65d14898c600 |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| Total Files Size (in bytes):                                                                      |                                             |                             | 2512123                                  |                  |                  |

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

**New Applications Under 35 U.S.C. 111**

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

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

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

**New International Application Filed with the USPTO as a Receiving Office**

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

| <b>Electronic Acknowledgement Receipt</b>   |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 16617722                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
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| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | Peter Anthony Nieves                      |
| <b>Filer Authorized By:</b>                 |                                           |
| <b>Attorney Docket Number:</b>              | 40552-6175                                |
| <b>Receipt Date:</b>                        | 17-AUG-2013                               |
| <b>Filing Date:</b>                         |                                           |
| <b>Time Stamp:</b>                          | 11:54:05                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### **Payment information:**

|                                                                                                                                                                                                                                                                                                                                                                                          |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Submitted with Payment                                                                                                                                                                                                                                                                                                                                                                   | yes             |
| Payment Type                                                                                                                                                                                                                                                                                                                                                                             | Deposit Account |
| Payment was successfully received in RAM                                                                                                                                                                                                                                                                                                                                                 | \$ 970          |
| RAM confirmation Number                                                                                                                                                                                                                                                                                                                                                                  | 6854            |
| Deposit Account                                                                                                                                                                                                                                                                                                                                                                          | 501304          |
| Authorized User                                                                                                                                                                                                                                                                                                                                                                          |                 |
| <p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p> |                 |

|                                                                                                   |                                             |                             |                                          |                  |                  |
|---------------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------|------------------------------------------|------------------|------------------|
| Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)           |                                             |                             |                                          |                  |                  |
| Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)             |                                             |                             |                                          |                  |                  |
| Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges) |                                             |                             |                                          |                  |                  |
| File Listing:                                                                                     |                                             |                             |                                          |                  |                  |
| Document Number                                                                                   | Document Description                        | File Name                   | File Size(Bytes)/ Message Digest         | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                 | Abstract                                    | abstracttofile6175.pdf      | 14254                                    | no               | 1                |
|                                                                                                   |                                             |                             | f3a1144086bac1bf86f0c3757fc389cd654c8f0  |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 2                                                                                                 | Specification                               | specificationtofile6175.pdf | 685250                                   | no               | 16               |
|                                                                                                   |                                             |                             | ad69faa0b8531ce4ee5ca3751a530ea52fdeaf76 |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 3                                                                                                 | Claims                                      | claimstofile6175.pdf        | 215283                                   | no               | 6                |
|                                                                                                   |                                             |                             | 7abedf8a1ccff3ff34cb5c664a40ecfb7750f11d |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 4                                                                                                 | Drawings-only black and white line drawings | FigsToFile.pdf              | 55901                                    | no               | 3                |
|                                                                                                   |                                             |                             | 6c1d97531ffd4691ae945b29b77da6901d5265a6 |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 5                                                                                                 | Application Data Sheet                      | S0245721.pdf                | 1505423                                  | no               | 6                |
|                                                                                                   |                                             |                             | bfbba2e2c0d19e96c8d7105626ef61bf52ff54fb |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| 6                                                                                                 | Fee Worksheet (SB06)                        | fee-info.pdf                | 36012                                    | no               | 2                |
|                                                                                                   |                                             |                             | 76defb226f877714044c20c9fb5c65d14898c600 |                  |                  |
| Warnings:                                                                                         |                                             |                             |                                          |                  |                  |
| Information:                                                                                      |                                             |                             |                                          |                  |                  |
| Total Files Size (in bytes):                                                                      |                                             |                             | 2512123                                  |                  |                  |

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

**New Applications Under 35 U.S.C. 111**

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

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**New International Application Filed with the USPTO as a Receiving Office**

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

Document code: WFEE

United States Patent and Trademark Office  
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|          |      | 01 FC : 2051 | 70.00 DA                |        |          |

| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                               |                                    |               |              |          | Application or Docket Number<br>13/969,520 |                 |                               |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------|--------------|----------|--------------------------------------------|-----------------|-------------------------------|---|
| <b>APPLICATION AS FILED - PART I</b>                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                               |                                    |               |              |          |                                            |                 |                               |   |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                               | (Column 2)                         |               | SMALL ENTITY |          | OR<br>OTHER THAN SMALL ENTITY              |                 |                               |   |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                        | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA                       |               | RATE(\$)     | FEE(\$)  | RATE(\$)                                   | FEE(\$)         |                               |   |
| BASIC FEE<br><small>(37 CFR 1.16(a), (b), or (c))</small>                                                                                                                                                                                                                                                                                                                                                  | N/A                                                                                                                                                                                                                           | N/A                                |               | N/A          | 70       | N/A                                        |                 |                               |   |
| SEARCH FEE<br><small>(37 CFR 1.16(k), (l), or (m))</small>                                                                                                                                                                                                                                                                                                                                                 | N/A                                                                                                                                                                                                                           | N/A                                |               | N/A          | 300      | N/A                                        |                 |                               |   |
| EXAMINATION FEE<br><small>(37 CFR 1.16(o), (p), or (q))</small>                                                                                                                                                                                                                                                                                                                                            | N/A                                                                                                                                                                                                                           | N/A                                |               | N/A          | 360      | N/A                                        |                 |                               |   |
| TOTAL CLAIMS<br><small>(37 CFR 1.16(i))</small>                                                                                                                                                                                                                                                                                                                                                            | 26                                                                                                                                                                                                                            | minus 20 =                         | *             | 6            |          |                                            |                 |                               |   |
| INDEPENDENT CLAIMS<br><small>(37 CFR 1.16(h))</small>                                                                                                                                                                                                                                                                                                                                                      | 3                                                                                                                                                                                                                             | minus 3 =                          | *             |              |          |                                            |                 |                               |   |
| APPLICATION SIZE FEE<br><small>(37 CFR 1.16(s))</small>                                                                                                                                                                                                                                                                                                                                                    | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |                                    |               |              | 0.00     |                                            |                 |                               |   |
| MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |                                    |               |              | 0.00     |                                            |                 |                               |   |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                               |                                    |               | TOTAL        | 970      | TOTAL                                      |                 |                               |   |
| <b>APPLICATION AS AMENDED - PART II</b>                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                               |                                    |               |              |          |                                            |                 |                               |   |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                               | (Column 2)                         |               | (Column 3)   |          | SMALL ENTITY                               |                 | OR<br>OTHER THAN SMALL ENTITY |   |
| AMENDMENT A                                                                                                                                                                                                                                                                                                                                                                                                | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |              | RATE(\$) | ADDITIONAL FEE(\$)                         | RATE(\$)        | ADDITIONAL FEE(\$)            |   |
|                                                                                                                                                                                                                                                                                                                                                                                                            | Total<br><small>(37 CFR 1.16(i))</small>                                                                                                                                                                                      | *                                  | Minus         | **           | =        |                                            |                 | x                             | = |
|                                                                                                                                                                                                                                                                                                                                                                                                            | Independent<br><small>(37 CFR 1.16(h))</small>                                                                                                                                                                                | *                                  | Minus         | ***          | =        |                                            |                 | x                             | = |
|                                                                                                                                                                                                                                                                                                                                                                                                            | Application Size Fee <small>(37 CFR 1.16(s))</small>                                                                                                                                                                          |                                    |               |              |          |                                            |                 |                               |   |
|                                                                                                                                                                                                                                                                                                                                                                                                            | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>                                                                                                                                                |                                    |               |              |          |                                            |                 |                               |   |
| TOTAL ADD'L FEE                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                               |                                    |               |              |          |                                            | TOTAL ADD'L FEE |                               |   |
| AMENDMENT B                                                                                                                                                                                                                                                                                                                                                                                                | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |              | RATE(\$) | ADDITIONAL FEE(\$)                         | RATE(\$)        | ADDITIONAL FEE(\$)            |   |
|                                                                                                                                                                                                                                                                                                                                                                                                            | Total<br><small>(37 CFR 1.16(i))</small>                                                                                                                                                                                      | *                                  | Minus         | **           | =        |                                            |                 | x                             | = |
|                                                                                                                                                                                                                                                                                                                                                                                                            | Independent<br><small>(37 CFR 1.16(h))</small>                                                                                                                                                                                | *                                  | Minus         | ***          | =        |                                            |                 | x                             | = |
|                                                                                                                                                                                                                                                                                                                                                                                                            | Application Size Fee <small>(37 CFR 1.16(s))</small>                                                                                                                                                                          |                                    |               |              |          |                                            |                 |                               |   |
|                                                                                                                                                                                                                                                                                                                                                                                                            | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>                                                                                                                                                |                                    |               |              |          |                                            |                 |                               |   |
| 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.<br>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".<br>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".<br>The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1. |                                                                                                                                                                                                                               |                                    |               |              |          |                                            |                 |                               |   |



# UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office  
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Alexandria, Virginia 22313-1450  
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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         | 40552-6175P            |

**CONFIRMATION NO. 4152**

57449

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

## NOTICE



Date Mailed: 09/10/2013

## INFORMATIONAL NOTICE TO APPLICANT

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).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):  
Ronen Solomon

Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.



## UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION<br>NUMBER | FILING or<br>371(c) DATE | GRP ART<br>UNIT | FIL FEE REC'D | ATTY. DOCKET NO | TOT CLAIMS | IND CLAIMS |
|-----------------------|--------------------------|-----------------|---------------|-----------------|------------|------------|
| 13/969,520            | 08/17/2013               | 2472            | 1040          | 40552-6175P     | 26         | 3          |

CONFIRMATION NO. 4152

## FILING RECEIPT



\*OC000000063612031\*

57449

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

Date Mailed: 09/10/2013

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

## Inventor(s)

Ronen Solomon, Ramat Gan, ISRAEL;

## Applicant(s)

Orckit-Corrigent Ltd., Tel Aviv, ISRAEL

## Assignment For Published Patent Application

Orckit-Corrigent Ltd., Tel Aviv, ISRAEL

## Power of Attorney: None

## Domestic Priority data as claimed by applicant

This application is a CON of 13/116,696 05/26/2011 PAT 8537682  
which is a CON of 11/123,801 05/06/2005 PAT 7974202

**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.*

## If Required, Foreign Filing License Granted: 09/05/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/969,520**

## Projected Publication Date: 12/19/2013

## Non-Publication Request: No

## Early Publication Request: No

**\*\* SMALL ENTITY \*\***

page 1 of 3

**Title**

TUNNEL PROVISIONING WITH LINK AGGREGATION

**Preliminary Class**

370

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

**PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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**Title 35, United States Code, Section 184**  
**Title 37, Code of Federal Regulations, 5.11 & 5.15**

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 13/969,520      | 08/17/2013  | Ronen Solomon        | 40552-6175P         | 4152             |

57449 7590 12/04/2013  
SHEEHAN PHINNEY BASS & GREEN, PA  
c/o PETER NIEVES  
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MANCHESTER, NH 03105-3701

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| EXAMINER |
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MOUTAOUAKIL, MOUNIR

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|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2476

|           |               |
|-----------|---------------|
| MAIL DATE | DELIVERY MODE |
|-----------|---------------|

12/04/2013

PAPER

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

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

|                              |                                      |                                       |                                                  |
|------------------------------|--------------------------------------|---------------------------------------|--------------------------------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>13/969,520 | <b>Applicant(s)</b><br>SOLOMON, RONEN |                                                  |
|                              | <b>Examiner</b><br>MOUNIR MOUTAOUKIL | <b>Art Unit</b><br>2476               | <b>AIA (First Inventor to File) Status</b><br>No |

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

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

**Status**

1) ☒ Responsive to communication(s) filed on 08-17-2013.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

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

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

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

**Disposition of Claims\***

5) ☒ Claim(s) 1-26 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

6) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

7) ☒ Claim(s) 1-26 is/are rejected.

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

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

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

**Application Papers**

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

11) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

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

**Certified copies:**

a) ☐ All    b) ☐ Some\*\*    c) ☐ None of the:

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

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

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

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

**Attachment(s)**

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

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)  
Paper No(s)/Mail Date \_\_\_\_\_.

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

4) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

### ***Double Patenting***

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

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-11, and 14-26 are rejected on the ground of nonstatutory double patenting over claims 1-19 of U. S. Patent No. 7,974,202 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: (see table below)

| <b>Current application 13/696520</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>U.S. Patent 7,974,202</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 1.A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of: selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of the LAG which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; assigning, by said first MPLS/LAG switch, said single physical tunnel port to said network tunnel; preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified; sending, by said first MPLS/LAG switch, a message comprising said data packet | 1. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the method comprising: sending downstream, by the preceding node, an RSVP-TE PATH message augmented with a LABEL_REQUEST object; receiving, by a first MPLS/LAG switch, said RSVP-TE PATH message and said LABEL_REQUEST object; designating a plurality of physical data ports in the LAG as a single logical port; selecting, by said first MPLS/LAG switch from said plurality of physical data ports in said single logical port, a single physical tunnel port which |

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| <p>label to a preceding node; receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label; and switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel port.</p> <p>2. The method of claim 1, further comprising the step of receiving from a preceding node located upstream from said first MPLS/LAG switch, by said first MPLS/LAG switch, a request message requesting configuration of said network tunnel, the message further requesting said data packet label associated with said network tunnel.</p> <p>3. The method of claim 2, wherein said request message comprises an RSVP-TE PATH message augmented with a LABEL_REQUEST object.</p> <p>4. The method according to claim 3, wherein said request comprises an indication of a service property, and wherein said selecting comprises identifying a physical port in compliance with said service property.</p> <p>5. The method according to claim 4, wherein said service property comprises at least one of: a guaranteed bandwidth; a peak bandwidth; and a class of service.</p> <p>6. The method according to claim 1, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of</p> | <p>meets a bandwidth requirement of the network tunnel, and wherein said single physical tunnel port has a port serial number; assigning said single physical tunnel port to the network tunnel; preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified, wherein said preparing includes dedicating a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; sending, by said first MPLS/LAG switch, said data packet label to the preceding node; attaching said data packet label to a data packet sent by the preceding node, which is associated with the network tunnel; receiving said data packet having said data packet label at said first MPLS/LAG switch, and responsively to said data packet label, switching said data packet to said single physical tunnel port, and sending said data packet to a second MPLS/LAG switch via said single physical tunnel port.</p> <p>2. The method according to claim 1, wherein said request comprises an indication of a service property, and wherein said selecting comprises complying with said service property.</p> <p>3. The method according to claim 2, wherein said service property comprises at least one of: a guaranteed bandwidth; a peak bandwidth; and a class of service.</p> <p>4. The method according to claim 3, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports.</p> <p>5. The method according to claim 3,</p> |
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| <p>said plurality of physical data ports.</p> <p>7. The method according to claim 1, wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of physical data ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>8. The method according to claim 1, wherein said switching said data packet is according to a mapping function.</p> <p>9. The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits that identify said single physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.</p> <p>10. The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.</p> <p>11. The method according to claim 1, further comprising the steps of: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.</p> <p>13. The method according to claim 1,</p> | <p>wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of physical data ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>6. The method according to claim 1, wherein said switching said data packet is according to a mapping function.</p> <p>7. The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits which identify said single physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.</p> <p>8. The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.</p> <p>9. The method according to claim 1, further comprising: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.</p> <p>10. An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching</p> |
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| <p>wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>14. The method of claim 1, further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port.</p> <p>15. An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising: a processor, which is configured to: receive a tunnel configuration request message from the preceding node; make a selection from a plurality of physical data ports in said first MPLS/LAG switch, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number; assign said single physical tunnel port to the network tunnel; prepare a data packet label, by which said single physical tunnel port may be identified; dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; and publish said packet label upstream; and a mapper, which is configured to: receive a data packet from an upstream node; detect said data packet label in said data packet; and if said data packet contains said data packet label, to direct the first MPLS/LAG switch to switch said data packet to said single physical</p> | <p>(MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising: a processor, which is configured to: receive an RSVP-TE PATH message augmented with a LABEL_REQUEST object from the preceding node; receive a designation of a plurality of physical data ports in the LAG as a single logical port; make a selection from said plurality of physical data ports in said single logical port, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number; assign said single physical tunnel port to the network tunnel; prepare a data packet label, by which said single physical tunnel port may be identified; dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; and send said data packet label upstream to said preceding node, for attaching said data packet label to a data packet sent by the preceding node which is associated with the network tunnel; and a mapper, which is configured to: receive a data packet from the preceding node, detect said data packet label in said data packet, and if said data packet contains said data packet label, to direct the first MPLS/LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS/LAG switch via said single physical tunnel port.</p> <p>11. The apparatus according to claim 10, wherein the processor is configured to make said selection in compliance with a</p> |
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| <p>tunnel port, and send said data packet to the second MPLS/LAG switch via said single physical tunnel port.</p> <p>16. The apparatus according to claim 15, wherein the processor is configured to make said selection in compliance with a service property.</p> <p>17. The apparatus according to claim 16, wherein said service property comprises at least one of the group consisting of a guaranteed bandwidth, a peak bandwidth, and a class of service.</p> <p>18. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.</p> <p>19. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>20. The apparatus according to claim 15, wherein said processor is configured to insert into said data packet label a set of bits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.</p> <p>21. The apparatus according to claim 15, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said mapper is</p> | <p>service property.</p> <p>12. The apparatus according to claim 11, wherein said service property comprises at least one of: a guaranteed bandwidth, a peak bandwidth, and a class of service.</p> <p>13. The apparatus according to claim 12, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.</p> <p>14. The apparatus according to claim 12, wherein said processor is configured to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>15. The apparatus according to claim 10, wherein said processor is configured to insert into said data packet label a set of bits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.</p> <p>16. The apparatus according to claim 10, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said mapper is configured to retrieve said identifier from said memory responsively to said data packet label.</p> <p>17. The apparatus according to claim 10, wherein said processor is further configured to select a backup port from</p> |
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| <p>configured to retrieve said identifier from said memory responsively to said data packet label.</p> <p>22. The apparatus according to claim 15, wherein said processor is further configured to select a backup port from among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.</p> <p>23. The apparatus according to claim 15, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>24. The apparatus according to claim 15, wherein said processor comprises a network processor.</p> <p>25. The apparatus according to claim 15, wherein said plurality of physical data ports are selected from a single logical port.</p> <p>26. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of: receiving from a preceding node located upstream from a first MPLS/LAG switch, at said first MPLS/LAG switch, a request message requesting configuration of a network tunnel, the message further requesting a data packet label associated with said network tunnel, said request message specifying a bandwidth</p> | <p>among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.</p> <p>18. The method according to claim 1, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>19. The apparatus according to claim 10, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> |
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| requirement;<br>selecting, at the first MPLS/LAG switch, from a plurality of physical data ports associated with said first MPLS/LAG switch, a single physical tunnel of the LAG, which meets the bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; assigning, at the first MPLS/LAG switch, said single physical tunnel of the LAG to said network tunnel; preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel may be identified; sending, by said first MPLS/LAG switch, a message that includes said data packet label to the preceding node; receiving from the preceding node, at said first MPLS/LAG switch, a data packet that includes said data packet label; and switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel associated with said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel. |  |
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Claims 1-11, and 14-26 include all the limitations of the U.S. patent 7,974,202 except for the deletion of some limitations as can be seen above. The deleted limitations were omitted to broaden the scope of the claims. Therefore, deletion of the additional limitations in the instant claim would have been obvious to one of ordinary skill in the art. See *In re Karlson*, 136 USPQ 184 (CCPA). Also note *Ex parte Rainu*, 168 USPQ 375 (Bd.App.1969); omission of a reference element whose function is not needed would be obvious to one skilled in the art.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

4. Claims 1-14 and 26 are rejected on the ground of nonstatutory double patenting over claims 1-14 and 26 of U. S. Patent No. 8,537,682 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: (see table below)

| <b>Current application 13/696520</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>U.S. Patent 8,537,682</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| 1.A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of: selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of the LAG which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; assigning, by said first MPLS/LAG switch, said single physical tunnel port to said network tunnel; preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified; sending, by said first MPLS/LAG switch, a message comprising said data packet label to a preceding node; receiving from the preceding node, by said first | 1. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of: selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of the LAG which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; assigning, by said first MPLS/LAG switch, said single physical tunnel port to said network tunnel; preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified, wherein said preparing includes dedicating sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; sending, by |

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| <p>MPLS/LAG switch, a data packet comprising said data packet label; and switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel port.</p> <p>2. The method of claim 1, further comprising the step of receiving from a preceding node located upstream from said first MPLS/LAG switch, by said first MPLS/LAG switch, a request message requesting configuration of said network tunnel, the message further requesting said data packet label associated with said network tunnel.</p> <p>3. The method of claim 2, wherein said request message comprises an RSVP-TE PATH message augmented with a LABEL_REQUEST object.</p> <p>4. The method according to claim 3, wherein said request comprises an indication of a service property, and wherein said selecting comprises identifying a physical port in compliance with said service property.</p> <p>5. The method according to claim 4, wherein said service property comprises at least one of: a guaranteed bandwidth; a peak bandwidth; and a class of service.</p> <p>6. The method according to claim 1, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports.</p> <p>7. The method according to claim 1,</p> | <p>said first MPLS/LAG switch, a message comprising said data packet label to a preceding node; receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label; and switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel port.</p> <p>2. The method of claim 1, further comprising the steps of: receiving from a preceding node located upstream from said first MPLS/LAG switch, by said first MPLS/LAG switch, a request message requesting configuration of said network tunnel, the message further requesting said data packet label associated with said network tunnel.</p> <p>3. The method of claim 2, wherein said request message comprises an RSVP-TE PATH message augmented with a LABEL_REQUEST object.</p> <p>4. The method according to claim 3, wherein said request comprises an indication of a service property, and wherein said selecting comprises identifying a physical port in compliance with said service property.</p> <p>5. The method according to claim 4, wherein said service property comprises at least one of; a guaranteed bandwidth; a peak bandwidth; and a class of service.</p> <p>6. The method according to claim 1, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said</p> |
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| <p>wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of physical data ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>8. The method according to claim 1, wherein said switching said data packet is according to a mapping function.</p> <p>9. The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits that identify said single physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.</p> <p>10. The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.</p> <p>11. The method according to claim 1, further comprising the steps of: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.</p> <p>12. The method according to claim 11, further comprising the step of responsive to a restoral of said service interruption of said single physical tunnel port, reverting</p> | <p>plurality of physical data ports.</p> <p>7. The method according to claim 1, wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of physical data ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>8. The method according to claim 1, wherein said switching said data packet is according to a mapping function.</p> <p>9. The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits that identify said single physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.</p> <p>10. The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.</p> <p>11. The method according to claim 1, further comprising the steps of: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.</p> <p>12. The method according to claim 11, further comprising the step of responsive</p> |
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| <p>switching of said data packet from said backup port and sending said data packet to said second MPLS/LAG switch via said single physical tunnel port.</p> <p>13. The method according to claim 1, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>14. The method of claim 1, further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port.</p> <p>26. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of receiving from a preceding node located upstream from a first MPLS/LAG switch, at said first MPLS/LAG switch, a request message requesting configuration of a network tunnel, the message further requesting a data packet label associated with said network tunnel, said request message specifying a bandwidth requirement; selecting, at the first MPLS/LAG switch, from a plurality of physical data ports associated with said first MPLS/LAG switch, a single physical tunnel of the LAG, which meets the bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; assigning, at the first MPLS/LAG switch, said single physical tunnel of the LAG to said network tunnel; preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel may be identified; sending, by said first MPLS/LAG switch, a message that includes said data packet label to the preceding node; receiving from</p> | <p>to a restoral of said service interruption of said single physical tunnel port, reverting switching of said data packet from said backup port and sending said data packet to said second MPLS/LAG switch via said single physical tunnel port.</p> <p>13. The method according to claim 1, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>14. The method of claim 1, further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port.</p> <p>26. A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of receiving from a preceding node located upstream from a first MPLS/LAG switch, at said first MPLS/LAG switch, a request message requesting configuration of a network tunnel, the message further requesting a data packet label associated with said network tunnel, said request message specifying a bandwidth requirement; selecting, at the first MPLS/LAG switch, from a plurality of physical data ports associated with said first MPLS/LAG switch, a single physical tunnel of the LNG, which meets the bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; assigning, at the first MPLS/LAG switch, said single physical tunnel of the LAG to said network tunnel; preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel may be identified, wherein said preparing includes dedicating</p> |
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| the preceding node, at said first MPLS/LAG switch, a data packet that includes said data packet label; and switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel associated with said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel. | a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel; sending, by said first MPLS/LAG switch, a message that includes said data packet label to the preceding node; receiving from the preceding node, at said first MPLS/LAG switch, a data packet that includes said data packet label; and switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel associated with said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel. |
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Claims 1-14 and 26 include all the limitations of the U.S. patent 8,537,682 except for the deletion of some limitations as can be seen above. The deleted limitations were omitted to broaden the scope of the claims. Therefore, deletion of the additional limitations in the instant claim would have been obvious to one of ordinary skill in the art. See *In re Karlson*, 136 USPQ 184 (CCPA). Also note *Ex parte Rainu*, 168 USPQ 375 (Bd.App.1969); omission of a reference element whose function is not needed would be obvious to one skilled in the art.

5. Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

6. A rejection based on double patenting of the “same invention” type finds its support in the language of 35 U.S.C. 101 which states that “whoever invents or

discovers any new and useful process... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957).

7. **A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the claims that are directed to the same invention so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.**

8. Claims 15-25 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 15-25 of prior U.S. Patent No. 8,537,682. This is a statutory double patenting rejection.

| Current application 13/696520                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | U.S. Patent 8,537,682                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| 15. An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising: a processor, which is configured to: receive a tunnel configuration request message from the preceding node; make a selection from a | 15. An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising; a processor, which is configured to: receive a tunnel configuration request message from the preceding node; make a selection from a |

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| <p>plurality of physical data ports in said first MPLS/LAG switch, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number; assign said single physical tunnel port to the network tunnel; prepare a data packet label, by which said single physical tunnel port may be identified; dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; and publish said packet label upstream; and a mapper, which is configured to: receive a data packet from an upstream node; detect said data packet label in said data packet; and if said data packet contains said data packet label, to direct the first MPLS/LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS/LAG switch via said single physical tunnel port.</p> <p>16. The apparatus according to claim 15, wherein the processor is configured to make said selection in compliance with a service property.</p> <p>17. The apparatus according to claim 16, wherein said service property comprises at least one of the group consisting of a guaranteed bandwidth, a peak bandwidth, and a class of service.</p> <p>18. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.</p> <p>19. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a</p> | <p>plurality of physical data ports in said first MPLS/LAG switch, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number; assign said single physical tunnel port to the network tunnel; prepare a data packet label, by which said single physical tunnel port may be identified; dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port; and publish said packet label upstream; and a mapper, which is configured to: receive a data packet from an upstream node, detect said data packet label in said data packet, and if said data packet contains said data packet label, to direct the first MPLS/LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS /LAG switch via said single physical tunnel port.</p> <p>16. The apparatus according to claim 15, wherein the processor is configured to make said selection in compliance with a service property.</p> <p>17. The apparatus according to claim 16, wherein said service property comprises at least one of the group consisting of a guaranteed bandwidth, a peak bandwidth, and a class of service.</p> <p>18. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.</p> <p>19. The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a</p> |
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| <p>minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>20. The apparatus according to claim 15, wherein said processor is configured to insert into said data packet label a set of bits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.</p> <p>21. The apparatus according to claim 15, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said mapper is configured to retrieve said identifier from said memory responsively to said data packet label.</p> <p>22. The apparatus according to claim 15, wherein said processor is further configured to select a backup port from among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.</p> <p>23. The apparatus according to claim 15, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>24. The apparatus according to claim 15, wherein said processor comprises a</p> | <p>minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.</p> <p>20. The apparatus according to claim 15, wherein said processor is configured to insert into said data packet label a set of hits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.</p> <p>21. The apparatus according to claim 15, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said mapper is configured to retrieve said identifier from said memory responsively to said data packet label.</p> <p>22. The apparatus according to claim 15, wherein said processor is further configured to select a backup port from among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.</p> <p>23. The apparatus according to claim 15, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).</p> <p>24. The apparatus according to claim 15, wherein said processor comprises a</p> |
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| network processor.<br><br>25. The apparatus according to claim 15, wherein said plurality of physical data ports are selected from a single logical port. | network processor.<br><br>25. The apparatus according to claim 15, wherein said plurality of physical data ports are selected from a single logical port. |
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***Claim Rejections - 35 USC § 103***

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

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

10. Claims 1-2, 7, 9, 11, 13, and 14 rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Sivabalan et al (US 2005/0083928, Hereinafter referred to as Sivabalan) in view of Ramia (US 2005/0125490).

11. Regarding claim 1, Sivabalan discloses a method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of: selecting, by a first MPLS / LAG switch, from a plurality of physical data ports in said first MPLS / LAG switch, a single physical tunnel port which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number *[0034] A local admission control mechanism at node A determines whether or not to accept the LSP and picks a component link for use by the LSP. The component link should have sufficient bandwidth available to support the LSP's*

requirements. The component link chosen in this fashion is called a "primary" component link. The admission control mechanism further selects one or more other component links as secondary component links. As will be explained below, the secondary component links are used as backup links when the primary component link fails. The secondary component link information is preconfigured into the label forwarding table entry for the LSP so that the switchover can occur very quickly);  
assigning, by said first MPLS / LAG switch, said single physical tunnel port to said network tunnel ([0034] A local admission control mechanism at node A determines whether or not to accept the LSP and picks a component link for use by the LSP. The component link should have sufficient bandwidth available to support the LSP's requirements. The component link chosen in this fashion is called a "primary" component link. The admission control mechanism further selects one or more other component links as secondary component links. As will be explained below, the secondary component links are used as backup links when the primary component link fails. The secondary component link information is preconfigured into the label forwarding table entry for the LSP so that the switchover can occur very quickly);  
preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified ([0038] FIG. 4 is a flow chart describing steps of component link operation according to the first mode as provided by embodiments of the present invention. At step 402, node A receives a request to establish a Traffic Engineering LSP using link bundle 100. Node A identifies a component link with sufficient bandwidth to accommodate the requirements of this Traffic Engineering LSP.

At step 404, this component link is designated as the primary component link for the LSP. At step 406, node A identifies another component link with sufficient bandwidth to support the LSP. This component link is designated at step 408 as the secondary component link for the LSP. Information about the primary and secondary component links is programmed into the label forwarding table entry or entries corresponding to the LSP. At step 410, packets belonging to the LSP are carried on the primary component link); receiving, by said first MPLS / LAG switch, a data packet comprising said data packet label at said first MPLS / LAG switch ([0036] In the first mode, a single secondary component link is assigned as backup for the primary component link. Sufficient bandwidth to accommodate the LSP is reserved on this single secondary component link. The amount of available bandwidth on the secondary component link is reduced accordingly. FIG. 2 illustrates an example of this first mode where an MPLS Traffic Engineering LSP X employs link bundle 100 between nodes A and B. Node A ties LSP X to a primary component link AB1 and a secondary component link AB3. Further details of this first mode of operation will be described with reference to FIG. 4);  
and switching, by said first MPLS / LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MPLS / LAG switch via said single physical tunnel port ([0036] In the first mode, a single secondary component link is assigned as backup for the primary component link. Sufficient bandwidth to accommodate the LSP is reserved on this single secondary component link. The amount of available bandwidth on the secondary component link is reduced accordingly. FIG. 2 illustrates an example of this first mode where an MPLS

Traffic Engineering LSP X employs link bundle 100 between nodes A and B. Node A ties LSP X to a primary component link AB1 and a secondary component link AB3. Further details of this first mode of operation will be described with reference to FIG. 4).

12. Sivabalan discloses all the limitations of the claimed invention with the exception of sending, by said first MPLS / LAG switch, a reply message comprising said data packet label to the preceding node. However, Ramia, from a similar field of endeavor, teaches a Multi-Protocol Label Switching (MPLS) system that uses downstream nodes to determine labels and distribute the label information upstream [paragraph 0028], the label stack (label) in a packet defining the path (nested tunnel) of the packet through an MPLS network [paragraph 0038] (**i.e. sending data packet label to upstream node**). Ramia teaches that the labels are assigned to data packets belonging to a particular forwarding equivalence class (FEC), which is a group of packets forwarded in the same manner or over the same path [paragraph 0005], and the labels can be unique to a certain interface or port when assigned [paragraph 0027] (**i.e. attaching data packet label to all packets sent by upstream node associated with the tunnel**). Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to implement MPLS upstream labeling as taught by Ramia for use with the label switched routers constructing a label switch path at an upstream source. One would be motivated to do so provide the capabilities that would be available with MPLS labeling [refer Ramia; abstract][refer Sivabalan; paragraphs 0020-0025].

13. Regarding claim 2. Sivabalan discloses a method further comprising the steps of: receiving from a preceding node located upstream from said first MPLS / LAG switch,

by said first MPLS / LAG switch, a request message requesting configuration of said network tunnel (see paragraphs [0038]).

14. Regarding claim 2, Sivabalan discloses all the limitations of the claimed invention with the exception that the message further requests said data packet label associated with said network tunnel. However, Ramia, from a similar field of endeavor, teaches a Multi-Protocol Label Switching (MPLS) system that uses downstream nodes to determine labels and distribute the label information upstream [paragraph 0028], the label stack (label) in a packet defining the path (nested tunnel) of the packet through an MPLS network [paragraph 0038] (**i.e. sending data packet label to upstream node**). Ramia teaches that the labels are assigned to data packets belonging to a particular forwarding equivalence class (FEC), which is a group of packets forwarded in the same manner or over the same path [paragraph 0005], and the labels can be unique to a certain interface or port when assigned [paragraph 0027] (**i.e. attaching data packet label to all packets sent by upstream node associated with the tunnel**). Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to implement MPLS upstream labeling as taught by Ramia for use with the label switched routers constructing a label switch path at an upstream source. One would be motivated to do so provide the capabilities that would be available with MPLS labeling [refer Ramia; abstract][refer Sivabalan; paragraphs 0020-0025].

15. Regarding claim 7, Sivabalan in view of Ramia teaches to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel (a component link is selected

that would have a sufficient amount of bandwidth available to support the LSP)[paragraph 0033].

16. Regarding claim 9, Sivabalan in view of Ramia teaches a method wherein preparing comprises inserting into said data packet label a set of bits which identify said tunnel port (component link) (labels are inserted into the data on the LSP [paragraph 0029], component link information is preconfigured into the label forwarding tables for forwarding [paragraph 0038], it is inherent that the label as part of MPLS would include a set of bits within the label used for identification); and the mapper is configured to extract said set of bits to determine an identity of said tunnel port (when a packet is received, the LSR, or the Node, will reference the packet's label to a label forwarding table to make a forwarding selection and a new label for the path)[paragraph 0029].

17. Regarding claim 11, Sivabalan in view of Ramia teaches said processor is further configured to select a backup port (secondary component link) from among the plurality of ports (link bundle)[paragraph 0034], different from said tunnel port (secondary component link is another component link in the bundle that can satisfy the bandwidth requirements) [paragraph 0033], and said mapper is further configured, responsively to a service interruption (failure) of said tunnel port (primary component link) [paragraph 0034], to direct the first LAG switch to switch said data packet to said backup port, and send said data packet to the second LAG switch via said backup port [paragraph 0039].

18. Regarding claim 13, Sivabalan in view of Ramia teaches the first LAG switch comprises a Label Switched Router (LSR) [paragraph 0029].

19. Regarding claim 14, Sivabalan in view of Ramia discloses a method further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port (i.e. the link bundle).

20. Claims 3-6, 10 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia and further in view of Kompella et al. ("Link Bundling in MPLS Traffic Engineering")(Kompella hereafter).

21. Regarding claim 3, Sivabalan in view of Ramia discloses all the limitations of the claimed invention with the exception the MPLS network tunnel employs Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, receiving an RSVP-TE PATH message augmented with a LABEL\_REQUEST object from the preceding node. However, Kompella, from a similar field of endeavor, discloses the implementations of performing MPLS with bundled links, i.e. the aggregated links, using RSVP for sending a path/REQUEST messages for setting up a LSP as would be disclosed in RSVP-TE extensions cited in RFC 3473 [refer Kompella; page 5 section 4.3] and operating without raising issue to securities for RSVP-TE specified in RFC 3209 [refer page 9 section 7]. Thus, It would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan in view of Ramia to incorporate the teachings of Kompella [refer Sivabalan; paragraph 0027-0028] to explicitly configure a label switched path using RSVP over a bundle of links that can be seen publicly as a single link, since for signaling traffic used to establish an LSP, only the link bundle itself is identified (i.e. seen as a single logical link by RSVP)[refer Sivabalan; paragraph

0006]. One would be motivated to do so to unambiguously identify appropriate resources to be used by an LSP for a MPLS network [refer Kompella; page 1 section 2], as would be incorporated therein [refer Sivabalan; paragraph 0027-0028].

22. Regarding claims 4-5 and 26, Sivabalan in view of Ramia teaches the processor is configured to make said selection in compliance with said service property (data networking requirements)(MPLS, as known in the art, uses LSRs to create LSP to meet networking requirements)[refer paragraph 0002], the service property comprises at least one of: a guaranteed bandwidth [paragraph 0031] and a class of service (quality of service)[paragraph 0039][paragraph 0043].

23. Regarding claim 6, Sivabalan in view of Ramia fails to explicitly disclose selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports . However, Kompella teaches to make said selection of a port having a maximum available bandwidth of the plurality of ports [page 8 section 5.10]. Thus, It would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to incorporate the teachings of Kompella [refer Sivabalan; paragraph 0027-0028] to be able to configure a path using maximum LSP bandwidth. One would be motivated to do so to unambiguously identify appropriate resources used by an LSP for a MPLS network [refer Kompella; page 1 section 2], as would be incorporated [refer Sivabalan; paragraph 0027-0028].

24. Regarding claim 10, Sivabalan in view of Ramia teaches comprising a memory (program memory)[refer Fig. 6; 604], and the processor is configured to store said data packet label along with an identifier of said tunnel port in said memory, and wherein said

mapper is configured to retrieve said identifier from said memory responsively to said data packet label (forwarding selection and substitute labels are referenced in a label forwarding table)[paragraph 0029].

25. However Sivabalan doesn't explicitly disclose that storing a data packet along with an identifier of the tunnel port in memory and retrieving the identifier from memory responsive to the label. However, Kompella discloses that for a LSP, identifiers used for LSR's to interconnect would be used, such as <component link identifier, label> to identify appropriate resources to be used by an LSP [page 3 section 4 paragraph 3]. Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to incorporate the teachings of Kompella [refer Sivabalan; paragraph 0027-0028] to be able to store the reference to a specific link, such as the primary component used for a LSP (i.e. tunnel) with the identification of the label used for the LSP. One would be motivated to do so to unambiguously identify appropriate resources used by an LSP for a MPLS network [refer Kompella; page 3 section 4 paragraph 3], as would be incorporated [refer Sivabalan; paragraph 0027-0028].

26. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia further view of in view of Larson et al. (US Pub 2004/0107285)(Larson hereafter).

27. Regarding claim 8, Sivabalan in view of Ramia fails to disclose that the switch is configured to perform mapping function. However, Larson teaches a hashing function with a one-to-one mapping that generates a sync portion from a sync value, a "private" header which is an inner header for a packet contains an encrypted (i.e. hashed) link

key as part of a sync (i.e. a port number) [paragraph 0178]. Larson further teaches that when a packet is received by a node, the inner header is decrypted by using a decryption (i.e. inverse hashing) function to extract the sync portion, and if a sync portion is still valid, it is extracted from memory and added to a packet, considered as an inverse hash [paragraph 0178]. Sivabalan suggests that component links can be chosen on a per-packet basis based upon a hash [paragraph 0042]. Thus, it would have been obvious to one of ordinary skill in the art given the teachings of Sivabalan and the suggestion of using a hash for a packet to select a component link to combine with the teachings of Larson for using encrypting (i.e. hashing) linking and an inverse hash function in memory to be able to produce a port number from a header or label and vice versa for communicating packets over a network. One would be motivated to combine because in performing a hash and finding information from a hash on a header or label would provide a secure mode of communication over a network [refer Larson; abstract] and help to speed up table lookup and data comparisons.

28. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia in view of Wang (US 2005/0090275).

29. Sivabalan in view of Ramia discloses all the limitations of the claimed invention with the exception of further comprising the step of responsive to a restoral of said service interruption of said single physical tunnel port, reverting switching of said data packet from said backup port and sending said data packet to said second MPLS / LAG switch via said single physical tunnel port. However, Wang, from a similar field of endeavor, discloses a communication system where devices can switch between

channels based on availability and ranking (see fig.4). Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to employ the teaching of Wang into the communication system of Sivabalan by enabling a dynamic port selection based on ranking and availability for the purpose of avoiding system interruption.

### ***Conclusion***

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO\_892.

Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

When responding to this office action, applicants are advised to clearly point out the patentable novelty which they think the claims present in view of the state of the art disclosed by the references cited or the objections made. Applicants must also show how the amendments avoid such references or objections. See 37C.F.R 1.111(c). In addition, applicants are advised to provide the examiner with the line numbers and pages numbers in the application and/or references cited to assist examiner in locating the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOUNIR MOUTAOUAKIL whose telephone number is (571)270-1416. The examiner can normally be reached on Monday-Thursday (1pm-4:30pm) eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. M./  
Examiner, Art Unit 2476  
/AYAZ SHEIKH/

Supervisory Patent Examiner, Art Unit 2476

|                                   |                                       |  |                                                              |             |
|-----------------------------------|---------------------------------------|--|--------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>13/969,520 |  | Applicant(s)/Patent Under<br>Reexamination<br>SOLOMON, RONEN |             |
|                                   | Examiner<br>MOUNIR MOUTAOUAKIL        |  | Art Unit<br>2476                                             | Page 1 of 1 |

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| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name                | Classification |
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| * | B | US-2003/0020976                                  | 01-2003         | Krishnaswamy et al. | 359/110        |
| * | C | US-2005/0125490                                  | 06-2005         | Ramia, Kannan Babu  | 709/202        |
| * | D | US-2004/0107285                                  | 06-2004         | Larson et al.       | 709/229        |
| * | E | US-2005/0090275                                  | 04-2005         | Wang, Mingheng      | 455/512        |
|   | F | US-                                              |                 |                     |                |
|   | G | US-                                              |                 |                     |                |
|   | H | US-                                              |                 |                     |                |
|   | I | US-                                              |                 |                     |                |
|   | J | US-                                              |                 |                     |                |
|   | K | US-                                              |                 |                     |                |
|   | L | US-                                              |                 |                     |                |
|   | M | US-                                              |                 |                     |                |

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|   | R |                                                  |                 |         |      |                |
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|   | V |                                                                                                                                                                             |
|   | W |                                                                                                                                                                             |
|   | X |                                                                                                                                                                             |

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

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|----------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------|
| <b>Search Notes</b><br> | <b>Application/Control No.</b><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br>SOLOMON, RONEN |
|                                                                                                          | <b>Examiner</b><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br>2476                                          |

| CPC- SEARCHED |      |          |
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| Symbol        | Date | Examiner |
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| CPC COMBINATION SETS - SEARCHED |      |          |
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| US CLASSIFICATION SEARCHED |                 |            |          |
|----------------------------|-----------------|------------|----------|
| Class                      | Subclass        | Date       | Examiner |
| 370                        | 235,389,392,400 | 11/30/2013 | MM       |
| 709                        | 239,242         | 11/30/2013 | MM       |

| SEARCH NOTES               |            |          |
|----------------------------|------------|----------|
| Search Notes               | Date       | Examiner |
| Consulted with Ayaz Sheikh | 11/30/2013 | MM       |
| NPL                        | 11/30/2013 | MM       |
| East                       | 11/30/2013 | MM       |
| inventorship Search        | 11/30/2013 | MM       |
| Assignee Search            | 11/30/2013 | MM       |
| DB Search                  | 11/30/2013 | MM       |
| JPO                        | 11/30/2013 | MM       |
| EPO                        | 11/30/2013 | MM       |
| WIPO                       | 11/30/2013 | MM       |

| INTERFERENCE SEARCH     |                         |      |          |
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## BIB DATA SHEET

CONFIRMATION NO. 4152

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|--------------------------------------------------------------|---------------------------|--------------------------------|
| <b>SERIAL NUMBER</b><br>13/969,520                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>FILING or 371(c)<br/>DATE</b><br>08/17/2013<br><b>RULE</b>                                                     | <b>CLASS</b><br>370                                      | <b>GROUP ART UNIT</b><br>2476     | <b>ATTORNEY DOCKET NO.</b><br>40552-6175P                    |                           |                                |
| <b>APPLICANTS</b><br>Orckit-Corrigent Ltd., Tel Aviv, ISRAEL, Assignee (with 37 CFR 1.172 Interest);<br><b>INVENTORS</b><br>Ronen Solomon, Ramat Gan, ISRAEL;<br><b>** CONTINUING DATA *****</b><br>This application is a CON of 13/116,696 05/26/2011 PAT 8537682<br>which is a CON of 11/123,801 05/06/2005 PAT 7974202<br><b>** FOREIGN APPLICATIONS *****</b><br><b>** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY **</b><br>09/05/2013 |                                                                                                                   |                                                          |                                   |                                                              |                           |                                |
| Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>Verified and /MOUNIR<br>MOUTAOUAKIL/<br>Acknowledged Examiner's Signature                                                                                                                                                                                |                                                                                                                   | <input type="checkbox"/> Met after Allowance<br>Initials | <b>STATE OR COUNTRY</b><br>ISRAEL | <b>SHEETS DRAWINGS</b><br>3                                  | <b>TOTAL CLAIMS</b><br>26 | <b>INDEPENDENT CLAIMS</b><br>3 |
| <b>ADDRESS</b><br>SHEEHAN PHINNEY BASS & GREEN, PA<br>c/o PETER NIEVES<br>1000 ELM STREET<br>MANCHESTER, NH 03105-3701<br>UNITED STATES                                                                                                                                                                                                                                                                                                                        |                                                                                                                   |                                                          |                                   |                                                              |                           |                                |
| <b>TITLE</b><br>TUNNEL PROVISIONING WITH LINK AGGREGATION                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                   |                                                          |                                   |                                                              |                           |                                |
| <b>FILING FEE RECEIVED</b><br>1040                                                                                                                                                                                                                                                                                                                                                                                                                             | FEES: Authority has been given in Paper<br>No. _____ to charge/credit DEPOSIT ACCOUNT<br>No. _____ for following: |                                                          |                                   | <input type="checkbox"/> All Fees                            |                           |                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                   |                                                          |                                   | <input type="checkbox"/> 1.16 Fees (Filing)                  |                           |                                |
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|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| <b><i>Index of Claims</i></b><br><br> | <b>Application/Control No.</b><br><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>SOLOMON, RONEN |
|                                                                                                                        | <b>Examiner</b><br><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br><br>2476                                          |

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|---|-----------------|---|-------------------|---|---------------------|---|-----------------|
| ✓ | <b>Rejected</b> | - | <b>Cancelled</b>  | N | <b>Non-Elected</b>  | A | <b>Appeal</b>   |
| = | <b>Allowed</b>  | ÷ | <b>Restricted</b> | I | <b>Interference</b> | O | <b>Objected</b> |

| <input type="checkbox"/> Claims renumbered in the same order as presented by applicant |          |            |      |  |  |  |  |  |  |  | <input type="checkbox"/> CPA |  |  |  |  |  |  |  |  |  |  | <input type="checkbox"/> T.D. |  |  |  |  |  |  |  |  |  |  | <input type="checkbox"/> R.1.47 |  |  |  |  |  |  |  |  |  |  |
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| CLAIM                                                                                  |          |            | DATE |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
| Final                                                                                  | Original | 12/02/2013 |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 1        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 2        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 3        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 4        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 5        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 6        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 7        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 8        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 9        | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 10       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 11       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 12       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 13       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 14       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 15       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 16       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 17       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 18       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 19       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 20       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 21       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 22       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 23       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 24       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 25       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |
|                                                                                        | 26       | ✓          |      |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |  |                               |  |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |  |



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|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         | 40552-6175P            |

**CONFIRMATION NO. 4152**

**PUBLICATION NOTICE**

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



**Title:**TUNNEL PROVISIONING WITH LINK AGGREGATION

**Publication No.**US-2013-0336324-A1

**Publication Date:**12/19/2013

**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 publicly available Searchable Databases via the Internet at [www.uspto.gov](http://www.uspto.gov). The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

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

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

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

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

## POWER OF ATTORNEY BY APPLICANT

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

|                    |                 |
|--------------------|-----------------|
| Application Number | Filing Date     |
| 13/969,520         | August 17, 2013 |

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

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

57449

OR

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

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

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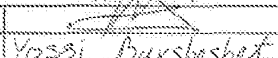
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Orckit-Corrigent Ltd.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.45(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

### SIGNATURE of Applicant for Patent

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

|           |                                                                                     |                 |               |
|-----------|-------------------------------------------------------------------------------------|-----------------|---------------|
| Signature |  | Date (Optional) | 14th Nov 2013 |
| Name      | Yossi Burshten                                                                      |                 |               |
| Title     | Vice President of R&D                                                               |                 |               |

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

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to be paid by the USPTO to process an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form, and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1480, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1450.

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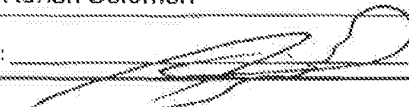
| Electronic Acknowledgement Receipt          |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 18093129                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | Peter Anthony Nieves/Karen Morin          |
| <b>Filer Authorized By:</b>                 | Peter Anthony Nieves                      |
| <b>Attorney Docket Number:</b>              | 40552-6175P                               |
| <b>Receipt Date:</b>                        | 03-FEB-2014                               |
| <b>Filing Date:</b>                         | 17-AUG-2013                               |
| <b>Time Stamp:</b>                          | 12:45:09                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

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| 1                      | Oath or Declaration filed | S0329585.pdf | 95734                                   | no               | 1                |
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| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Power of Attorney | S0329586.pdf | 125368                                   | no     | 1 |
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| <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><b><u>New Applications Under 35 U.S.C. 111</u></b><br/>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                   |              |                                          |        |   |

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>Title of<br/>Invention</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>TUNNEL PROVISIONING WITH LINK AGGREGATION</b> |
| <p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: <input type="checkbox"/> The attached application, or<br/><input checked="" type="checkbox"/> United States application or PCT international application number <u>13/969,520</u><br/>filed on <u>August 17, 2013</u></p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>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.</p> <p style="text-align: center;"><b>WARNING:</b></p> <p>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.</p> <p><b>LEGAL NAME OF INVENTOR</b></p> <p>Inventor: <u>Ronen Solomon</u> Date (Optional): <u>January 28<sup>th</sup> 2014</u></p> <p>Signature: </p> <p>Note: An application data sheet (PTO/SF/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.</p> |                                                  |

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.

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         | 40552-6175P            |

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

**CONFIRMATION NO. 4152**  
**POA ACCEPTANCE LETTER**



Date Mailed: 02/10/2014

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 02/03/2014.

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

/nhassani/

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. Of: Ronen Solomon, et al. Group Art Unit: 2472  
Serial No.: 13/969,520 Examiner: Moutaouakil, Mounir  
Filed: August 17, 2013 DOCKET: 40552-6175  
For: TUNNEL PROVISIONING WITH LINK AGGREGATION

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

RESPONSE

This amendment is being filed in response to the non-final Office Action mailed  
**December 4, 2013.**

AUTHORIZATION TO DEBIT ACCOUNT

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

**Amendments to the Claims**

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

**Listing of Claims:**

What is claimed is:

1. (Currently Amended) A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:
  - selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of the LAG which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number;
  - assigning, by said first MPLS/LAG switch, said single physical tunnel port to said network tunnel;
  - preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified;
  - sending, by said first MPLS/LAG switch, a message comprising said data packet label to a preceding node;
  - receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label; and
  - switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel port according to said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel port.
2. (Original) The method of claim 1, further comprising the step of receiving from a preceding node located upstream from said first MPLS/LAG switch, by said first

MPLS/LAG switch, a request message requesting configuration of said network tunnel, the message further requesting said data packet label associated with said network tunnel.

3. (Original) The method of claim 2, wherein said request message comprises an RSVP-TE PATH message augmented with a LABEL\_REQUEST object.

4. (Original) The method according to claim 3, wherein said request comprises an indication of a service property, and wherein said selecting comprises identifying a physical port in compliance with said service property.

5. (Original) The method according to claim 4, wherein said service property comprises at least one of: a guaranteed bandwidth; a peak bandwidth; and a class of service.

6. (Original) The method according to claim 1, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports.

7. (Original) The method according to claim 1, wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of physical data ports which is not less than said bandwidth requirement of the network tunnel.

8. (Original) The method according to claim 1, wherein said switching said data packet is according to a mapping function.

9. (Original) The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits that identify said single

physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.

10. (Original) The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.

11. (Original) The method according to claim 1, further comprising the steps of: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.

12. (Original) The method according to claim 11, further comprising the step of responsive to a restoral of said service interruption of said single physical tunnel port, reverting switching of said data packet from said backup port and sending said data packet to said second MPLS/LAG switch via said single physical tunnel port.

13. (Original) The method according to claim 1, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).

14. (Original) The method of claim 1, further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port.

15. (Currently Amended) An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel

employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising:

a processor, which is configured to:

receive a tunnel configuration request message from the preceding node;

make a selection from a plurality of physical data ports in said first MPLS/LAG switch, of a single physical tunnel port which meets a bandwidth requirement of the network tunnel, wherein said single physical tunnel port has a port serial number;

assign said single physical tunnel port to the network tunnel;

prepare a data packet label, by which said single physical tunnel port is may be identified;

~~dedicate a sub-set of bits of said data packet label to encode said port serial number of said single physical tunnel port;~~ and

publish said packet label upstream; and

a mapper, which is configured to:

receive a data packet from an upstream node;

detect said data packet label in said data packet; and

if said data packet contains said data packet label, to direct the first MPLS/LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS/LAG switch via said single physical tunnel port.

16. (Original) The apparatus according to claim 15, wherein the processor is configured to make said selection in compliance with a service property.

17. (Original) The apparatus according to claim 16, wherein said service property comprises at least one of the group consisting of a guaranteed bandwidth, a peak bandwidth, and a class of service.

18. (Original) The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.

19. (Original) The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.

20. (Original) The apparatus according to claim 15, wherein said processor is configured to insert into said data packet label a set of bits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.

21. (Original) The apparatus according to claim 15, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said mapper is configured to retrieve said identifier from said memory responsively to said data packet label.

22. (Original) The apparatus according to claim 15, wherein said processor is further configured to select a backup port from among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.

23. (Original) The apparatus according to claim 15, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).

24. (Original) The apparatus according to claim 15, wherein said processor comprises a network processor.

25. (Original) The apparatus according to claim 15, wherein said plurality of physical data ports are selected from a single logical port.

26. (Currently Amended) A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:

receiving from a preceding node located upstream from a first MPLS/LAG switch, at said first MPLS/LAG switch, a request message requesting configuration of a network tunnel, the message further requesting a data packet label associated with said network tunnel, said request message specifying a bandwidth requirement;

selecting, at the first MPLS/LAG switch, from a plurality of physical data ports associated with said first MPLS/LAG switch, a single physical tunnel of the LAG, which meets the bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number;

assigning, at the first MPLS/LAG switch, said single physical tunnel of the LAG to said network tunnel;

preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel ~~may be~~ is identified;

sending, by said first MPLS/LAG switch, a message that includes said data packet label to the preceding node;

receiving from the preceding node, at said first MPLS/LAG switch, a data packet that includes said data packet label; and

switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel associated with said serial port number, and sending said data packet to a second MSPLS/LAG switch via said single physical tunnel.

27. (New) A method for tagging a packet for transport through an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the method comprising the steps of:

sending downstream to a MPLS/LAG switch, by the preceding node, an RSVP-TE PATH message, the RSVP-TE PATH message comprising a LABEL\_REQUEST object requesting a network tunnel, and a bandwidth requirement;

receiving, by the preceding node, a packet label sent by the MPLS/LAG switch, said packet label comprising a serial number of a single physical tunnel port in the LAG of the MPLS/LAG switch, and wherein the single physical tunnel port meets the bandwidth requirement;

attaching by the preceding node, said packet label to a data packet sent by the preceding node, wherein the data packet is intended to be forwarded via the single physical tunnel port; and

sending downstream to the MPLS/LAG switch, by the preceding node, the data packet with the attached data packet label.

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### REMARKS/ARGUMENTS

This is a full and timely response to the outstanding non-final Office Action mailed **December 4, 2013**.

Claims 1, 15 and 26 are being amended, in part, to clarify the claimed subject matter. Claim 27 is new. Support for the new and amended claims can be found throughout the specification.<sup>1</sup> Claims 15-25 are being canceled.

#### Non-Statutory Double Patenting

In the office action, claims 1-11 and 14-26 were rejected on the ground of non-statutory double patenting over claims 1-19 of U.S. Patent No. 7,974,202. The applicant does not concede that these rejections are proper. Nevertheless, a terminal disclaimer is enclosed to obviate them.

In the office action, claims 1-14 and 26 were rejected on the ground of non-statutory double patenting over claims 1-14 and 26 of U.S. Patent No. 8,537,682. The applicant does not concede that these rejections are proper. Nevertheless, a terminal disclaimer is enclosed to obviate them.

#### Statutory Double Patenting

In the office action, claims 15-25 were rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 15-25 in U.S. Patent No. 8,537,682.

Claims 15-25 have been amended to overcome these rejections.

#### Claim Rejections 35 U.S.C. §103

In the office action, claims 1, 2, 7, 9, 11, 13 and 14 were rejected under pre-AIA 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No.

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<sup>1</sup> Claim 27 corresponds to claim 16 in this application's parent (13/116,696). Claim 16 was canceled in this application's parent.

2005/0083928 ("Sivabalan") in view of U.S. Patent Application Publication No.  
2005/0125490 ("Ramia").

In a typical implementation, the subject matter recited in claim 1 facilitates the provisioning of proper bandwidth across an aggregated link of multiple parallel physical Ethernet ports for label switched network tunnel traffic within the context of the "Resource ReSerVation Protocol" (RSVP). It is generally necessary to use a single physical path for the label switched traffic in a network tunnel to insure that individual packets arrive in the same order in which they are sent.

The use of RSVP is widespread and is noted in the art of record (*e.g.*, in Sivabalan). However, RSVP does not take physical link aggregation into account when reserving resources and treats aggregated parallel physical links only as a single logical link having the combined bandwidths of the separate physical links. In the case of aggregated physical links, therefore, the prior-art RSVP provisioning will either assign the logical link, or an arbitrary single physical link. In either of these cases, the resulting assignment may fail to operate properly; assigning the logical link to the network tunnel does not guarantee preservation of data packet arrival in order, and arbitrarily assigning a single physical link may conflict with previous assignments and may not provide sufficient bandwidth.

In a similar manner, IEEE Ethernet Link Aggregation standards usually only specify that data packets with the same header attributes (such as packets belonging to the same network tunnel) be assigned to the same physical link. This, too, can fail to provide sufficient bandwidth.

The subject matter now recited in claim 1 provides a method for overcoming the restrictions of the prior art, by supplementing RSVP to particularly assign a single physical Ethernet data port for network tunnel traffic to guarantee that the single physical Ethernet data port offers available bandwidth to support the traffic.

In this regard, claim 1, as amended, recites:

*selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of [a] LAG which meets a bandwidth requirement of a network tunnel . . .*

*preparing, by [a] first MPLS/LAG switch, a data packet label by which said single physical tunnel port is identified; [and]  
sending, by said first MPLS/LAG switch, a message comprising said data packet label to a preceding node . . . .*

As discussed below, Sivabalan, alone or in combination with Ramia, does not disclose or reasonably suggest the claimed subject matter.

Sivabalan discloses transparent re-routing of label switched paths (LSPs) within a link bundle. Certain aspects of the Sivabalan techniques in this regard can be understood by referring to FIG. 1 of Sivabalan, reproduced below for ease of reference

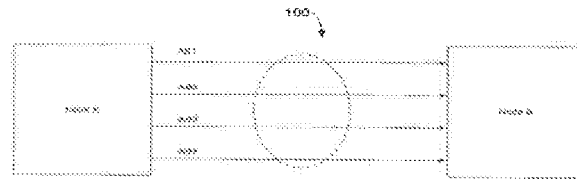


FIG. 1

FIG. 1 of Sivabalan shows a link bundle 100 that interconnects two nodes (node A and node B). According to Sivabalan, a local admission control mechanism at node A picks “primary” and “secondary” (or backup) component links for use by a label switched paths (LSP):

*A local admission control mechanism at node A determines whether or not to accept the LSP and picks a component link for use by the LSP. The component link should have sufficient bandwidth available to support the LSP's requirements. The component link chosen in this fashion is called a “primary” component link. The admission control mechanism further selects one or more other component links as secondary component links. As will be explained below, the secondary component links are used as backup links when the primary component link fails. The secondary component link information is preconfigured into the label forwarding table entry for the LSP so that the switchover can occur very quickly.*

¶ [0034].

Referring to the flowchart in FIG. 4, Sivabalan explains how the system reacts upon failure of a primary component link:

*At step 410, packets belonging to the LSP are carried on the primary component link.*

*At step 412, failure of the primary component link is detected. The response is a switchover of the LSP traffic to the secondary component link at step 414. Quality of service is maintained since the secondary component link also has sufficient guaranteed bandwidth. There is no signaling to the head-end to implement the switch-over. The secondary component link now becomes the primary component link. At step 416, node A selects another component link in the same link bundle to be the new secondary component link.*

¶ [0038]-[0039].

The office action (throughout paragraph 11) seems to indicate that the information about the primary or secondary component links that gets preconfigured into the label forwarding table entry for the label switched path in Sivabalan somehow corresponds to the “data packet label” of claim 1.

Even if the information about the primary or secondary component links did correspond to the “data packet label” of claim 1, which the applicant does not concede, Sivabalan does not disclose “sending, by [a] first MPLS/LAG switch, a message comprising” information about the primary or secondary component links “to a preceding node,” as recited in claim 1. Indeed, the office action itself concedes this very point.<sup>2</sup>

Nor would there have been any reason to modify Sivabalan in a manner that would have led to the claimed subject matter. More particularly, for example, a person of ordinary skill simply would not have had any reason to make the local admission control mechanism in Sivabalan send information about the primary and/or secondary component links “to a preceding node,” as recited in claim 1.

In fact, Sivabalan specifically emphasizes that “switchover of the LSP traffic to the secondary component link” occurs with “no signaling to the head-end to implement the switch-over” and that “[t]he secondary component link information is preconfigured

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<sup>2</sup> In particular, the office action (at paragraph 12 on page 21) acknowledges that Sivabalan does not disclose “sending, by said first MPLS/LAG switch, a reply message comprising said data packet label to the preceding node.”

into the label forwarding table entry for the LSP so that the switchover can occur very quickly.”

Since Sivabalan’s switchover to the secondary component link very clearly occurs with no signaling to the head-end, there would have been no reason to send information about the primary or secondary links to “a preceding node,” as recited in claim 1. This is true regardless of what any other “prior art” references might disclose.

For at least the foregoing reasons, regardless of what any other “prior art” references disclose, it would not have been obvious to modify Sivabalan in a manner that would have led to:

*selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first MPLS/LAG switch, a single physical tunnel port of [a] LAG which meets a bandwidth requirement of a network tunnel, . . .  
preparing, by [a] first MPLS/LAG switch, a data packet label by which said single physical tunnel port is identified; [and]  
sending, by said first MPLS/LAG switch, a message comprising said data packet label to a preceding node . . . .*

Certainly, Ramia does not remedy Sivabalan’s shortcomings in this regard.

Ramia discloses a device and method for handling MPLS labels. Ramia explains that “[g]enerally, labels are determined by downstream nodes and distributed upstream.” ¶ [0028]. Moreover, Ramia mentions that the path for a packet through an MPLS domain can encompass nested tunnels.

Ramia does not mention link aggregation groups<sup>3</sup>, which is a focus of the subject matter in claim 1. As mentioned above, Resource ReSerVation Protocol” (RSVP), for example, does not take physical link aggregation into account when reserving resources, and treats aggregated parallel physical links only as a single logical link having the combined bandwidths of the separate physical links. There is nothing in Ramia that would suggest any contrary approach in regard to link aggregated groups.

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<sup>3</sup> To be clear, a “nested tunnel” is not a link aggregation group.

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The fairly-generic disclosure in Ramia that “labels are determined by downstream nodes and distributed upstream” certainly would not have led a person of ordinary skill to implement the subject matter recited in claim 1.

Claim 1 is allowable over Sivabalan in view of Ramia for at least the foregoing reasons.

Claims 2, 7, 9, 11, 13 and 14 depend from claim 1 and, therefore, are allowable for at least the same reasons as claim 1.

In the office action, claims 3-6, 10 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sivabalan in view of Ramia and further in view of an article entitled *Link Building in MPLS Traffic Engineering*, (by “Kompella”).

Claims 3-6 and 10 depend from claim 1 and, therefore, are allowable over Sivabalan in view of Ramia for the reasons set forth above. Moreover, Kompella does not remedy the shortcomings in Sivabalan and Ramia.

Claims 3-6 and 10 are allowable over Sivabalan, Ramia and Kompella for at least the foregoing reasons.

Claim 26 recites subject matter that is similar to the subject matter recited in claim 1 (and discussed above).

More particularly, claim 26 recites:

*selecting, at the first MPLS/LAG switch, from a plurality of physical data ports associated with said first MPLS/LAG switch, a single physical tunnel of [a] LAG, which meets the bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number; . . .*

*preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel is identified; [and]*

*sending, by said first MPLS/LAG switch, a message that includes said data packet label to the preceding node . . . .*

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For reasons set forth in detail above, Sivabalan, Ramia and Kompella, alone or in combination, do not disclose or render obvious the claimed subject matter.

Claim 26 is allowable for at least the foregoing reasons.

In the office action, claim 8 was rejected as being unpatentable over Sivabalan in view of Ramia and further in view of U.S. Patent Application Publication No. 2004/0107285 ("Larson").

Claim 8 depends from claim 1 and, therefore, is allowable over Sivabalan for at least the reasons provided above in detail. Larson does not remedy the shortcomings of Sivabalan discussed above.

Claim 8 is allowable for at least the foregoing reasons.

In the office action, claim 12 was rejected as being unpatentable over Sivabalan in view of Ramia and further in view of U.S. Patent Application Publication No. 2005/0090275 ("Wang").

Claim 12 depends from claim 1 and, therefore, is allowable over Sivabalan in view of Ramia for at least the reasons provided above in detail. Wang does not remedy the shortcomings of Sivabalan and Ramia discussed above.

Claim 12 is allowable for at least the foregoing reasons.

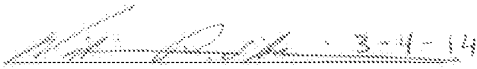
### CONCLUSION

In light of the foregoing and for at least the reasons set forth above, the Applicants respectfully request favorable reconsideration and allowance of the present application and the presently pending claims. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 627-8186.

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Respectfully submitted,

A handwritten signature in dark ink, appearing to read "W. P. O'Sullivan", is written over a horizontal dotted line. To the right of the signature, the date "3-11-14" is handwritten.

William P. O'Sullivan  
Attorney for Applicants  
Reg. No. 59,005

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**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING  
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)  
40552-6175

In re Application of: ORCKIT-CORRIGENT LTD.

Application No.: 13989520

Filed: August 17, 2013

For: Tunnel Provisioning for Link Aggregation

The applicant, ORCKIT-CORRIGENT LTD., owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent No. 8,537,682 as the term of said prior patent is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for any during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

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

2. ☐ The undersigned is an attorney or agent of record. Reg. No. \_\_\_\_\_

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3/3/2014  
Date

Yossi Barshishat  
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Vice President of R&D  
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Telephone Number

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| Electronic Patent Application Fee Transmittal  |                 |                                           |               |                             |
|------------------------------------------------|-----------------|-------------------------------------------|---------------|-----------------------------|
| <b>Application Number:</b>                     |                 | 13969520                                  |               |                             |
| <b>Filing Date:</b>                            |                 | 17-Aug-2013                               |               |                             |
| <b>Title of Invention:</b>                     |                 | TUNNEL PROVISIONING WITH LINK AGGREGATION |               |                             |
| <b>First Named Inventor/Applicant Name:</b>    |                 | Ronen Solomon                             |               |                             |
| <b>Filer:</b>                                  |                 | William P. Osullivan/Karen Morin          |               |                             |
| <b>Attorney Docket Number:</b>                 |                 | 40552-6175P                               |               |                             |
| Filed as Small Entity                          |                 |                                           |               |                             |
| <b>Utility under 35 USC 111(a) Filing Fees</b> |                 |                                           |               |                             |
| <b>Description</b>                             | <b>Fee Code</b> | <b>Quantity</b>                           | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                           |                 |                                           |               |                             |
| <b>Pages:</b>                                  |                 |                                           |               |                             |
| <b>Claims:</b>                                 |                 |                                           |               |                             |
| Claims in excess of 20                         | 2202            | 1                                         | 40            | 40                          |
| <b>Miscellaneous-Filing:</b>                   |                 |                                           |               |                             |
| <b>Petition:</b>                               |                 |                                           |               |                             |
| <b>Patent-Appeals-and-Interference:</b>        |                 |                                           |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>       |                 |                                           |               |                             |
| <b>Extension-of-Time:</b>                      |                 |                                           |               |                             |

| Description                      | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|----------------------------------|----------|----------|--------|----------------------|
| <b>Miscellaneous:</b>            |          |          |        |                      |
| Statutory or Terminal Disclaimer | 1814     | 2        | 160    | 320                  |
| <b>Total in USD (\$)</b>         |          |          |        | <b>360</b>           |

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| <b>EFS ID:</b>                              | 18358078                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | William P. Osullivan/Karen Morin          |
| <b>Filer Authorized By:</b>                 | William P. Osullivan                      |
| <b>Attorney Docket Number:</b>              | 40552-6175P                               |
| <b>Receipt Date:</b>                        | 04-MAR-2014                               |
| <b>Filing Date:</b>                         | 17-AUG-2013                               |
| <b>Time Stamp:</b>                          | 10:24:32                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### **Payment information:**

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Submitted with Payment                                                                                                                                                                                                                                                                                                                                                                   | yes             |
| Payment Type                                                                                                                                                                                                                                                                                                                                                                             | Deposit Account |
| Payment was successfully received in RAM                                                                                                                                                                                                                                                                                                                                                 | \$ 360          |
| RAM confirmation Number                                                                                                                                                                                                                                                                                                                                                                  | 7732            |
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| Authorized User                                                                                                                                                                                                                                                                                                                                                                          |                 |
| <p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p> |                 |

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| Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                       |              |                                          |                  |                  |
| <b>File Listing:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                       |              |                                          |                  |                  |
| Document Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Document Description                                  | File Name    | File Size(Bytes)/<br>Message Digest      | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Amendment/Req. Reconsideration-After Non-Final Reject | S0343540.pdf | 916680                                   | no               | 16               |
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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |              |                                          |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |              |                                          |                  |                  |
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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |              |                                          |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |              |                                          |                  |                  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Terminal Disclaimer Filed                             | S0343538.pdf | 93941                                    | no               | 1                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                       |              | c932ff95e7fe6b29a9f8f7d582caf552f9eb3    |                  |                  |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |              |                                          |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |              |                                          |                  |                  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Fee Worksheet (SB06)                                  | fee-info.pdf | 32017                                    | no               | 2                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                       |              | 1b09aa995c50cb124f152691859d5e22cbf84da0 |                  |                  |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |              |                                          |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |              |                                          |                  |                  |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |              | 1138295                                  |                  |                  |
| <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><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                                                       |              |                                          |                  |                  |

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**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING  
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)  
40552-6175

In re Application of: ORCKIT-CORRIGENT LTD.

Application No.: 13969520

Filed: August 17, 2013

For: Tunnel Provisioning for Link Aggregation

The applicant, ORCKIT-CORRIGENT LTD., owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent No. 7,974,202 as the term of said prior patent is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for any during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☒ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

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

2. ☐ The undersigned is an attorney or agent of record. Reg. No. \_\_\_\_\_

Yossi Barshishat  
Signature

3/3/2014  
Date

Yossi Barshishat  
Typed or printed name

Vice President of R&D  
Title

+97236945480  
Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

This collection of information is required by 37 CFR 1.321. 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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|                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------|---------------|----------------------------------|--|---------------------------------------|--|
| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                                                    |                                                                                          |                                                                                                                                                                                                                               |       | Application or Docket Number<br><b>13/969,520</b> |               | Filing Date<br><b>08/17/2013</b> |  | <input type="checkbox"/> To be Mailed |  |
| ENTITY: <input type="checkbox"/> LARGE <input checked="" type="checkbox"/> SMALL <input type="checkbox"/> MICRO                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
| <b>APPLICATION AS FILED – PART I</b>                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | (Column 2)                                                                                                                                                                                                                    |       |                                                   |               |                                  |  |                                       |  |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          | NUMBER FILED                                                                                                                                                                                                                  |       | NUMBER EXTRA                                      |               | RATE (\$)                        |  | FEE (\$)                              |  |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          | N/A                                                                                                                                                                                                                           |       | N/A                                               |               | N/A                              |  |                                       |  |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (i), or (m))                                                                                                                                                                                                                                                                                                                                                                 |                                                                                          | N/A                                                                                                                                                                                                                           |       | N/A                                               |               | N/A                              |  |                                       |  |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                                                                                                                                                                                                                                                                                                                            |                                                                                          | N/A                                                                                                                                                                                                                           |       | N/A                                               |               | N/A                              |  |                                       |  |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                          | minus 20 =                                                                                                                                                                                                                    |       | *                                                 |               | X \$ =                           |  |                                       |  |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                          | minus 3 =                                                                                                                                                                                                                     |       | *                                                 |               | X \$ =                           |  |                                       |  |
| <input type="checkbox"/> APPLICATION SIZE FEE<br>(37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                                    |                                                                                          | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |       |                                                   |               |                                  |  |                                       |  |
| <input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                                                           |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                                                                                                                                                                                                                                                                                                                            |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               | TOTAL                            |  |                                       |  |
| <b>APPLICATION AS AMENDED – PART II</b>                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | (Column 2)                                                                                                                                                                                                                    |       | (Column 3)                                        |               |                                  |  |                                       |  |
| AMENDMENT                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>03/04/2014</b>                                                                        | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |       | HIGHEST NUMBER PREVIOUSLY PAID FOR                | PRESENT EXTRA | RATE (\$)                        |  | ADDITIONAL FEE (\$)                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total (37 CFR 1.16(u))                                                                   | * 27                                                                                                                                                                                                                          | Minus | ** 26                                             | = 1           | X \$40 =                         |  | 40                                    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Independent (37 CFR 1.16(h))                                                             | * 4                                                                                                                                                                                                                           | Minus | ***3                                              | = 1           | X \$210 =                        |  | 210                                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               | TOTAL ADD'L FEE                  |  | <b>250</b>                            |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | (Column 2)                                                                                                                                                                                                                    |       | (Column 3)                                        |               |                                  |  |                                       |  |
| AMENDMENT                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                          | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |       | HIGHEST NUMBER PREVIOUSLY PAID FOR                | PRESENT EXTRA | RATE (\$)                        |  | ADDITIONAL FEE (\$)                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total (37 CFR 1.16(i))                                                                   | *                                                                                                                                                                                                                             | Minus | **                                                | =             | X \$ =                           |  |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Independent (37 CFR 1.16(h))                                                             | *                                                                                                                                                                                                                             | Minus | ***                                               | =             | X \$ =                           |  |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               | TOTAL ADD'L FEE                  |  |                                       |  |
| <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 number found in the appropriate box in column 1.</p> |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |               |                                  |  |                                       |  |

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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|----------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------|--|
| <b>Application Number</b><br> | <b>Application/Control No.</b><br>13/969,520 | <b>Applicant(s)/Patent under Reexamination</b><br>SOLOMON, RONEN |  |
| <b>Document Code - DISQ</b>                                                                                    |                                              | <b>Internal Document – DO NOT MAIL</b>                           |  |

|                                |                                                                |                                             |
|--------------------------------|----------------------------------------------------------------|---------------------------------------------|
| <b>TERMINAL<br/>DISCLAIMER</b> | <input checked="" type="checkbox"/> <b>APPROVED</b>            | <input type="checkbox"/> <b>DISAPPROVED</b> |
| Date Filed : 3/04/14           | <b>This patent is subject<br/>to a Terminal<br/>Disclaimer</b> |                                             |

**Approved/Disapproved by:**

2 td's  
Jean Proctor



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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 13/969,520      | 08/17/2013  | Ronen Solomon        | 40552-6175P         | 4152             |

57449 7590 06/05/2014  
SHEEHAN PHINNEY BASS & GREEN, PA  
c/o PETER NIEVES  
1000 ELM STREET  
MANCHESTER, NH 03105-3701

EXAMINER

MOUTAOUAKIL, MOUNIR

ART UNIT PAPER NUMBER

2476

MAIL DATE DELIVERY MODE

06/05/2014

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.

|                              |                                      |                                       |                                                  |
|------------------------------|--------------------------------------|---------------------------------------|--------------------------------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>13/969,520 | <b>Applicant(s)</b><br>SOLOMON, RONEN |                                                  |
|                              | <b>Examiner</b><br>MOUNIR MOUTAOUKIL | <b>Art Unit</b><br>2476               | <b>AIA (First Inventor to File) Status</b><br>No |

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

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

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

**Status**

1) ☒ Responsive to communication(s) filed on 03-04-2014.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

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

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

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

**Disposition of Claims\***

5) ☒ Claim(s) 1-27 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

6) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

7) ☒ Claim(s) 1-27 is/are rejected.

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

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

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

**Application Papers**

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

11) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

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

**Certified copies:**

a) ☐ All    b) ☐ Some\*\*    c) ☐ None of the:

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

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

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

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

**Attachment(s)**

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

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)  
Paper No(s)/Mail Date \_\_\_\_\_.

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

4) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

The amendment filed on 03-04-2014 has been entered and considered.

Claims 1-27 are pending in the current application.

Claim 27 is new.

Claims 1-27 remain rejected as discussed below.

***Specification***

1. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

***Claim Rejections - 35 USC § 103***

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

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

3. Claims 1-2, 7, 9, 11, 13-15, 20, 22-25 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Sivabalan et al (US 2005/0083928, Hereinafter referred to as Sivabalan) in view of Ramia (US 2005/0125490).
4. Regarding claims 1, 15 and 25, Sivabalan discloses a method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:

selecting, by a first MPLS / LAG switch, from a plurality of physical data ports in said first MPLS / LAG switch, a single physical tunnel port which meets a bandwidth requirement of a network tunnel, wherein said single physical tunnel port has a port serial number [[0034] A local admission control mechanism at node A determines whether or not to accept the LSP and picks a component link for use by the LSP. The component link should have sufficient bandwidth available to support the LSP's requirements. The component link chosen in this fashion is called a "primary" component link. The admission control mechanism further selects one or more other component links as secondary component links. As will be explained below, the secondary component links are used as backup links when the primary component link fails. The secondary component link information is preconfigured into the label forwarding table entry for the LSP so that the switchover can occur very quickly];

assigning, by said first MPLS / LAG switch, said single physical tunnel port to said network tunnel [[0034] A local admission control mechanism at node A determines whether or not to accept the LSP and picks a component link for use by the LSP. The component link should have sufficient bandwidth available to support the LSP's requirements. The component link chosen in this fashion is called a "primary" component link. The admission control mechanism further selects one or more other component links as secondary component links. As will be explained below, the secondary component links are used as backup links when the primary component link fails. The secondary component link information is preconfigured into the label forwarding table entry for the LSP so that the switchover can occur very quickly];

preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified [[0038] FIG. 4 is a flow chart describing steps of component link operation according to the first mode as provided by embodiments of the present invention. At step 402, node A receives a request to establish a Traffic Engineering LSP using link bundle 100. Node A identifies a component link with sufficient bandwidth to accommodate the requirements of this Traffic Engineering LSP. At step 404, this component link is designated as the primary component link for the LSP. At step 406, node A identifies another component link with sufficient bandwidth to support the LSP. This component link is designated at step 408 as the secondary component link for the LSP. Information about the primary and secondary component links is programmed into the label forwarding table entry or entries corresponding to the LSP. At step 410, packets belonging to the LSP are carried on the primary component link); receiving, by said first MPLS / LAG switch, a data packet comprising said data packet label at said first MPLS / LAG switch [[0036] In the first mode, a single secondary component link is assigned as backup for the primary component link. Sufficient bandwidth to accommodate the LSP is reserved on this single secondary component link. The amount of available bandwidth on the secondary component link is reduced accordingly. FIG. 2 illustrates an example of this first mode where an MPLS Traffic Engineering LSP X employs link bundle 100 between nodes A and B. Node A ties LSP X to a primary component link AB1 and a secondary component link AB3. Further details of this first mode of operation will be described with reference to FIG. 4); and switching, by said first MPLS / LAG switch, said data packet to said single physical

tunnel port according to said serial port number, and sending said data packet to a second MPLS / LAG switch via said single physical tunnel port [[0036] In the first mode, a single secondary component link is assigned as backup for the primary component link. Sufficient bandwidth to accommodate the LSP is reserved on this single secondary component link. The amount of available bandwidth on the secondary component link is reduced accordingly. FIG. 2 illustrates an example of this first mode where an MPLS Traffic Engineering LSP X employs link bundle 100 between nodes A and B. Node A ties LSP X to a primary component link AB1 and a secondary component link AB3. Further details of this first mode of operation will be described with reference to FIG. 4).

5. Sivabalan discloses all the limitations of the claimed invention with the exception of sending, by said first MPLS / LAG switch, a reply message comprising said data packet label to the preceding node. However, Ramia, from a similar field of endeavor, teaches a Multi-Protocol Label Switching (MPLS) system that uses downstream nodes to determine labels and distribute the label information upstream [paragraph 0028], the label stack (label) in a packet defining the path (nested tunnel) of the packet through an MPLS network [paragraph 0038] **(i.e. sending data packet label to upstream node)**. Ramia teaches that the labels are assigned to data packets belonging to a particular forwarding equivalence class (FEC), which is a group of packets forwarded in the same manner or over the same path [paragraph 0005], and the labels can be unique to a certain interface or port when assigned [paragraph 0027] **(i.e. attaching data packet label to all packets sent by upstream node associated with the tunnel)**. Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of

Sivabalan to implement MPLS upstream labeling as taught by Ramia for use with the label switched routers constructing a label switch path at an upstream source. One would be motivated to do so provide the capabilities that would be available with MPLS labeling [refer Ramia; abstract][refer Sivabalan; paragraphs 0020-0025].

6. Regarding claim 2, Sivabalan discloses a method further comprising the steps of: receiving from a preceding node located upstream from said first MPLS / LAG switch, by said first MPLS / LAG switch, a request message requesting configuration of said network tunnel (see paragraphs [0038]).

7. Regarding claim 2, Sivabalan discloses all the limitations of the claimed invention with the exception that the message further requests said data packet label associated with said network tunnel. However, Ramia, from a similar field of endeavor, teaches a Multi-Protocol Label Switching (MPLS) system that uses downstream nodes to determine labels and distribute the label information upstream [paragraph 0028], the label stack (label) in a packet defining the path (nested tunnel) of the packet through an MPLS network [paragraph 0038] (**i.e. sending data packet label to upstream node**). Ramia teaches that the labels are assigned to data packets belonging to a particular forwarding equivalence class (FEC), which is a group of packets forwarded in the same manner or over the same path [paragraph 0005], and the labels can be unique to a certain interface or port when assigned [paragraph 0027] (**i.e. attaching data packet label to all packets sent by upstream node associated with the tunnel**). Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to implement MPLS upstream labeling as taught by Ramia for use with the

label switched routers constructing a label switch path at an upstream source. One would be motivated to do so provide the capabilities that would be available with MPLS labeling [refer Ramia; abstract][refer Sivabalan; paragraphs 0020-0025].

8. Regarding claim 7, Sivabalan in view of Ramia teaches to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel (a component link is selected that would have a sufficient amount of bandwidth available to support the LSP)[paragraph 0033].

9. Regarding claims 9 and 20, Sivabalan in view of Ramia teaches a method wherein preparing comprises inserting into said data packet label a set of bits which identify said tunnel port (component link) (labels are inserted into the data on the LSP [paragraph 0029], component link information is preconfigured into the label forwarding tables for forwarding [paragraph 0038], it is inherent that the label as part of MPLS would include a set of bits within the label used for identification); and the mapper is configured to extract said set of bits to determine an identity of said tunnel port (when a packet is received, the LSR, or the Node, will reference the packet's label to a label forwarding table to make a forwarding selection and a new label for the path)[paragraph 0029].

10. Regarding claims 11 and 22, Sivabalan in view of Ramia teaches said processor is further configured to select a backup port (secondary component link) from among the plurality of ports (link bundle)[paragraph 0034], different from said tunnel port (secondary component link is another component link in the bundle that can satisfy the

bandwidth requirements) [paragraph 0033], and said mapper is further configured, responsively to a service interruption (failure) of said tunnel port (primary component link) [paragraph 0034], to direct the first LAG switch to switch said data packet to said backup port, and send said data packet to the second LAG switch via said backup port [paragraph 0039].

11. Regarding claims 13 and 23, Sivabalan in view of Ramia teaches the first LAG switch comprises a Label Switched Router (LSR) [paragraph 0029].

12. Regarding claims 14 and 25, Sivabalan in view of Ramia discloses a method further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port (i.e. the link bundle).

13. Claims 3-6, 10, 16-19, 21 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia and further in view of Kompella et al. ("Link Bundling in MPLS Traffic Engineering")(Kompella hereafter).

14. Regarding claim 3, Sivabalan in view of Ramia discloses all the limitations of the claimed invention with the exception the MPLS network tunnel employs Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, receiving an RSVP-TE PATH message augmented with a LABEL\_REQUEST object from the preceding node. However, Kompella, from a similar field of endeavor, discloses the implementations of performing MPLS with bundled links, i.e. the aggregated links, using RSVP for sending a path/REQUEST messages for setting up a LSP as would be disclosed in RSVP-TE extensions cited in RFC 3473 [refer Kompella; page 5 section

4.3] and operating without raising issue to securities for RSVP-TE specified in RFC 3209 [refer page 9 section 7]. Thus, It would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan in view of Ramia to incorporate the teachings of Kompella [refer Sivabalan; paragraph 0027-0028] to explicitly configure a label switched path using RSVP over a bundle of links that can be seen publicly as a single link, since for signaling traffic used to establish an LSP, only the link bundle itself is identified (i.e. seen as a single logical link by RSVP)[refer Sivabalan; paragraph 0006]. One would be motivated to do so to unambiguously identify appropriate resources to be used by an LSP for a MPLS network [refer Kompella; page 1 section 2], as would be incorporated therein [refer Sivabalan; paragraph 0027-0028].

15. Regarding claims 4-5, 16-17 and 26-27, Sivabalan in view of Ramia teaches the processor is configured to make said selection in compliance with said service property (data networking requirements)(MPLS, as known in the art, uses LSRs to create LSP to meet networking requirements)[refer paragraph 0002], the service property comprises at least one of: a guaranteed bandwidth [paragraph 0031] and a class of service (quality of service)[paragraph 0039][paragraph 0043].

16. Regarding claims 6 and 18, Sivabalan in view of Ramia fails to explicitly disclose selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports . However, Kompella teaches to make said selection of a port having a maximum available bandwidth of the plurality of ports [page 8 section 5.10]. Thus, It would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to incorporate the teachings of Kompella [refer

Sivabalan; paragraph 0027-0028] to be able to configure a path using maximum LSP bandwidth. One would be motivated to do so to unambiguously identify appropriate resources used by an LSP for a MPLS network [refer Kompella; page 1 section 2], as would be incorporated [refer Sivabalan; paragraph 0027-0028].

17. Regarding claim 19, Sivabalan in view of Ramia and further in view of Kompella teaches to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel (a component link is selected that would have a sufficient amount of bandwidth available to support the LSP)[paragraph 0033].

18. Regarding claims 10 and 21, Sivabalan in view of Ramia teaches comprising a memory (program memory)[refer Fig. 6; 604], and the processor is configured to store said data packet label along with an identifier of said tunnel port in said memory, and wherein said mapper is configured to retrieve said identifier from said memory responsively to said data packet label (forwarding selection and substitute labels are referenced in a label forwarding table)[paragraph 0029].

19. However Sivabalan doesn't explicitly disclose that storing a data packet along with an identifier of the tunnel port in memory and retrieving the identifier from memory responsive to the label. However, Kompella discloses that for a LSP, identifiers used for LSR's to interconnect would be used, such as <component link identifier, label> to identify appropriate resources to be used by an LSP [page 3 section 4 paragraph 3]. Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan to incorporate the teachings of Kompella [refer Sivabalan;

paragraph 0027-0028] to be able to store the reference to a specific link, such as the primary component used for a LSP (i.e. tunnel) with the identification of the label used for the LSP. One would be motivated to do so to unambiguously identify appropriate resources used by an LSP for a MPLS network [refer Kompella; page 3 section 4 paragraph 3], as would be incorporated [refer Sivabalan; paragraph 0027-0028].

20. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia further view of in view of Larson et al. (US Pub 2004/0107285)(Larson hereafter).

21. Regarding claim 8, Sivabalan in view of Ramia fails to disclose that the switch is configured to perform mapping function. However, Larson teaches a hashing function with a one-to-one mapping that generates a sync portion from a sync value, a "private" header which is an inner header for a packet contains an encrypted (i.e. hashed) link key as part of a sync (i.e. a port number) [paragraph 0178]. Larson further teaches that when a packet is received by a node, the inner header is decrypted by using a decryption (i.e. inverse hashing) function to extract the sync portion, and if a sync portion is still valid, it is extracted from memory and added to a packet, considered as an inverse hash [paragraph 0178]. Sivabalan suggests that component links can be chosen on a per-packet basis based upon a hash [paragraph 0042]. Thus, it would have been obvious to one of ordinary skilled in the art given the teachings of Sivabalan and the suggestion of using a hash for a packet to select a component link to combine with the teachings of Larson for using encrypting (i.e. hashing) linking and an inverse hash function in memory to be able to produce a port number from a header or label and vice

versa for communicating packets over a network. One would be motivated to combine because in performing a hash and finding information from a hash on a header or label would provide a secure mode of communication over a network [refer Larson; abstract] and help to speed up table lookup and data comparisons.

22. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia in view of Wang (US 2005/0090275).

23. Sivabalan in view of Ramia discloses all the limitations of the claimed invention with the exception of further comprising the step of responsive to a restoral of said service interruption of said single physical tunnel port, reverting switching of said data packet from said backup port and sending said data packet to said second MPLS / LAG switch via said single physical tunnel port. However, Wang, from a similar field of endeavor, discloses a communication system where devices can switch between channels based on availability and ranking (see fig.4). Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to employ the teaching of Wang into the communication system of Sivabalan by enabling a dynamic port selection based on ranking and availability for the purpose of avoiding system interruption.

### ***Response to Arguments***

24. Applicants' arguments filed 03-04-2014 have been fully considered but they are not persuasive.

25. Applicants' representative argues that the prior art of record does not teach "selecting, by a first MPLS/LAG switch, from a plurality of physical data ports in said first

MPLS/LAG switch, a single physical tunnel port of the LAG which meets a bandwidth requirement of a network tunnel...preparing, by first MPLS/LAG switch, a data packet label by which said single physical tunnel port may be identified; sending, by a first MPLS/LAG switch, a message comprising said data packet label to a preceding node”.

26. In response to the above-mentioned argument, examiner respectfully disagrees. As stated by the applicant, the primary reference, Sivabalan, discloses that RSVP is used to perform signaling procedures [refer paragraph 0049] and selects a physical link that has sufficient bandwidth to support a label switched path (LSP), i.e. a network tunnel, in accordance to MPLS [refer paragraph 0034], but it is noted that Sivabalan discloses that the nodes of the network operate in a manner specified by various protocols, such as RSVP-TE for LSPs (i.e. tunneling)[refer paragraphs 0019-0026].

27. Furthermore, independent claim 1 does not claim supplementing RSVP to particularly assign physical Ethernet data port. However, in dependent claim 3, the prior art of record, Kompella, discloses the implementations of performing MPLS with bundled links, i.e. the aggregated links, using RSVP for sending a path/REQUEST messages for setting up a LSP as would be disclosed in RSVP-TE extensions cited in RFC 3473 [refer Kompella; page 5 section 4.3] and operating without raising issue to securities for RSVP-TE specified in RFC 3209 [refer page 9 section 7].

28. Given the suggestion of Sivabalan for supporting RSVP for signaling procedures and supporting various protocols, such as RSVP-TE for LSPs, in combination with Kompella for the explicit disclosure of implementing RSVP to identify resources needed for a LSP in an MPLS system when operating a link bundle, it would be clear that

Sivabalan would be able to use RSVP to assign a single physical Ethernet data port, in this case an interface tied to a single component link in a link bundle, for network tunnel traffic that can offer a bandwidth to support traffic specified for an LSP or network tunnel.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

When responding to this office action, applicants are advised to clearly point out the patentable novelty which they think the claims present in view of the state of the art disclosed by the references cited or the objections made. Applicants must also show how the amendments avoid such references or objections. See 37C.F.R 1.111(c). In addition, applicants are advised to provide the examiner with the line numbers and pages numbers in the application and/or references cited to assist examiner in locating the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOUNIR MOUTAOUAKIL whose telephone number is (571)270-1416. The examiner can normally be reached on Monday-Thursday (1pm-4:30pm) eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. M./  
Examiner, Art Unit 2476

/AYAZ SHEIKH/  
Supervisory Patent Examiner, Art Unit 2476

|                                                                                                              |                                                |                                                                      |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>SOLOMON, RONEN |
|                                                                                                              | <b>Examiner</b><br><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br><br>2476                                          |

| CPC- SEARCHED                                                                                             |           |          |
|-----------------------------------------------------------------------------------------------------------|-----------|----------|
| Symbol                                                                                                    | Date      | Examiner |
| H04L12/5695; H04L45/04; H04L45/245; H04L45/50; H04L45/502; H04L47/724; H04L47/728; H04L47/825; H04L47/829 | 5/29/2014 | MM       |

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

| US CLASSIFICATION SEARCHED |                 |            |          |
|----------------------------|-----------------|------------|----------|
| Class                      | Subclass        | Date       | Examiner |
| 370                        | 235,389,392,400 | 11/30/2013 | MM       |
| 709                        | 239,242         | 11/30/2013 | MM       |

| SEARCH NOTES               |            |          |
|----------------------------|------------|----------|
| Search Notes               | Date       | Examiner |
| Consulted with Ayaz Sheikh | 11/30/2013 | MM       |
| NPL                        | 11/30/2013 | MM       |
| East                       | 11/30/2013 | MM       |
| inventorship Search        | 11/30/2013 | MM       |
| Assignee Search            | 11/30/2013 | MM       |
| DB Search                  | 11/30/2013 | MM       |
| JPO                        | 11/30/2013 | MM       |
| EPO                        | 11/30/2013 | MM       |
| WIPO                       | 11/30/2013 | MM       |
| updated search             | 5/29/2014  | MM       |

| INTERFERENCE SEARCH     |                         |      |          |
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| <b><i>Index of Claims</i></b><br> | <b>Application/Control No.</b><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br>SOLOMON, RONEN |
|                                                                                                                    | <b>Examiner</b><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br>2476                                          |

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|---|-----------------|---|-------------------|---|---------------------|---|-----------------|
| ✓ | <b>Rejected</b> | - | <b>Cancelled</b>  | N | <b>Non-Elected</b>  | A | <b>Appeal</b>   |
| = | <b>Allowed</b>  | ÷ | <b>Restricted</b> | I | <b>Interference</b> | O | <b>Objected</b> |

| <input type="checkbox"/> Claims renumbered in the same order as presented by applicant |          |            |            | <input type="checkbox"/> CPA |  |  |  | <input type="checkbox"/> T.D. |  |  |  | <input type="checkbox"/> R.1.47 |  |  |  |
|----------------------------------------------------------------------------------------|----------|------------|------------|------------------------------|--|--|--|-------------------------------|--|--|--|---------------------------------|--|--|--|
| CLAIM                                                                                  |          | DATE       |            |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
| Final                                                                                  | Original | 12/02/2013 | 05/30/2014 |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 1        | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 2        | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 3        | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
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|                                                                                        | 7        | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 8        | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 9        | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 10       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
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|                                                                                        | 18       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 19       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
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|                                                                                        | 21       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 22       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 23       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 24       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 25       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |
|                                                                                        | 26       | ✓          | ✓          |                              |  |  |  |                               |  |  |  |                                 |  |  |  |

Doc code: RCEX

Doc description: Request for Continued Examination (RCE)

PTO/SB/50EFS (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

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

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

| REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL<br>(Submitted Only via EFS-Web)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |             |            |                               |                     |          |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|------------|-------------------------------|---------------------|----------|------|
| Application Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 13/969,520    | Filing Date | 2013-09-17 | Docket Number (if applicable) | 40552-6175          | Art Unit | 2476 |
| First Named Inventor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Ronen Solomon |             |            | Examiner Name                 | MOUTAOUAKIL, MOUNIR |          |      |
| <p>This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV</p>                                                                                                                                                                                                                                                                                                                  |               |             |            |                               |                     |          |      |
| SUBMISSION REQUIRED UNDER 37 CFR 1.114                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |             |            |                               |                     |          |      |
| <p>Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).</p>                                                                                                                                                                                                                                                                                                                        |               |             |            |                               |                     |          |      |
| <p><input type="checkbox"/> Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.</p> <p><input type="checkbox"/> Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____</p> <p><input type="checkbox"/> Other _____</p> <p><input checked="" type="checkbox"/> Enclosed</p> <p><input checked="" type="checkbox"/> Amendment/Reply</p> <p><input type="checkbox"/> Information Disclosure Statement (IDS)</p> <p><input type="checkbox"/> Affidavit(s)/ Declaration(s)</p> <p><input type="checkbox"/> Other _____</p> |               |             |            |                               |                     |          |      |
| MISCELLANEOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |             |            |                               |                     |          |      |
| <p><input type="checkbox"/> Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)</p> <p><input type="checkbox"/> Other _____</p>                                                                                                                                                                                                                                                                                                                                                                                            |               |             |            |                               |                     |          |      |
| FEES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |             |            |                               |                     |          |      |
| <p>The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 501304</p>                                                                                                                                                                                                                                                                                                                                                                                                                |               |             |            |                               |                     |          |      |
| SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |             |            |                               |                     |          |      |
| <p><input checked="" type="checkbox"/> Patent Practitioner Signature</p> <p><input type="checkbox"/> Applicant Signature</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |             |            |                               |                     |          |      |

EFS - Web 2.1.15

Doc code: RCEX

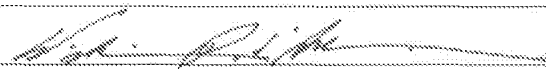
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)

Approved for use through 07/31/2012, OMB 0851-0031

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| Signature                                        |  | Date (YYYY-MM-DD)   | 2014-09-05 |
| Name                                             | William P. O'Sullivan                                                             | Registration Number | 59005      |

This collection of information is required by 37 CFR 1.114. 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.

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| Electronic Patent Application Fee Transmittal  |                 |                                           |               |                             |
|------------------------------------------------|-----------------|-------------------------------------------|---------------|-----------------------------|
| <b>Application Number:</b>                     |                 | 13969520                                  |               |                             |
| <b>Filing Date:</b>                            |                 | 17-Aug-2013                               |               |                             |
| <b>Title of Invention:</b>                     |                 | TUNNEL PROVISIONING WITH LINK AGGREGATION |               |                             |
| <b>First Named Inventor/Applicant Name:</b>    |                 | Ronen Solomon                             |               |                             |
| <b>Filer:</b>                                  |                 | William P. Osullivan/Karen Morin          |               |                             |
| <b>Attorney Docket Number:</b>                 |                 | 40552-6175P                               |               |                             |
| Filed as Small Entity                          |                 |                                           |               |                             |
| <b>Utility under 35 USC 111(a) Filing Fees</b> |                 |                                           |               |                             |
| <b>Description</b>                             | <b>Fee Code</b> | <b>Quantity</b>                           | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                           |                 |                                           |               |                             |
| <b>Pages:</b>                                  |                 |                                           |               |                             |
| <b>Claims:</b>                                 |                 |                                           |               |                             |
| <b>Miscellaneous-Filing:</b>                   |                 |                                           |               |                             |
| <b>Petition:</b>                               |                 |                                           |               |                             |
| <b>Patent-Appeals-and-Interference:</b>        |                 |                                           |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>       |                 |                                           |               |                             |
| <b>Extension-of-Time:</b>                      |                 |                                           |               |                             |

| Description                       | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-----------------------------------|----------|----------|--------|----------------------|
| <b>Miscellaneous:</b>             |          |          |        |                      |
| Request for Continued Examination | 2801     | 1        | 600    | 600                  |
| <b>Total in USD (\$)</b>          |          |          |        | <b>600</b>           |

| Electronic Acknowledgement Receipt          |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 20059079                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | William P. Osullivan/Karen Morin          |
| <b>Filer Authorized By:</b>                 | William P. Osullivan                      |
| <b>Attorney Docket Number:</b>              | 40552-6175P                               |
| <b>Receipt Date:</b>                        | 05-SEP-2014                               |
| <b>Filing Date:</b>                         | 17-AUG-2013                               |
| <b>Time Stamp:</b>                          | 14:26:54                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### Payment information:

|                                                                                                                                                                                                                                                                                                                                                                                          |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Submitted with Payment                                                                                                                                                                                                                                                                                                                                                                   | yes             |
| Payment Type                                                                                                                                                                                                                                                                                                                                                                             | Deposit Account |
| Payment was successfully received in RAM                                                                                                                                                                                                                                                                                                                                                 | \$ 600          |
| RAM confirmation Number                                                                                                                                                                                                                                                                                                                                                                  | 673             |
| Deposit Account                                                                                                                                                                                                                                                                                                                                                                          | 501304          |
| Authorized User                                                                                                                                                                                                                                                                                                                                                                          |                 |
| <p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p> |                 |

| Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                    |              |                                                    |                  |                  |
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| Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                    |              |                                                    |                  |                  |
| Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                    |              |                                                    |                  |                  |
| <b>File Listing:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                    |              |                                                    |                  |                  |
| Document Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Document Description                               | File Name    | File Size(Bytes)/<br>Message Digest                | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Amendment Submitted/Entered with Filing of CPA/RCE | S0429368.pdf | 743499<br>1d6daa03fcc75c88211a4c823a5220c5cfeaaf17 | no               | 16               |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                    |              |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                    |              |                                                    |                  |                  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Request for Continued Examination (RCE)            | S0429371.pdf | 109182<br>ab82b888f382b84cfc6c285d78c20076d7bd1000 | no               | 2                |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                    |              |                                                    |                  |                  |
| This is not a USPTO supplied RCE SB30 form.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |              |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                    |              |                                                    |                  |                  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Fee Worksheet (SB06)                               | fee-info.pdf | 30369<br>b41eb1d3af807db6de0c237455ee70976003c138  | no               | 2                |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                    |              |                                                    |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                    |              |                                                    |                  |                  |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                    |              | 883050                                             |                  |                  |
| <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><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                                                    |              |                                                    |                  |                  |

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. Of: Ronen Solomon, et al. Group Art Unit: 2476  
Serial No.: 13/969,520 Examiner: Moutaouakil, Mounir  
Filed: August 17, 2013 DOCKET: 40552-6175  
For: TUNNEL PROVISIONING WITH LINK AGGREGATION

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

**RESPONSE TO FINAL OFFICE ACTION ACCOMPANIED BY REQUEST FOR  
CONTINUED EXAMINATION (RCE)**

This amendment is being filed in response to the final Office Action mailed **June 5, 2014** and is accompanied by an RCE.

**AUTHORIZATION TO DEBIT ACCOUNT**

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

Applicant : Ronen Solomon, et al.  
Serial No. : 13/969,520  
Filed: : August 17, 2013  
Page: : 2

Attorney Docket No.: 40552-6175

Amendments to the Specification:

Please replace the first paragraph under the heading "Multiprotocol Label Switching" on page 1 with the following amended paragraph:

Multiprotocol Label Switching (MPLS) has gained popularity as a method for efficient transportation of data packets over connectionless networks, such as Internet Protocol (IP) networks. MPLS is described in detail by Rosen et al., in Request for Comments (RFC) 3031 of the Internet Engineering Task Force (IETF), entitled "Multiprotocol Label Switching Architecture" (January, 2001), which is incorporated herein by reference. ~~This RFC, as well as other IETF RFCs cited hereinbelow, is available at~~ [www.ietf.org/rfc](http://www.ietf.org/rfc).

**Amendments to the Claims**

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

**Listing of Claims:**

1. (Currently Amended) A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:

~~selecting assigning, by a first MPLS/LAG switch, a single physical tunnel port of a LAG to a network tunnel, from a plurality of physical data ports in said first MPLS/LAG switch, a wherein the single physical tunnel port of the LAG which meets a bandwidth requirement of [[a]] the network tunnel, and wherein said single physical tunnel port of the LAG has a port serial number;~~

~~assigning, by said first MPLS/LAG switch, said single physical tunnel port to said network tunnel;~~

~~preparing, by said first MPLS/LAG switch, a data packet label by which said single physical tunnel port is identified;~~

~~dedicating a sub-set of bits in a data packet label prepared by the first MPLS/LAG switch to encode said port serial number of said single physical tunnel port of the LAG into the data packet label;~~

~~sending, by said first MPLS/LAG switch, a message comprising said the data packet label, in which said port serial number of said single physical tunnel port is encoded, to a preceding node;~~

~~receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label, in which said port serial number of said single physical tunnel port is encoded; and~~

~~switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel port according to said serial port number, and~~  
sending said data packet from said first MPLS/LAG switch to a second MSPLS/LAG switch via said single physical tunnel port having the port serial number encoded in the data packet label.

2. (Original) The method of claim 1, further comprising the step of receiving from a preceding node located upstream from said first MPLS/LAG switch, by said first MPLS/LAG switch, a request message requesting configuration of said network tunnel, the message further requesting said data packet label associated with said network tunnel.

3. (Original) The method of claim 2, wherein said request message comprises an RSVP-TE PATH message augmented with a LABEL\_REQUEST object.

4. (Original) The method according to claim 3, wherein said request comprises an indication of a service property, and wherein said selecting comprises identifying a physical port in compliance with said service property.

5. (Original) The method according to claim 4, wherein said service property comprises at least one of: a guaranteed bandwidth; a peak bandwidth; and a class of service.

6. (Original) The method according to claim 1, wherein said selecting comprises selecting a single physical tunnel port having a maximum available bandwidth of said plurality of physical data ports.

7. (Original) The method according to claim 1, wherein said selecting comprises selecting a port having a minimum available bandwidth of said plurality of

physical data ports which is not less than said bandwidth requirement of the network tunnel.

8. (Original) The method according to claim 1, wherein said switching said data packet is according to a mapping function.

9. (Original) The method according to claim 1, wherein said preparing comprises inserting into said data packet label a set of bits that identify said single physical tunnel port; and wherein said switching said data packet comprises extracting said set of bits to determine an identity of said single physical tunnel port.

10. (Original) The method according to claim 1, wherein said preparing comprises storing said data packet label along with an identifier of said single physical tunnel port in a memory, and wherein said switching said data packet comprises retrieving said identifier from said memory responsively to said data packet label.

11. (Original) The method according to claim 1, further comprising the steps of: selecting a backup port from among the plurality of physical data ports, different from said single physical tunnel port; and responsively to a service interruption of said single physical tunnel port, switching said data packet to said backup port and sending said data packet to said second MPLS/LAG switch via said backup port.

12. (Original) The method according to claim 11, further comprising the step of responsive to a restoral of said service interruption of said single physical tunnel port, reverting switching of said data packet from said backup port and sending said data packet to said second MPLS/LAG switch via said single physical tunnel port.

13. (Original) The method according to claim 1, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).

14. (Original) The method of claim 1, further comprising the step of designating by said first MPLS/LAG switch, the plurality of physical data ports in said first MPLS/LAG switch as a single logical port.

15. (Currently Amended) An apparatus for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the LAG having a first MPLS/LAG switch and a second MPLS/LAG switch, the apparatus comprising:

a processor, which is configured to:

~~receive a tunnel configuration request message from the preceding node;~~

~~make a selection~~ assign a single physical tunnel port of a LAG to a network tunnel, from a plurality of physical data ports ~~at said first MPLS/LAG switch, of a~~ wherein said single physical tunnel port which meets a bandwidth requirement of the network tunnel, and wherein said single physical tunnel port has a port serial number;

~~assign said single physical tunnel port to the network tunnel;~~

~~prepare a data packet label, by which said single physical tunnel port is identified; and~~

dedicate a sub-set of bits in a data packet label to encode said port serial number of said single physical tunnel port of the LAG into the data packet label;

publish said packet label upstream; and

a mapper, which is configured to:

receive a data packet from an upstream node;

detect said data packet label in said data packet; and

if said data packet contains said data packet label, ~~to direct the first MPLS/LAG switch to switch said data packet to said single physical tunnel port, and send said data packet to the second MPLS/LAG switch via said single physical tunnel port.~~

16. (Original) The apparatus according to claim 15, wherein the processor is configured to make said selection in compliance with a service property.

17. (Original) The apparatus according to claim 16, wherein said service property comprises at least one of the group consisting of a guaranteed bandwidth, a peak bandwidth, and a class of service.

18. (Original) The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a maximum available bandwidth of the plurality of ports.

19. (Original) The apparatus according to claim 17, wherein said processor is configured to make said selection of a port having a minimum available bandwidth of the plurality of ports which is not less than said bandwidth requirement of the network tunnel.

20. (Original) The apparatus according to claim 15, wherein said processor is configured to insert into said data packet label a set of bits which identify said single physical tunnel port; and wherein said mapper is configured to extract said set of bits to determine an identity of said single physical tunnel port.

21. (Original) The apparatus according to claim 15, further comprising a memory, and wherein said processor is configured to store said data packet label along with an identifier of said single physical tunnel port in said memory, and wherein said

mapper is configured to retrieve said identifier from said memory responsively to said data packet label.

22. (Original) The apparatus according to claim 15, wherein said processor is further configured to select a backup port from among the plurality of physical data ports, different from said single physical tunnel port, and wherein said mapper is further configured, responsively to a service interruption of said single physical tunnel port, to direct the first MPLS/LAG switch to switch said data packet to said backup port, and send said data packet to the second MPLS/LAG switch via said backup port.

23. (Original) The apparatus according to claim 15, wherein said first MPLS/LAG switch comprises a Label Switched Router (LSR).

24. (Original) The apparatus according to claim 15, wherein said processor comprises a network processor.

25. (Original) The apparatus according to claim 15, wherein said plurality of physical data ports are selected from a single logical port.

26. (Currently Amended) A method for assigning and utilizing an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) in a Multi-Protocol Label Switching (MPLS) network, the method comprising the steps of:

receiving from a preceding node located upstream from a first MPLS/LAG switch, at said first MPLS/LAG switch, a request message requesting configuration of a network tunnel, the message further requesting a data packet label associated with said network tunnel, said request message specifying a bandwidth requirement;

selecting assigning, at the first MPLS/LAG switch, a single physical tunnel port of a LAG to the network tunnel from a plurality of physical data ports associated with said first MPLS/LAG switch, a wherein the single physical tunnel port of the LAG,

which meets the specified bandwidth requirement of a network tunnel, wherein said single physical tunnel port of said LAG has a port serial number;

~~assigning, at the first MPLS/LAG switch, said single physical tunnel of the LAG to said network tunnel;~~

~~preparing, at said first MPLS/LAG switch, a data packet label by which said single physical tunnel is identified;~~

dedicating a sub-set of bits in a data packet label prepared by said first MPLS/LAG switch to encode said port serial number of said single physical tunnel port of the LAG into the data packet label;

sending, by said first MPLS/LAG switch, a message that includes said data packet label, in which said port serial number of said single physical tunnel port is encoded, to the preceding node;

receiving from the preceding node, at said first MPLS/LAG switch, a data packet that includes said data packet label, in which said port serial number of said single physical tunnel port is encoded; and

~~switching, by said first MPLS/LAG switch, said data packet to said single physical tunnel associated with said serial port number, and sending said data packet from said first MPLS/LAG switch to a second MSPLS/LAG switch via said single physical tunnel port having the port serial number encoded in the data packet label.~~

27. (Previously Presented) A method for tagging a packet for transport through an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the method comprising the steps of:

sending downstream to a MPLS/LAG switch, by the preceding node, an RSVP-TE PATH message, the RSVP-TE PATH message comprising a LABEL\_REQUEST object requesting a network tunnel, and a bandwidth requirement;

receiving, by the preceding node, a packet label sent by the MPLS/LAG switch, said packet label comprising a serial number of a single physical tunnel port in the LAG of the MPLS/LAG switch, and wherein the single physical tunnel port meets the bandwidth requirement;

attaching by the preceding node, said packet label to a data packet sent by the preceding node, wherein the data packet is intended to be forwarded via the single physical tunnel port; and

sending downstream to the MPLS/LAG switch, by the preceding node, the data packet with the attached data packet label.

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### REMARKS/ARGUMENTS

This is a full and timely response to the outstanding final Office Action mailed **June 5, 2014**.

Claims 1, 15 and 26 are being amended. Support for the amended claims can be found throughout the specification including, for example, paragraphs [0012], [0036] and [0038] of the published version of the present application (U.S. Patent Application Publication No. 20130336324). No new matter is being added.

Claims 1-27 are pending.

#### Specification

In the office action, the disclosure was objected to because it contained a hyperlink.

The disclosure has been amended to overcome this objection.

#### Claim Rejections – 35 U.S.C. §103

In the office action, claims 1-2, 7, 9, 11, 13-15, 20 and 22-25 were rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent Application Publication No. 2005/0083928 (“Sivabalan”) in view of U.S. Patent Application Publication No. 2005/0125490 (“Ramia”).

Claim 1, for example, has been amended to introduce subject matter similar to the subject matter that ultimately led to the allowance of this application’s parent (Serial No. 13/116,696, now U.S. Patent No. 8,537,682) and this application’s grandparent (Serial No. 11/123,801, now U.S. Patent No. 7,974,202). More particularly, the currently amended version of claim 1, in relevant part, recites:

*[a] single physical tunnel port of the LAG has a port serial number;*

*dedicating a sub-set of bits in a data packet label prepared by the first MPLS/LAG switch to encode said port serial number of said single physical tunnel port of the LAG into the data packet label;*  
*sending, by said first MPLS/LAG switch, the data packet label, in which said port serial number of said single physical tunnel port is encoded, to a preceding node;*  
*receiving from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label, in which said port serial number of said single physical tunnel port is encoded,; and*  
*sending said data packet from said first MPLS/LAG switch to a second MPLS/LAG switch via said single physical tunnel port having the port serial number encoded in the data packet label.*

Notably, the same references (i.e., Sivabalan and Ramia) were relied upon to reject claims in this application's parent (Serial No. 13/116,696, now U.S. Patent No. 8,537,682) and in this application's grandparent (Serial No. 11/123,801, now U.S. Patent No. 7,974,202).

In this application's parent, the rejections based on Sivabalan and Ramia were overcome by amending claim 1 to indicate that preparing the data packet label included "dedicating a sub-set of bits of said data packet label to encode [a] port serial number of [a] single physical tunnel port," and to recite "sending, by [a] first MPLS/LAG switch, a message comprising said data packet label to a preceding node; [and] receiving, from the preceding node, by said first MPLS/LAG switch, a data packet comprising said data packet label."

The amendments to claim 1 being presented herein are very similar to the amendments that overcame the rejections based on Sivabalan and Ramia in this application's parent.

In this application's grandparent, the rejections based on Sivabalan and Ramia were overcome by amending claim 33 (which became claim 1 in U.S. Patent No. 7,974,202) to specify that "said single physical tunnel port has a port serial number," and that preparing the data packet label included "dedicating a sub-set of bits of said data packet label to encode said port serial number of said physical tunnel port."

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The amendments to claim 1 being presented herein are very similar to the amendments that overcame the rejections based on Sivabalan and Ramia in this application's grandparent.

For at least reasons similar to those expressed in and/or deemed compelling in this application's parent and grandparent, Sivabalan does not disclose or render obvious the subject matter now recited in claim 1. Moreover, Ramia does not remedy the shortcomings of Sivabalan in this regard.

Claim 1 is allowable.

Independent claim 15 has been amended to recite subject matter similar to the subject matter recited in claim 1.

Claim 15, therefore, is allowable for reasons similar to those expressed above in regard to claim 1.

Each of claims 2, 7, 9, 11, 13-14, 20 and 22-25 depends from an allowable claim and, therefore, is allowable for at least the same reasons as the claim from which it depends.

In the office action, claims 3-6, 10, 16-19, 21 and 26 were rejected under 35 U.S.C. §103 as being unpatentable over Sivabalan in view of Ramia and further in view of an article by Kompella, entitled, *Link Bundling in MPLS Traffic Engineering* ("Kompella").

Claim 26 has been amended to recite subject matter similar to the subject matter recited in claim 1.

Claim 26, therefore, is allowable for reasons similar to those expressed above in regard to claim 1.

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Each of claims 3-6, 10, 16-19 and 21 depends from an allowable claim and, therefore, should be allowable for at least the same reasons as the claim from which it depends.

The office action states claim 27 was rejected under 35 U.S.C. §103 as being unpatentable over Sivabalan in view of Ramia and further in view of Kompella. However, there are only two paragraphs (§ 13 and § 15) in the office action that seem to be at all related to claim 27 and these paragraphs clearly fail to state a *prima facie* rejection.

For example, regarding claim 27, paragraph 13 merely states the rejection. Here is paragraph 13:

13. Claims 3-6, 10, 16-19, 21 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sivabalan in view of Ramia and further in view of Kompella et al. ("Link Bundling in MPLS Traffic Engineering")(Kompella hereafter).

Clearly, paragraph 13 lacks any kind of explanation about why claim 27 is rejected. Paragraph 15 doesn't explain much more about why claim 27 is being rejection. Certainly paragraph 15 does not state a *prima facie* rejection under 35 U.S.C. §103. Here is paragraph 15:

15. Regarding claims 4-5, 16-17 and 26-27, Sivabalan in view of Ramia teaches the processor is configured to make said selection in compliance with said service property (data networking requirements)(MPLS, as known in the art, uses LSRs to create LSP to meet networking requirements)[refer paragraph 0002], the service property comprises at least one of: a guaranteed bandwidth [paragraph 0031] and a class of service (quality of service)[paragraph 0039][paragraph 0043].

Claim 27 recites:

27. *(Previously Presented) A method for tagging a packet for transport through an Ethernet physical data port in an Ethernet Link Aggregation Group (LAG) located downstream from a preceding node in a Multi-Protocol Label Switching (MPLS) network tunnel employing Resource Reservation Protocol Traffic Engineering (RSVP-TE) tunnel provisioning, the method comprising the steps of:*

*sending downstream to a MPLS/LAG switch, by the preceding node, an RSVP-TE PATH message, the RSVP-TE PATH message comprising a LABEL\_REQUEST object requesting a network tunnel, and a bandwidth requirement;*

*receiving, by the preceding node, a packet label sent by the MPLS/LAG switch, said packet label comprising a serial number of a single physical tunnel port in the LAG of the MPLS/LAG switch, and wherein the single physical tunnel port meets the bandwidth requirement;*

*attaching by the preceding node, said packet label to a data packet sent by the preceding node, wherein the data packet is intended to be forwarded via the single physical tunnel port; and*

*sending downstream to the MPLS/LAG switch, by the preceding node, the data packet with the attached data packet label.*

The applicant respectfully submits that Sivabalan, alone or in view of Ramia and/or Kompella, does not disclose or render obvious the claimed subject matter.

Claim 27, therefore, is allowable.<sup>1</sup>

In the office action, claim 12 was also rejected under 35 U.S.C. §103 as being unpatentable over Sivalaban, in view of Ramia and U.S. Patent Application Publication No. 2005/00090275.

Claim 12 depends from an allowable claim and, therefore, is allowable for at least the same reasons as the claim from which it depends.

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<sup>1</sup> If the examiner disagrees with the applicant about the allowability of claim 27, the examiner is requested to provide a detailed explanation of that opinion.

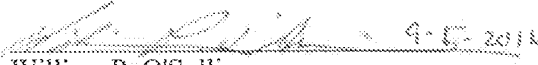
Applicant : Ronen Solomon, et al.  
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Filed: : August 17, 2013  
Page: : 16

Attorney Docket No.: 40552-6175

### CONCLUSION

In light of the foregoing and for at least the reasons set forth above, the Applicants respectfully request favorable reconsideration and allowance of the present application and the presently pending claims. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 627-8186.

Respectfully submitted,

  
William P. O'Sullivan  
Attorney for Applicants  
Reg. No. 59,005

| <b>PATENT APPLICATION FEE DETERMINATION RECORD</b><br>Substitute for Form PTO-875                                                                                                                                                                                                                                                                                                                                                    |                                                                                          |                                                                                                                                                                                                                               |       | Application or Docket Number<br><b>13/969,520</b> |     | Filing Date<br><b>08/17/2013</b> |           | <input type="checkbox"/> To be Mailed |   |                     |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------|-----|----------------------------------|-----------|---------------------------------------|---|---------------------|--|
| <b>ENTITY:</b> <input type="checkbox"/> LARGE <input checked="" type="checkbox"/> SMALL <input type="checkbox"/> MICRO                                                                                                                                                                                                                                                                                                               |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
| <b>APPLICATION AS FILED – PART I</b>                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | (Column 2)                                                                                                                                                                                                                    |       |                                                   |     |                                  |           |                                       |   |                     |  |
| FOR                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          | NUMBER FILED                                                                                                                                                                                                                  |       | NUMBER EXTRA                                      |     | RATE (\$)                        |           | FEE (\$)                              |   |                     |  |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          | N/A                                                                                                                                                                                                                           |       | N/A                                               |     | N/A                              |           |                                       |   |                     |  |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (j), or (m))                                                                                                                                                                                                                                                                                                                                                                 |                                                                                          | N/A                                                                                                                                                                                                                           |       | N/A                                               |     | N/A                              |           |                                       |   |                     |  |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                                                                                                                                                                                                                                                                                                                            |                                                                                          | N/A                                                                                                                                                                                                                           |       | N/A                                               |     | N/A                              |           |                                       |   |                     |  |
| TOTAL CLAIMS<br>(37 CFR 1.16(i))                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                          | minus 20 =                                                                                                                                                                                                                    |       | *                                                 |     | X \$    =                        |           |                                       |   |                     |  |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                          | minus 3 =                                                                                                                                                                                                                     |       | *                                                 |     | X \$    =                        |           |                                       |   |                     |  |
| <input type="checkbox"/> APPLICATION SIZE FEE<br>(37 CFR 1.16(s))                                                                                                                                                                                                                                                                                                                                                                    |                                                                                          | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |       |                                                   |     |                                  |           |                                       |   |                     |  |
| <input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                                                                                                                                                                                                                                                                                                                                                           |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                                                                                                                                                                                                                                                                                                                            |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     | TOTAL                            |           |                                       |   |                     |  |
| <b>APPLICATION AS AMENDED – PART II</b>                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | (Column 2)                                                                                                                                                                                                                    |       | (Column 3)                                        |     |                                  |           |                                       |   |                     |  |
| <b>AMENDMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>09/05/2014</b>                                                                        | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |       | HIGHEST NUMBER PREVIOUSLY PAID FOR                |     | PRESENT EXTRA                    |           | RATE (\$)                             |   | ADDITIONAL FEE (\$) |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total (37 CFR 1.16(i))                                                                   | * 27                                                                                                                                                                                                                          | Minus | ** 27                                             | = 0 |                                  | X \$40 =  |                                       | 0 |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Independent (37 CFR 1.16(h))                                                             | * 4                                                                                                                                                                                                                           | Minus | ***4                                              | = 0 |                                  | X \$210 = |                                       | 0 |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     | TOTAL ADD'L FEE                  |           | <b>0</b>                              |   |                     |  |
| (Column 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | (Column 2)                                                                                                                                                                                                                    |       | (Column 3)                                        |     |                                  |           |                                       |   |                     |  |
| <b>AMENDMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                          | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |       | HIGHEST NUMBER PREVIOUSLY PAID FOR                |     | PRESENT EXTRA                    |           | RATE (\$)                             |   | ADDITIONAL FEE (\$) |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total (37 CFR 1.16(i))                                                                   | *                                                                                                                                                                                                                             | Minus | **                                                | =   |                                  | X \$    = |                                       |   |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | Independent (37 CFR 1.16(h))                                                             | *                                                                                                                                                                                                                             | Minus | ***                                               | =   |                                  | X \$    = |                                       |   |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     | TOTAL ADD'L FEE                  |           |                                       |   |                     |  |
| <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 number found in the appropriate box in column 1.</p> |                                                                                          |                                                                                                                                                                                                                               |       |                                                   |     |                                  |           |                                       |   |                     |  |

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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## NOTICE OF ALLOWANCE AND FEE(S) DUE

57449 7590 04/17/2015  
SHEEHAN PHINNEY BASS & GREEN, PA  
c/o PETER NIEVES  
1000 ELM STREET  
MANCHESTER, NH 03105-3701

EXAMINER

MOUTAOUAKIL, MOUNIR

ART UNIT

PAPER NUMBER

2476

DATE MAILED: 04/17/2015

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 13/969,520      | 08/17/2013  | Ronen Solomon        | 40552-6175P         | 4152             |

TITLE OF INVENTION: TUNNEL PROVISIONING WITH LINK AGGREGATION

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | SMALL         | \$480         | \$0                 | \$0                  | \$480            | 07/17/2015 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

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

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

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

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II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

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

# PART B - FEE(S) TRANSMITTAL

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

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**1000 ELM STREET**  
**MANCHESTER, NH 03105-3701**

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 13/969,520      | 08/17/2013  | Ronen Solomon        | 40552-6175P         | 4152             |

TITLE OF INVENTION: TUNNEL PROVISIONING WITH LINK AGGREGATION

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | SMALL         | \$480         | \$0                 | \$0                  | \$480            | 07/17/2015 |

| EXAMINER             | ART UNIT | CLASS-SUBCLASS |
|----------------------|----------|----------------|
| MOUATAOUAKIL, MOUNIR | 2476     | 370-235000     |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

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

2. For printing on the patent front page, list

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

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

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

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

4a. The following fee(s) are submitted:

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

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

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

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

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

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Date \_\_\_\_\_

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



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|-------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------------------|------------------|
| APPLICATION NO.                                                                                                               | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.             | CONFIRMATION NO. |
| 13/969,520                                                                                                                    | 08/17/2013  | Ronen Solomon        | 40552-6175P                     | 4152             |
| 57449 7590 04/17/2015<br>SHEEHAN PHINNEY BASS & GREEN, PA<br>c/o PETER NIEVES<br>1000 ELM STREET<br>MANCHESTER, NH 03105-3701 |             |                      | EXAMINER<br>MOUTAOUAKIL, MOUNIR |                  |
|                                                                                                                               |             |                      | ART UNIT                        | PAPER NUMBER     |
|                                                                                                                               |             |                      | 2476                            |                  |

DATE MAILED: 04/17/2015

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(Applications filed on or after May 29, 2000)

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

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

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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

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

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### Privacy Act Statement

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

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

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

|                               |                                       |                                       |                                                  |
|-------------------------------|---------------------------------------|---------------------------------------|--------------------------------------------------|
| <b>Notice of Allowability</b> | <b>Application No.</b><br>13/969,520  | <b>Applicant(s)</b><br>SOLOMON, RONEN |                                                  |
|                               | <b>Examiner</b><br>MOUNIR MOUTAOUAKIL | <b>Art Unit</b><br>2476               | <b>AIA (First Inventor to File) Status</b><br>No |

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE filed on 09-05-2014.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

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

3. ☒ The allowed claim(s) is/are 1-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

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

**Certified copies:**

a) ☐ All    b) ☐ Some    \*c) ☐ None of the:

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

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

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

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

|                                                                                                            |                                                                           |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input checked="" type="checkbox"/> Examiner's Amendment/Comment       |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 7. <input type="checkbox"/> Other _____.                                  |
| 4. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____.          |                                                                           |

**DETAILED ACTION**

**EXAMINER'S AMENDMENT**

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

Authorization for this examiner's amendment was given in a telephone interview with William O'Sullivan on 04-03-2015.

Please amend the "CROSS REFERENCE TO RELATED APPLICATION" paragraph as follows:

This application is a continuation of, and claims priority to copending U.S. nonprovisional patent application entitled "Tunnel Provisioning With Link Aggregation," having Ser. No. 13/116,696, filed May 26, 2011, now U.S. Patent No. 8,537,682, which is a continuation of, and claims priority to U.S. nonprovisional patent application entitled "Tunnel Provisioning With Link Aggregation," having serial No. 11/123,801, filed May 6, 2005, now U.S. Pat. No. 7,974,202, filed May 6, 2005, each of which ~~are~~ is hereby incorporated by reference in ~~their~~ its entirety.

Claim 27 is amended as follows:

**Claim 27 is canceled.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOUNIR MOUTAOUAKIL whose telephone number is

(571)270-1416. The examiner can normally be reached on Monday-Thursday (1pm-4:30pm) eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MOUNIR MOUTAOUAKIL/  
Examiner, Art Unit 2476



|                                   |                                       |                                                              |             |
|-----------------------------------|---------------------------------------|--------------------------------------------------------------|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>13/969,520 | Applicant(s)/Patent Under<br>Reexamination<br>SOLOMON, RONEN |             |
|                                   | Examiner<br>MOUNIR MOUTAOUAKIL        | Art Unit<br>2476                                             | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name           | Classification |
|---|---|--------------------------------------------------|-----------------|----------------|----------------|
| * | A | US-7,983,286 B2                                  | 07-2011         | Rekhter, Yakov | 370/409        |
| * | B | US-2011/0206057 A1                               | 08-2011         | REKHTER, Yakov | 370/409        |
|   | C | US-                                              |                 |                |                |
|   | D | US-                                              |                 |                |                |
|   | E | US-                                              |                 |                |                |
|   | F | US-                                              |                 |                |                |
|   | G | US-                                              |                 |                |                |
|   | H | US-                                              |                 |                |                |
|   | I | US-                                              |                 |                |                |
|   | J | US-                                              |                 |                |                |
|   | K | US-                                              |                 |                |                |
|   | L | US-                                              |                 |                |                |
|   | M | US-                                              |                 |                |                |

**FOREIGN PATENT DOCUMENTS**

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

**NON-PATENT DOCUMENTS**

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

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

|                                                                                                                  |                                            |                                                                  |  |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------|--|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br>SOLOMON, RONEN |  |
|                                                                                                                  | <b>Examiner</b><br>MOUNIR MOUTAOUKIL       | <b>Art Unit</b><br>2476                                          |  |

| CPC    |    |      |  |      |            |
|--------|----|------|--|------|------------|
| Symbol |    |      |  | Type | Version    |
| H04L   | 45 | 50   |  | F    | 2013-01-01 |
| H04L   | 12 | 5695 |  | I    | 2013-01-01 |
| H04L   | 45 | 04   |  | I    | 2013-01-01 |
| H04L   | 45 | 245  |  | I    | 2013-01-01 |
| H04L   | 45 | 502  |  | I    | 2013-01-01 |
| H04L   | 47 | 724  |  | I    | 2013-01-01 |
| H04L   | 47 | 728  |  | I    | 2013-01-01 |
| H04L   | 47 | 825  |  | I    | 2013-01-01 |
| H04L   | 47 | 829  |  | I    | 2013-01-01 |
| Y02B   | 60 | 33   |  | A    | 2013-01-01 |
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| CPC Combination Sets |      |     |         |         |
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| Symbol               | Type | Set | Ranking | Version |
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|                                               |            | <b>Total Claims Allowed:</b> |                   |
| (Assistant Examiner)                          | (Date)     | 26                           |                   |
| /MOUNIR MOUTAOUKIL/<br>Examiner.Art Unit 2476 | 04/03/2015 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                            | (Date)     | 1                            | 1A                |

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| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br>SOLOMON, RONEN |
|                                                                                                                  | <b>Examiner</b><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br>2476                                          |

| US ORIGINAL CLASSIFICATION |                                   |     |          |  |  | INTERNATIONAL CLASSIFICATION |   |   |   |                   |             |  |  |  |  |  |
|----------------------------|-----------------------------------|-----|----------|--|--|------------------------------|---|---|---|-------------------|-------------|--|--|--|--|--|
| CLASS                      |                                   |     | SUBCLASS |  |  | CLAIMED                      |   |   |   |                   | NON-CLAIMED |  |  |  |  |  |
| 370                        |                                   |     | 235      |  |  | G                            | 0 | 8 | C | 15 / 00 (2006.0)  |             |  |  |  |  |  |
| CROSS REFERENCE(S)         |                                   |     |          |  |  | H                            | 0 | 4 | L | 12 / 28 (2006.0)  |             |  |  |  |  |  |
|                            |                                   |     |          |  |  | G                            | 0 | 6 | F | 15 / 173 (2006.0) |             |  |  |  |  |  |
| CLASS                      | SUBCLASS (ONE SUBCLASS PER BLOCK) |     |          |  |  |                              |   |   |   |                   |             |  |  |  |  |  |
| 370                        | 392                               | 400 |          |  |  |                              |   |   |   |                   |             |  |  |  |  |  |
| 709                        | 239                               | 242 |          |  |  |                              |   |   |   |                   |             |  |  |  |  |  |
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|                                                |            | <b>Total Claims Allowed:</b> |                   |
| (Assistant Examiner)                           | (Date)     | 26                           |                   |
| /MOUNIR MOUTAOUAKIL/<br>Examiner.Art Unit 2476 | 04/03/2015 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                             | (Date)     | 1                            | 1A                |

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|------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br>SOLOMON, RONEN |
|                                                                                                                  | <b>Examiner</b><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br>2476                                          |

| <input checked="" type="checkbox"/> <b>Claims renumbered in the same order as presented by applicant</b> <input type="checkbox"/> <b>CPA</b> <input checked="" type="checkbox"/> <b>T.D.</b> <input type="checkbox"/> <b>R.1.47</b> |          |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| Final                                                                                                                                                                                                                               | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|                                                                                                                                                                                                                                     | 1        |       | 17       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 2        |       | 18       |       |          |       |          |       |          |       |          |       |          |       |          |
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|                                                                                                                                                                                                                                     | 10       |       | 26       |       |          |       |          |       |          |       |          |       |          |       |          |
|                                                                                                                                                                                                                                     | 11       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |
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|                                                                                                                                                                                                                                     | 16       |       |          |       |          |       |          |       |          |       |          |       |          |       |          |

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|                                                |            | <b>Total Claims Allowed:</b> |                   |
| (Assistant Examiner)                           | (Date)     | 26                           |                   |
| /MOUNIR MOUTAOUAKIL/<br>Examiner.Art Unit 2476 | 04/03/2015 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                             | (Date)     | 1                            | 1A                |

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|--------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| <b>Search Notes</b><br><br> | <b>Application/Control No.</b><br><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>SOLOMON, RONEN |
|                                                                                                              | <b>Examiner</b><br><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br><br>2476                                          |

| CPC- SEARCHED                                                                                             |           |          |
|-----------------------------------------------------------------------------------------------------------|-----------|----------|
| Symbol                                                                                                    | Date      | Examiner |
| H04L12/5695; H04L45/04; H04L45/245; H04L45/50; H04L45/502; H04L47/724; H04L47/728; H04L47/825; H04L47/829 | 5/29/2014 | MM       |

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

| US CLASSIFICATION SEARCHED |                 |            |          |
|----------------------------|-----------------|------------|----------|
| Class                      | Subclass        | Date       | Examiner |
| 370                        | 235,389,392,400 | 11/30/2013 | MM       |
| 709                        | 239,242         | 11/30/2013 | MM       |

| SEARCH NOTES               |            |          |
|----------------------------|------------|----------|
| Search Notes               | Date       | Examiner |
| Consulted with Ayaz Sheikh | 11/30/2013 | MM       |
| NPL                        | 11/30/2013 | MM       |
| East                       | 11/30/2013 | MM       |
| inventorship Search        | 11/30/2013 | MM       |
| Assignee Search            | 11/30/2013 | MM       |
| DB Search                  | 11/30/2013 | MM       |
| JPO                        | 11/30/2013 | MM       |
| EPO                        | 11/30/2013 | MM       |
| WIPO                       | 11/30/2013 | MM       |
| updated search             | 5/29/2014  | MM       |
| updated search             | 4/3/2015   | MM       |

| INTERFERENCE SEARCH     |                         |      |          |
|-------------------------|-------------------------|------|----------|
| US Class/<br>CPC Symbol | US Subclass / CPC Group | Date | Examiner |
|                         |                         |      |          |

| INTERFERENCE SEARCH     |                             |          |          |
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| US Class/<br>CPC Symbol | US Subclass / CPC Group     | Date     | Examiner |
|                         | See search history printout | 4/3/2015 | MM       |

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|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| <b><i>Index of Claims</i></b><br><br> | <b>Application/Control No.</b><br><br>13969520 | <b>Applicant(s)/Patent Under Reexamination</b><br><br>SOLOMON, RONEN |
|                                                                                                                        | <b>Examiner</b><br><br>MOUNIR MOUTAOUAKIL      | <b>Art Unit</b><br><br>2476                                          |

|   |                 |   |                   |   |                     |   |                 |
|---|-----------------|---|-------------------|---|---------------------|---|-----------------|
| ✓ | <b>Rejected</b> | - | <b>Cancelled</b>  | N | <b>Non-Elected</b>  | A | <b>Appeal</b>   |
| = | <b>Allowed</b>  | ÷ | <b>Restricted</b> | I | <b>Interference</b> | O | <b>Objected</b> |

| <input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant |          |            |            |            |  |  |  |  |  | <input type="checkbox"/> CPA |  |  |  |  |  |  |  |  |  | <input checked="" type="checkbox"/> T.D. |  |  |  |  |  |  |  |  |  | <input type="checkbox"/> R.1.47 |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------|----------|------------|------------|------------|--|--|--|--|--|------------------------------|--|--|--|--|--|--|--|--|--|------------------------------------------|--|--|--|--|--|--|--|--|--|---------------------------------|--|--|--|--|--|--|--|--|--|
| CLAIM                                                                                             |          | DATE       |            |            |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
| Final                                                                                             | Original | 12/02/2013 | 05/30/2014 | 04/03/2015 |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 1        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 2        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 3        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 4        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 5        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 6        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 7        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 8        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 9        | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 10       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 11       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 12       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 13       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 14       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 15       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 16       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 17       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 18       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 19       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 20       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 21       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 22       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 23       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 24       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 25       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 26       | ✓          | ✓          | =          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |
|                                                                                                   | 27       |            | ✓          | -          |  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |                                 |  |  |  |  |  |  |  |  |  |

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

| Ref # | Hits | Search Query                                                                                                                                   | DBs                                                                  | Default Operator | Plurals | Time Stamp          |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------|---------|---------------------|
| L1    | 14   | (link adj aggregat\$4 and switch and mpls and port and tunnel).clm.                                                                            | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:41 |
| L4    | 14   | (link adj aggregat\$4 and switch and mpls and port and tunnel).clm.                                                                            | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:42 |
| L6    | 7    | (lag and switch and mpls and port and tunnel).clm.                                                                                             | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:43 |
| L7    | 11   | ((multi\$3 adj protocol adj label adj switch\$4) mpls) and (resource adj reservation adj protocol (RSVP)) and lag and (up\$1stream with label) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:43 |
| L8    | 254  | (link adj aggregat\$4 and switch and mpls and port and tunnel)                                                                                 | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:43 |
| L9    | 32   | (link adj aggregat\$4 and switch and mpls with port with tunnel)                                                                               | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:44 |
| L10   | 148  | mpls and port near2 (identifier number) with tunnel                                                                                            | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:47 |
| L11   | 49   | mpls and port near2 (identifier number) with tunnel with label                                                                                 | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:47 |
| L12   | 19   | 11 and (@ad<="20050506"<br>@rlad<="20050506"<br>@pd<="20050506"<br>@rlpd<="20050506")                                                          | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2015/04/03<br>17:47 |

**EAST Search History (Interference)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|-------|------|--------------|-----|------------------|---------|------------|
|-------|------|--------------|-----|------------------|---------|------------|

## EAST Search History

|    |   |                                                                     |                |    |    |                     |
|----|---|---------------------------------------------------------------------|----------------|----|----|---------------------|
| L2 | 6 | (link adj aggregat\$4 and switch and mpls and port and tunnel).clm. | USPAT;<br>UPAD | OR | ON | 2015/04/03<br>17:41 |
| L3 | 6 | (link adj aggregat\$4 and switch and mpls and port and tunnel).clm. | USPAT;<br>UPAD | OR | ON | 2015/04/03<br>17:42 |
| L5 | 3 | (lag and switch and mpls and port and tunnel).clm.                  | USPAT;<br>UPAD | OR | ON | 2015/04/03<br>17:43 |

**4/ 3/ 2015 5:53:00 PM****C:\Users\mmoutaouakil\Documents\EAST\Workspaces\13116696.wsp**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**  
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**P.O. Box 1450**  
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57449 7590 04/17/2015  
**SHEEHAN PHINNEY BASS & GREEN, PA**  
**c/o PETER NIEVES**  
**1000 ELM STREET**  
**MANCHESTER, NH 03105-3701**

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 13/969,520      | 08/17/2013  | Ronen Solomon        | 40552-6175P         | 4152             |

TITLE OF INVENTION: TUNNEL PROVISIONING WITH LINK AGGREGATION

| APPL. TYPE     | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEES DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|----------------|------------|
| nonprovisional | SMALL         | \$480         | \$0                 | \$0                  | \$480          | 07/17/2015 |

| EXAMINER            | APT UNIT | CLASS-SUBCLASS |
|---------------------|----------|----------------|
| MOUTAOUAKIL, MOUNIR | 2476     | 370-235000     |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

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

2. For printing on the patent front page, list

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

1. Peter A. Nieves  
 2. Sheehan Phinney Bass + Green PA  
 3.

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.111. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

Orckit-Corrigent Ltd.

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

Tel Aviv, Israel

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

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- ☐ Applicant certifying micro entity status. See 37 CFR 1.29  
☐ Applicant asserting small entity status. See 37 CFR 1.27  
☐ Applicant changing to regular undiscounted fee status.

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

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

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Authorized Signature

Typed or printed name

Peter A. Nieves

Date

7-15-2015

Registration No. 48173

| Electronic Patent Application Fee Transmittal |          |                                           |        |                      |
|-----------------------------------------------|----------|-------------------------------------------|--------|----------------------|
| Application Number:                           |          | 13969520                                  |        |                      |
| Filing Date:                                  |          | 17-Aug-2013                               |        |                      |
| Title of Invention:                           |          | TUNNEL PROVISIONING WITH LINK AGGREGATION |        |                      |
| First Named Inventor/Applicant Name:          |          | Ronen Solomon                             |        |                      |
| Filer:                                        |          | Peter Anthony Nieves/Karen Morin          |        |                      |
| Attorney Docket Number:                       |          | 40552-6175P                               |        |                      |
| Filed as Small Entity                         |          |                                           |        |                      |
| Filing Fees for Utility under 35 USC 111(a)   |          |                                           |        |                      |
| Description                                   | Fee Code | Quantity                                  | Amount | Sub-Total in USD(\$) |
| Basic Filing:                                 |          |                                           |        |                      |
| Pages:                                        |          |                                           |        |                      |
| Claims:                                       |          |                                           |        |                      |
| Miscellaneous-Filing:                         |          |                                           |        |                      |
| Petition:                                     |          |                                           |        |                      |
| Patent-Appeals-and-Interference:              |          |                                           |        |                      |
| Post-Allowance-and-Post-Issuance:             |          |                                           |        |                      |

| <b>Description</b>                     | <b>Fee Code</b> | <b>Quantity</b> | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
|----------------------------------------|-----------------|-----------------|---------------|-----------------------------|
| Utility Appl Issue Fee                 | 2501            | 1               | 480           | 480                         |
| Publ. Fee- Early, Voluntary, or Normal | 1504            | 1               | 0             | 0                           |
| <b>Extension-of-Time:</b>              |                 |                 |               |                             |
| <b>Miscellaneous:</b>                  |                 |                 |               |                             |
| <b>Total in USD (\$)</b>               |                 |                 |               | <b>480</b>                  |

| Electronic Acknowledgement Receipt          |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 22933183                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | Peter Anthony Nieves/Karen Morin          |
| <b>Filer Authorized By:</b>                 | Peter Anthony Nieves                      |
| <b>Attorney Docket Number:</b>              | 40552-6175P                               |
| <b>Receipt Date:</b>                        | 16-JUL-2015                               |
| <b>Filing Date:</b>                         | 17-AUG-2013                               |
| <b>Time Stamp:</b>                          | 10:03:28                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### Payment information:

|                                                                                                                                                                                                                                                                                                                                                                                          |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Submitted with Payment                                                                                                                                                                                                                                                                                                                                                                   | yes             |
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| Payment was successfully received in RAM                                                                                                                                                                                                                                                                                                                                                 | \$480           |
| RAM confirmation Number                                                                                                                                                                                                                                                                                                                                                                  | 10028           |
| Deposit Account                                                                                                                                                                                                                                                                                                                                                                          | 501304          |
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| 1               | Issue Fee Payment (PTO-85B) | S0596346.pdf | 126379<br>5061d5ac356c967155a0702eadc97f4ac4b48471 | no               | 1                |

### Warnings:

### Information:

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|---|----------------------|--------------|---------------------------------------------------|----|---|
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 32205<br>5e510769f40eff72a2e9c02d4719b63b9c376eea | no | 2 |
|---|----------------------|--------------|---------------------------------------------------|----|---|

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### New Applications Under 35 U.S.C. 111

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

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

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

### New International Application Filed with the USPTO as a Receiving Office

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



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| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|------------|------------|---------------------|------------------|
| 13/969,520      | 08/25/2015 | 9118602    | 40552-6175P         | 4152             |

57449 7590 08/05/2015  
SHEEHAN PHINNEY BASS & GREEN, PA  
c/o PETER NIEVES  
1000 ELM STREET  
MANCHESTER, NH 03105-3701

## ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 102 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Orckit-Corrigent Ltd., Tel Aviv, ISRAEL;  
Ronen Solomon, Ramat Gan, ISRAEL;

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

## POWER OF ATTORNEY BY APPLICANT

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

| Application Number | Filing Date |
|--------------------|-------------|
| 13/969,520         | 08-17-2013  |

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

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

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

- ☐ The address associated with the above-mentioned Customer Number
- OR
- ☒ The address associated with Customer Number:
- OR

|                         |  |       |  |     |
|-------------------------|--|-------|--|-----|
| Firm or Individual Name |  |       |  |     |
| Address                 |  |       |  |     |
| City                    |  | State |  | Zip |
| Country                 |  |       |  |     |
| Telephone               |  | Email |  |     |

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

**ORCKIT IP, LLC**

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

### SIGNATURE of Applicant for Patent

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

|           |                                 |                 |  |
|-----------|---------------------------------|-----------------|--|
| Signature | /Yehuda Binder/                 | Date (Optional) |  |
| Name      | Yehuda Binder                   |                 |  |
| Title     | CEO and Owner of ORCKIT IP, LLC |                 |  |

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33 and 1.34 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

**STATEMENT UNDER 37 CFR 3.73(c)**

Applicant/Patent Owner: Ronen Solomon  
Application No./Patent No.: 13/969,520 Filed/Issue Date: 08-17-2013  
Titled: TUNNEL PROVISIONING WITH LINK AGGREGATION  
ORCKIT IP, LLC, a Limited Liability Company  
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

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

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is \_\_\_\_%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

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

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

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

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

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

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Ronen Solomon To: ORCKIT-CORRIGENT LTD

The document was recorded in the United States Patent and Trademark Office at  
Reel 032117, Frame 0185, or for which a copy thereof is attached.

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

The document was recorded in the United States Patent and Trademark Office at  
Reel 038507, Frame 0587, or for which a copy thereof is attached.

[Page 1 of 2]

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

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

**STATEMENT UNDER 37 CFR 3.73(c)**

3. From: \_\_\_\_\_ To: \_\_\_\_\_

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

4. From: \_\_\_\_\_ To: \_\_\_\_\_

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

5. From: \_\_\_\_\_ To: \_\_\_\_\_

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

6. From: \_\_\_\_\_ To: \_\_\_\_\_

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

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

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

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

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

/Yehuda Binder/

Signature

Yehuda Binder

Printed or Typed Name

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

2016-07-26

Date

CEO and Owner of Orckit IP LLC

Title or Registration Number

[Page 2 of 2]

| Electronic Acknowledgement Receipt          |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 26474892                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | Yehuda Binder                             |
| <b>Filer Authorized By:</b>                 |                                           |
| <b>Attorney Docket Number:</b>              | 40552-6175P                               |
| <b>Receipt Date:</b>                        | 27-JUL-2016                               |
| <b>Filing Date:</b>                         | 17-AUG-2013                               |
| <b>Time Stamp:</b>                          | 17:26:42                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### Payment information:

|                        |                        |                             |                                           |                  |                  |
|------------------------|------------------------|-----------------------------|-------------------------------------------|------------------|------------------|
| Submitted with Payment |                        | no                          |                                           |                  |                  |
| File Listing:          |                        |                             |                                           |                  |                  |
| Document Number        | Document Description   | File Name                   | File Size(Bytes)/ Message Digest          | Multi Part /.zip | Pages (if appl.) |
| 1                      | Application Data Sheet | ADS-with-marked-changes.pdf | 605246                                    | no               | 6                |
|                        |                        |                             | 993c6d5ef3fb94f1fcd0bf14f39bbdb25be3d13e9 |                  |                  |
| Warnings:              |                        |                             |                                           |                  |                  |

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| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    |                                          |    |   |
| This is not an USPTO supplied ADS fillable form                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    |                                          |    |   |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Power of Attorney                             | Signed-aia0082.pdf | 91659                                    | no | 1 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    | 377f6ddac855311e994cd55cc7a7c736d91627a  |    |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                    |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    |                                          |    |   |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Assignee showing of ownership per 37 CFR 3.73 | Signed-aia0096.pdf | 123060                                   | no | 2 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    | 58f649fb2f9adf0b563938d594b9b4e0b4cca937 |    |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                    |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    |                                          |    |   |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    | 819965                                   |    |   |
| <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><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                                               |                    |                                          |    |   |

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           |                        |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------|---------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           | Attorney Docket Number | <del>40552-6175P</del> ORCKIT-014-UA3 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           | Application Number     | 13/969,520                            |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                       |
| <p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p> |                                           |                        |                                       |

**Secrecy Order 37 CFR 5.2**

|                          |                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.) |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Inventor Information:**

|                                                                                                                                                                             |            |                        |             |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-------------|--------|
| Inventor 1 <span style="float: right;">Remove</span>                                                                                                                        |            |                        |             |        |
| Legal Name                                                                                                                                                                  |            |                        |             |        |
| Prefix                                                                                                                                                                      | Given Name | Middle Name            | Family Name | Suffix |
|                                                                                                                                                                             | Ronen      |                        | Solomon     |        |
| Residence Information (Select One) <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service    |            |                        |             |        |
| City                                                                                                                                                                        | Ramat Gan  | Country of Residence i | IL          |        |
| Mailing Address of Inventor:                                                                                                                                                |            |                        |             |        |
| Address 1                                                                                                                                                                   |            | 23 Rozen Street        |             |        |
| Address 2                                                                                                                                                                   |            |                        |             |        |
| City                                                                                                                                                                        | Ramat Gan  | State/Province         |             |        |
| Postal Code                                                                                                                                                                 | 52224      | Country i              | IL          |        |
| All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. <span style="float: right;">Add</span> |            |                        |             |        |

**Correspondence Information:**

|                                                                                                                                    |                              |           |              |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|--------------|
| Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a). |                              |           |              |
| <input type="checkbox"/> An Address is being provided for the correspondence information of this application.                      |                              |           |              |
| Customer Number                                                                                                                    | <del>57449</del>             | 131926    |              |
| Email Address                                                                                                                      | <del>ipadm@chochan.com</del> | Add Email | Remove Email |

**Application Information:**

|                                         |                                           |                                           |                                     |
|-----------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------|
| Title of the Invention                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |                                           |                                     |
| Attorney Docket Number                  | <del>40552-6175P</del> ORCKIT-014-UA3     | Small Entity Status Claimed               | <input checked="" type="checkbox"/> |
| Application Type                        | Nonprovisional                            |                                           |                                     |
| Subject Matter                          | Utility                                   |                                           |                                     |
| Total Number of Drawing Sheets (if any) | 3                                         | Suggested Figure for Publication (if any) |                                     |

|                                           |                                           |                        |                                       |
|-------------------------------------------|-------------------------------------------|------------------------|---------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | <del>40552-0475D</del> ORCKIT-014-UA3 |
|                                           |                                           | Application Number     | 13/969,520                            |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                       |

### Publication Information:

|                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Request Early Publication (Fee required at time of Request 37 CFR 1.219)                                                                                                                                                                                                                                                                                                                      |
| <input type="checkbox"/> <b>Request Not to Publish.</b> 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 <b>has not and will not</b> be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing. |

### Representative Information:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                              |                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------|---------------------------------------------------------|
| Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing. |                                                  |                                              |                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                              |                                                         |
| Please Select One:                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input checked="" type="radio"/> Customer Number | <input type="radio"/> US Patent Practitioner | <input type="radio"/> Limited Recognition (37 CFR 11.9) |
| Customer Number                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <del>57449</del> 131926                          |                                              |                                                         |

### Domestic Benefit/National Stage Information:

|                                                                                                                                                                                                                                                                                                                      |                 |                          |                          |               |                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|--------------------------|---------------|-------------------------|
| This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78. |                 |                          |                          |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                             | Pending         |                          | <div>Remove</div>        |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                   | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) |               |                         |
|                                                                                                                                                                                                                                                                                                                      | Continuation of | 13116696                 | 2011-05-26               |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                             | Patented        |                          | <div>Remove</div>        |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                   | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) | Patent Number | Issue Date (YYYY-MM-DD) |
| 13116696                                                                                                                                                                                                                                                                                                             | Continuation of | 11123801                 | 2005-05-06               | 7974202       | 2011-07-05              |
| Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the <b>Add</b> button.                                                                                                                                                                                                |                 |                          |                          |               | <div>Add</div>          |

### 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(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(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). |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                           |                                           |                        |                                       |
|-------------------------------------------|-------------------------------------------|------------------------|---------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | <del>48552-6475D</del> ORCKIT-014-UA3 |
|                                           |                                           | Application Number     | 13/969,520                            |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                       |

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

Additional Foreign Priority Data may be generated within this form by selecting the [Add](#) button.

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

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <p>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.</p> <p>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.</p> |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Authorization to Permit Access:

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <p>Authorization to Permit Access to the Instant Application by the Participating Offices</p> <p>If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p> |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Applicant Information:

|                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>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.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                           |                                           |                        |                                       |
|-------------------------------------------|-------------------------------------------|------------------------|---------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | <del>40552-0475P</del> ORCKIT-014-UA3 |
|                                           |                                           | Application Number     | 13/969,520                            |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                                                                |                                                                        |                                      |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------|----|
| <b>Applicant 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |                                                                |                                                                        | <a href="#">Remove</a>               |    |
| <p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p> |                  |                                                                |                                                                        |                                      |    |
| <a href="#">Clear</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                                                                |                                                                        |                                      |    |
| <input checked="" type="radio"/> Assignee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  | <input type="radio"/> Legal Representative under 35 U.S.C. 117 |                                                                        | <input type="radio"/> Joint Inventor |    |
| <input type="radio"/> Person to whom the inventor is obligated to assign.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                                                                | <input type="radio"/> Person who shows sufficient proprietary interest |                                      |    |
| If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                                                                |                                                                        |                                      |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                                                                |                                                                        |                                      |    |
| Name of the Deceased or Legally Incapacitated Inventor : <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                                                                |                                                                        |                                      |    |
| If the Applicant is an Organization check here. <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                                                                |                                                                        |                                      |    |
| Organization Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  | <del>Orckit Corrigent Ltd.</del> ORCKIT IP, LLC.               |                                                                        |                                      |    |
| <b>Mailing Address Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                                                                |                                                                        |                                      |    |
| Address 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  | <del>126 Yigal Allen Street</del> 831 Beacon St. #307          |                                                                        |                                      |    |
| Address 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                                                                |                                                                        |                                      |    |
| City                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  | <del>Tel Aviv</del> Newton                                     | State/Province                                                         |                                      | MA |
| Country i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <del>IL</del> US | Postal Code                                                    |                                                                        | <del>67443</del> 02459               |    |
| Phone Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  | Fax Number                                                     |                                                                        |                                      |    |
| Email Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                                                                |                                                                        |                                      |    |
| Additional Applicant Data may be generated within this form by selecting the Add button. <a href="#">Add</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                                                                |                                                                        |                                      |    |

## Assignee Information including Non-Applicant Assignee Information:

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Assignee 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>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.</p> |
| <a href="#">Remove</a>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| If the Assignee is an Organization check here. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                       |

|                                           |                                           |                        |                                       |
|-------------------------------------------|-------------------------------------------|------------------------|---------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | <del>48552-0475D</del> ORCKIT-014-UA3 |
|                                           |                                           | Application Number     | 13/969,520                            |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                       |

|                                                                                         |            |                |             |                                    |
|-----------------------------------------------------------------------------------------|------------|----------------|-------------|------------------------------------|
| Prefix                                                                                  | Given Name | Middle Name    | Family Name | Suffix                             |
|                                                                                         |            |                |             |                                    |
| <b>Mailing Address Information:</b>                                                     |            |                |             |                                    |
| Address 1                                                                               |            |                |             |                                    |
| Address 2                                                                               |            |                |             |                                    |
| City                                                                                    |            | State/Province |             |                                    |
| Country i                                                                               |            | Postal Code    |             |                                    |
| Phone Number                                                                            |            | Fax Number     |             |                                    |
| Email Address                                                                           |            |                |             |                                    |
| Additional Assignee Data may be generated within this form by selecting the Add button. |            |                |             |                                    |
|                                                                                         |            |                |             | <input type="button" value="Add"/> |

**Signature:**

|                                                                                                                             |                                            |           |                   |                                    |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|-------------------|------------------------------------|
| NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications |                                            |           |                   |                                    |
| Signature                                                                                                                   | <del>Peter A. Nieves</del> /Yehuda Binder/ |           | Date (YYYY-MM-DD) | <del>2013-08-17</del>              |
| First Name                                                                                                                  | Peter                                      | Last Name | Nieves            | Registration Number                |
| Additional Signature may be generated within this form by selecting the Add button.                                         |                                            |           |                   | <input type="button" value="Add"/> |

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

## Privacy Act Statement

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

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

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



UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         | 40552-6175P            |

CONFIRMATION NO. 4152

IMPROPER CFR REQUEST



\*OC000000084932926\*

57449

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

Date Mailed: 08/08/2016

**RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT**

***Power of Attorney, Claims, Fees, System Limitations, and Miscellaneous***

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

- The ADS submitted on 07-27-2016 was not properly marked up to show the desired changes. For information being changed relative to the information already of record, additions must be shown with underlining, and deletions must be shown with strike-through or brackets. See 37 CFR 1.76(c)(2)

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

/sleutchit/



UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         | 40552-6175P            |

**CONFIRMATION NO. 4152**

**MISCELLANEOUS NOTICE**



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

Date Mailed: 08/08/2016

A communication which cannot be delivered in electronic form has been mailed to the applicant.



## UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NUMBER | FILING DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013  | Ronen Solomon         | 40552-6175P            |

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

## CONFIRMATION NO. 4152



\*OC000000084932719\*

CC: 131926  
 MAY PATENTS LTD. C/O DORIT SHEM-TOV  
 P.O.B 7230  
 RAMAT-GAN, ISRAEL 52171-02

Date Mailed: 08/08/2016

## DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed on **07/27/2016** is acknowledged. However, the request cannot grant at this time for the reason stated below.

- ☐ The Power of Attorney you provided did not comply with the new Power of Attorney rules that became effective on June 25, 2004. See 37 CFR 1.32.
- ☐ The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- ☐ The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(c) has not been received.
- ☐ The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- ☐ The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- ☐ The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.
- ☐ Only one Customer Number can be designated for the Power of Attorney in an application. The Customer Number that was captured is the first Customer Number provided on the Power of Attorney document.



## UNITED STATES PATENT AND TRADEMARK OFFICE

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

- ☐ A request under 37 CFR 1.48 to add an inventor was granted in this application, however, no power of attorney consistent with the power of attorney granted by the originally named inventive entity has been received. Thus, the addition of the inventor has resulted in the loss of power of attorney in the application. See 37 CFR 1.32(e).
- ☒ The power of attorney has not been accepted because the party who is giving power of attorney has not been identified. Power of attorney may only be signed by the applicant for patent (37 CFR 1.42) or the patent owner. A patent owner who was not the applicant must appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. See 37 CFR 1.32(b)(4).
- ☐ The power of attorney from the inventors has not been accepted because it is a copy from a prior national application for which benefit is claimed and the continuing application names an inventor who was not named as an inventor in the prior application.
- ☐ The power of attorney from the inventors has not been accepted because the power of attorney must be signed by the applicant for patent. See 37 CFR 1.32(b)(4).
- ☒ Any request to correct or update the name of the applicant must include an application data sheet (ADS) in compliance with 37 CFR 1.76 specifying the correct or updated name of the applicant in the applicant information section. Any request to change the applicant after an original applicant has been specified under 37 CFR 1.46(b) must include a new ADS in compliance with 37 CFR 1.76 specifying the applicant in the applicant information section and comply with 37 CFR 3.71 and 3.73. See 37 CFR 1.46(c).

Any inquiries regarding this notice should be directed to the Application Assistance Unit at 571-272-4200.

Application Assistance Unit  
 571-272-4200

## POWER OF ATTORNEY BY APPLICANT

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

| Application Number | Filing Date |
|--------------------|-------------|
| 13/969,520         | 08-17-2013  |

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

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

131926

OR

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

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

☐ The address associated with the above-mentioned Customer Number

OR

☒ The address associated with Customer Number: 131926

OR

|                         |  |       |  |     |
|-------------------------|--|-------|--|-----|
| Firm or Individual Name |  |       |  |     |
| Address                 |  |       |  |     |
| City                    |  | State |  | Zip |
| Country                 |  |       |  |     |
| Telephone               |  | Email |  |     |

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

ORCKIT IP, LLC

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

### SIGNATURE of Applicant for Patent

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

|           |                                 |                 |  |
|-----------|---------------------------------|-----------------|--|
| Signature | /Yehuda Binder/                 | Date (Optional) |  |
| Name      | Yehuda Binder                   |                 |  |
| Title     | CEO and Owner of ORCKIT IP, LLC |                 |  |

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33 and 1.34 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

**STATEMENT UNDER 37 CFR 3.73(c)**

Applicant/Patent Owner: Ronen Solomon  
Application No./Patent No.: 13/969,520 Filed/Issue Date: 08-17-2013  
Titled: TUNNEL PROVISIONING WITH LINK AGGREGATION  
ORCKIT IP, LLC, a Limited Liability Company  
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

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

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is \_\_\_\_%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

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

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

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

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

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

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Ronen Solomon To: ORCKIT-CORRIGENT LTD

The document was recorded in the United States Patent and Trademark Office at  
Reel 032117, Frame 0185, or for which a copy thereof is attached.

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

The document was recorded in the United States Patent and Trademark Office at  
Reel 038507, Frame 0587, or for which a copy thereof is attached.

[Page 1 of 2]

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

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

**STATEMENT UNDER 37 CFR 3.73(c)**

3. From: \_\_\_\_\_ To: \_\_\_\_\_

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

4. From: \_\_\_\_\_ To: \_\_\_\_\_

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

5. From: \_\_\_\_\_ To: \_\_\_\_\_

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

6. From: \_\_\_\_\_ To: \_\_\_\_\_

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

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

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

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

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

/Yehuda Binder/

Signature

Yehuda Binder

Printed or Typed Name

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

2016-07-26

Date

CEO and Owner of Orckit IP LLC

Title or Registration Number

[Page 2 of 2]

| Electronic Acknowledgement Receipt          |                                           |
|---------------------------------------------|-------------------------------------------|
| <b>EFS ID:</b>                              | 26610195                                  |
| <b>Application Number:</b>                  | 13969520                                  |
| <b>International Application Number:</b>    |                                           |
| <b>Confirmation Number:</b>                 | 4152                                      |
| <b>Title of Invention:</b>                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |
| <b>First Named Inventor/Applicant Name:</b> | Ronen Solomon                             |
| <b>Customer Number:</b>                     | 57449                                     |
| <b>Filer:</b>                               | Yehuda Binder                             |
| <b>Filer Authorized By:</b>                 |                                           |
| <b>Attorney Docket Number:</b>              | 40552-6175P                               |
| <b>Receipt Date:</b>                        | 11-AUG-2016                               |
| <b>Filing Date:</b>                         | 17-AUG-2013                               |
| <b>Time Stamp:</b>                          | 08:52:27                                  |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)               |

### Payment information:

| Submitted with Payment | no                     |                                     |                                                        |                  |                  |
|------------------------|------------------------|-------------------------------------|--------------------------------------------------------|------------------|------------------|
| <b>File Listing:</b>   |                        |                                     |                                                        |                  |                  |
| Document Number        | Document Description   | File Name                           | File Size(Bytes)/<br>Message Digest                    | Multi Part /.zip | Pages (if appl.) |
| 1                      | Application Data Sheet | Updated-ADS-with-marked-changes.pdf | 682944<br><br>91a7bd4e3041da855829b432f16b5a50494e34fd | no               | 6                |
| <b>Warnings:</b>       |                        |                                     |                                                        |                  |                  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    |                                          |    |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------|------------------------------------------|----|---|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    |                                          |    |   |
| This is not an USPTO supplied ADS fillable form                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    |                                          |    |   |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Power of Attorney                             | Signed-aia0082.pdf | 91659                                    | no | 1 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    | 377f6ddac855311e994cd55cc7a7c736d91627a  |    |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                    |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    |                                          |    |   |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Assignee showing of ownership per 37 CFR 3.73 | Signed-aia0096.pdf | 123060                                   | no | 2 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |                    | 58f649fb2f9adf0b563938d594b9b4e0b4cca937 |    |   |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                    |                                          |    |   |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    |                                          |    |   |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                               |                    | 897663                                   |    |   |
| <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><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                                               |                    |                                          |    |   |

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                           |                        |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------|---------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                           | Attorney Docket Number | <del>40552-6175P</del> ORCKIT-014-UA3 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                           | Application Number     | 13/969,520                            |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                       |
| <p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p> |                                           |                        |                                       |

**Secrecy Order 37 CFR 5.2**

|                          |                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.) |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Inventor Information:**

|                                                                                                                                                                             |            |                        |             |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-------------|--------|
| Inventor 1 <span style="float: right;">Remove</span>                                                                                                                        |            |                        |             |        |
| Legal Name                                                                                                                                                                  |            |                        |             |        |
| Prefix                                                                                                                                                                      | Given Name | Middle Name            | Family Name | Suffix |
|                                                                                                                                                                             | Ronen      |                        | Solomon     |        |
| Residence Information (Select One) <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service    |            |                        |             |        |
| City                                                                                                                                                                        | Ramat Gan  | Country of Residence i | IL          |        |
| Mailing Address of Inventor:                                                                                                                                                |            |                        |             |        |
| Address 1                                                                                                                                                                   |            | 23 Rozen Street        |             |        |
| Address 2                                                                                                                                                                   |            |                        |             |        |
| City                                                                                                                                                                        | Ramat Gan  | State/Province         |             |        |
| Postal Code                                                                                                                                                                 | 52224      | Country i              | IL          |        |
| All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. <span style="float: right;">Add</span> |            |                        |             |        |

**Correspondence Information:**

|                                                                                                                                    |                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a). |                                                                                        |
| <input type="checkbox"/> An Address is being provided for the correspondence Information of this application.                      |                                                                                        |
| Customer Number                                                                                                                    | <del>57449</del> 131926                                                                |
| Email Address                                                                                                                      | <del>ipadm@chochan.com</del> <span style="float: right;">Add Email Remove Email</span> |

**Application Information:**

|                                         |                                           |                                           |                                     |
|-----------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------|
| Title of the Invention                  | TUNNEL PROVISIONING WITH LINK AGGREGATION |                                           |                                     |
| Attorney Docket Number                  | <del>40552-6175P</del> ORCKIT-014-UA3     | Small Entity Status Claimed               | <input checked="" type="checkbox"/> |
| Application Type                        | Nonprovisional                            |                                           |                                     |
| Subject Matter                          | Utility                                   |                                           |                                     |
| Total Number of Drawing Sheets (if any) | 3                                         | Suggested Figure for Publication (if any) |                                     |

|                                           |                                           |                        |                                              |
|-------------------------------------------|-------------------------------------------|------------------------|----------------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | <del>48552-0475P</del> <u>ORCKIT-014-UA3</u> |
|                                           |                                           | Application Number     | <u>13/969,520</u>                            |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                              |

### Publication Information:

|                          |                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Request Early Publication (Fee required at time of Request 37 CFR 1.219)                                                                                                                                                                                                                                                                                                                      |
| <input type="checkbox"/> | <b>Request Not to Publish.</b> 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 <b>has not and will not</b> be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing. |

### Representative Information:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                              |                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------|---------------------------------------------------------|
| Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing. |                                                  |                                              |                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                              |                                                         |
| Please Select One:                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input checked="" type="radio"/> Customer Number | <input type="radio"/> US Patent Practitioner | <input type="radio"/> Limited Recognition (37 CFR 11.9) |
| Customer Number                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <del>57448</del> <u>131926</u>                   |                                              |                                                         |

### Domestic Benefit/National Stage Information:

|                                                                                                                                                                                                                                                                                                                      |                 |                          |                          |               |                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|--------------------------|---------------|-------------------------|
| This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78. |                 |                          |                          |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                             | Pending         |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                   | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) |               |                         |
|                                                                                                                                                                                                                                                                                                                      | Continuation of | 13116696                 | 2011-05-26               |               |                         |
| Prior Application Status                                                                                                                                                                                                                                                                                             | Patented        |                          | <a href="#">Remove</a>   |               |                         |
| Application Number                                                                                                                                                                                                                                                                                                   | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) | Patent Number | Issue Date (YYYY-MM-DD) |
| 13116696                                                                                                                                                                                                                                                                                                             | Continuation of | 11123801                 | 2005-05-06               | 7974202       | 2011-07-05              |
| Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the <b>Add</b> button.                                                                                                                                                                                                |                 |                          |                          |               | <a href="#">Add</a>     |

### 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(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(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). |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                                        |                                           |                          |                                                                 |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------|-----------------------------------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                              |                                           | Attorney Docket Number   | <del>48552-6475P</del> <u>ORCKIT-014-UA3</u>                    |
|                                                                                                        |                                           | Application Number       | <u>13/969,520</u>                                               |
| Title of Invention                                                                                     | TUNNEL PROVISIONING WITH LINK AGGREGATION |                          |                                                                 |
| <span style="border: 1px solid black; padding: 2px;">Remove</span>                                     |                                           |                          |                                                                 |
| Application Number                                                                                     | Country <sup>i</sup>                      | Filing Date (YYYY-MM-DD) | Access Code <sup>j</sup> (if applicable)                        |
|                                                                                                        |                                           |                          |                                                                 |
| Additional Foreign Priority Data may be generated within this form by selecting the <b>Add</b> button. |                                           |                          | <span style="border: 1px solid black; padding: 2px;">Add</span> |

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

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <p>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.</p> <p>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.</p> |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Authorization to Permit Access:

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <p><b>Authorization to Permit Access to the Instant Application by the Participating Offices</b></p> <p>If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p> |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Applicant Information:

|                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>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.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                              |                                                                        |                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              | Attorney Docket Number                                                 | <del>40552-0475P</del> <u>ORCKIT-014-UA3</u> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                              | Application Number                                                     | <u>13/969,520</u>                            |
| Title of Invention                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | TUNNEL PROVISIONING WITH LINK AGGREGATION                    |                                                                        |                                              |
| <b>Applicant 1</b> <span>Remove</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                              |                                                                        |                                              |
| <p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p> <span>Clear</span> |                                                              |                                                                        |                                              |
| <input checked="" type="radio"/> Assignee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              | <input type="radio"/> Legal Representative under 35 U.S.C. 117         | <input type="radio"/> Joint Inventor         |
| <input type="radio"/> Person to whom the inventor is obligated to assign.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              | <input type="radio"/> Person who shows sufficient proprietary interest |                                              |
| If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                              |                                                                        |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                              |                                                                        |                                              |
| Name of the Deceased or Legally Incapacitated Inventor : <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                              |                                                                        |                                              |
| If the Applicant is an Organization check here. <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                              |                                                                        |                                              |
| Organization Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <del>Orckit Corrigent Ltd.</del> <u>ORCKIT IP, LLC.</u>      |                                                                        |                                              |
| <b>Mailing Address Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                              |                                                                        |                                              |
| Address 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <del>126 Yigal Allen Street</del> <u>831 Beacon St. #307</u> |                                                                        |                                              |
| Address 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              |                                                                        |                                              |
| City                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <del>Tel Aviv</del> <u>Newton</u>                            | State/Province                                                         | <u>MA</u>                                    |
| Country <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>US</u>                                                    | Postal Code                                                            | <del>67443</del> <u>02459</u>                |
| Phone Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                              | Fax Number                                                             |                                              |
| Email Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                              |                                                                        |                                              |
| Additional Applicant Data may be generated within this form by selecting the Add button. <span>Add</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              |                                                                        |                                              |

## Assignee Information including Non-Applicant Assignee Information:

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Assignee 1</b> <span>Remove</span>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>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.</p> |
| <p>If the Assignee is an Organization check here. <input type="checkbox"/></p>                                                                                                                                                                                                                                                                                                                                                                                |

|                                           |                                           |                        |                                              |
|-------------------------------------------|-------------------------------------------|------------------------|----------------------------------------------|
| <b>Application Data Sheet 37 CFR 1.76</b> |                                           | Attorney Docket Number | <del>48552-8475P</del> <u>ORCKIT-014-UA3</u> |
|                                           |                                           | Application Number     | <u>13/969,520</u>                            |
| Title of Invention                        | TUNNEL PROVISIONING WITH LINK AGGREGATION |                        |                                              |

|                                                                                         |            |                |             |                                    |
|-----------------------------------------------------------------------------------------|------------|----------------|-------------|------------------------------------|
| Prefix                                                                                  | Given Name | Middle Name    | Family Name | Suffix                             |
|                                                                                         |            |                |             |                                    |
| <b>Mailing Address Information:</b>                                                     |            |                |             |                                    |
| Address 1                                                                               |            |                |             |                                    |
| Address 2                                                                               |            |                |             |                                    |
| City                                                                                    |            | State/Province |             |                                    |
| Country i                                                                               |            | Postal Code    |             |                                    |
| Phone Number                                                                            |            | Fax Number     |             |                                    |
| Email Address                                                                           |            |                |             |                                    |
| Additional Assignee Data may be generated within this form by selecting the Add button. |            |                |             |                                    |
|                                                                                         |            |                |             | <input type="button" value="Add"/> |

**Signature:**

|                                                                                                                             |                                                   |           |                             |                                         |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------|-----------------------------|-----------------------------------------|
| NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications |                                                   |           |                             |                                         |
| Signature                                                                                                                   | <del>Peter A. Nieves</del> <u>/Yehuda Binder/</u> |           | Date (YYYY-MM-DD)           | <del>2013-08-17</del> <u>2016-08-10</u> |
| First Name                                                                                                                  | <u>Peter</u>                                      | Last Name | <u>Nieves</u> <u>Binder</u> | Registration Number <u>48473 73612</u>  |
| Additional Signature may be generated within this form by selecting the Add button.                                         |                                                   |           |                             |                                         |
|                                                                                                                             |                                                   |           |                             | <input type="button" value="Add"/>      |

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

## Privacy Act Statement

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

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

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



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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 |
|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         |                        |

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

**CONFIRMATION NO. 4152**  
**POA ACCEPTANCE LETTER**



\*OC000000085093697\*

Date Mailed: 08/15/2016

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 08/11/2016.

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

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

/rmtturner myles/



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P.O. Box 1450  
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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|-----------------------|------------------------|
| 13/969,520         | 08/17/2013            | Ronen Solomon         |                        |

57449

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

**CONFIRMATION NO. 4152**  
**POWER OF ATTORNEY NOTICE**



Date Mailed: 08/15/2016

**NOTICE REGARDING CHANGE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 08/11/2016.

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

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

/rmtturner myles/

AO 120 (Rev. 08/10)

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

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

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

|                                    |                                |                                                                  |
|------------------------------------|--------------------------------|------------------------------------------------------------------|
| DOCKET NO.<br>6:22-cv-396          | DATE FILED<br>4/19/2022        | U.S. DISTRICT COURT<br>Western District of Texas - Waco Division |
| PLAINTIFF<br>Corrigent Corporation |                                | DEFENDANT<br>Cisco Systems, Inc.                                 |
| PATENT OR<br>TRADEMARK NO.         | DATE OF PATENT<br>OR TRADEMARK | HOLDER OF PATENT OR TRADEMARK                                    |
| 1 6,957,369                        | 10/18/2005                     | Corrigent Corporation                                            |
| 2 7,113,485                        | 9/26/2006                      | Corrigent Corporation                                            |
| 3 7,330,431                        | 2/12/2008                      | Corrigent Corporation                                            |
| 4 7,593,400                        | 9/22/2009                      | Corrigent Corporation                                            |
| 5 9,118,602                        | 8/25/2015                      | Corrigent Corporation                                            |

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

|                            |                                                                                                                                                               |                               |  |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--|
| DATE INCLUDED              | INCLUDED BY<br><input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> Other Pleading |                               |  |
| PATENT OR<br>TRADEMARK NO. | DATE OF PATENT<br>OR TRADEMARK                                                                                                                                | HOLDER OF PATENT OR TRADEMARK |  |
| 1                          |                                                                                                                                                               |                               |  |
| 2                          |                                                                                                                                                               |                               |  |
| 3                          |                                                                                                                                                               |                               |  |
| 4                          |                                                                                                                                                               |                               |  |
| 5                          |                                                                                                                                                               |                               |  |

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

|                    |
|--------------------|
| DECISION/JUDGEMENT |
|--------------------|

|       |                   |      |
|-------|-------------------|------|
| CLERK | (BY) DEPUTY CLERK | DATE |
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AO 120 (Rev. 08/10)

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

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

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

|                                    |                                |                                                     |
|------------------------------------|--------------------------------|-----------------------------------------------------|
| DOCKET NO.                         | DATE FILED<br>4/19/2022        | U.S. DISTRICT COURT<br>for the District of Delaware |
| PLAINTIFF<br>CORRIGENT CORPORATION |                                | DEPENDANT<br>ARISTA NETWORKS, INC.                  |
| PATENT OR<br>TRADEMARK NO.         | DATE OF PATENT<br>OR TRADEMARK | HOLDER OF PATENT OR TRADEMARK                       |
| 1 6,957,369                        | 10/18/2005                     | Corrigent Corporation                               |
| 2 7,330,431                        | 2/12/2008                      | Corrigent Corporation                               |
| 3 7,593,400                        | 9/22/2009                      | Corrigent Corporation                               |
| 4 9,118,602                        | 8/25/2015                      | Corrigent Corporation                               |
| 5                                  |                                |                                                     |

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

|                            |                                                                                                                                                               |                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| DATE INCLUDED              | INCLUDED BY<br><input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> Other Pleading |                               |
| PATENT OR<br>TRADEMARK NO. | DATE OF PATENT<br>OR TRADEMARK                                                                                                                                | HOLDER OF PATENT OR TRADEMARK |
| 1                          |                                                                                                                                                               |                               |
| 2                          |                                                                                                                                                               |                               |
| 3                          |                                                                                                                                                               |                               |
| 4                          |                                                                                                                                                               |                               |
| 5                          |                                                                                                                                                               |                               |

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

|                    |
|--------------------|
| DECISION/JUDGEMENT |
|--------------------|

|       |                   |      |
|-------|-------------------|------|
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