



CISCO SYSTEMS, INC., Petitioner,
v.
PORTSMOUTH NETWORK CORP., Patent Owner

Case No. IPR2024-01450
U.S. Patent No. 7,596,088

Calmann J. Clements
Haynes and Boone, LLP

January 27, 2026



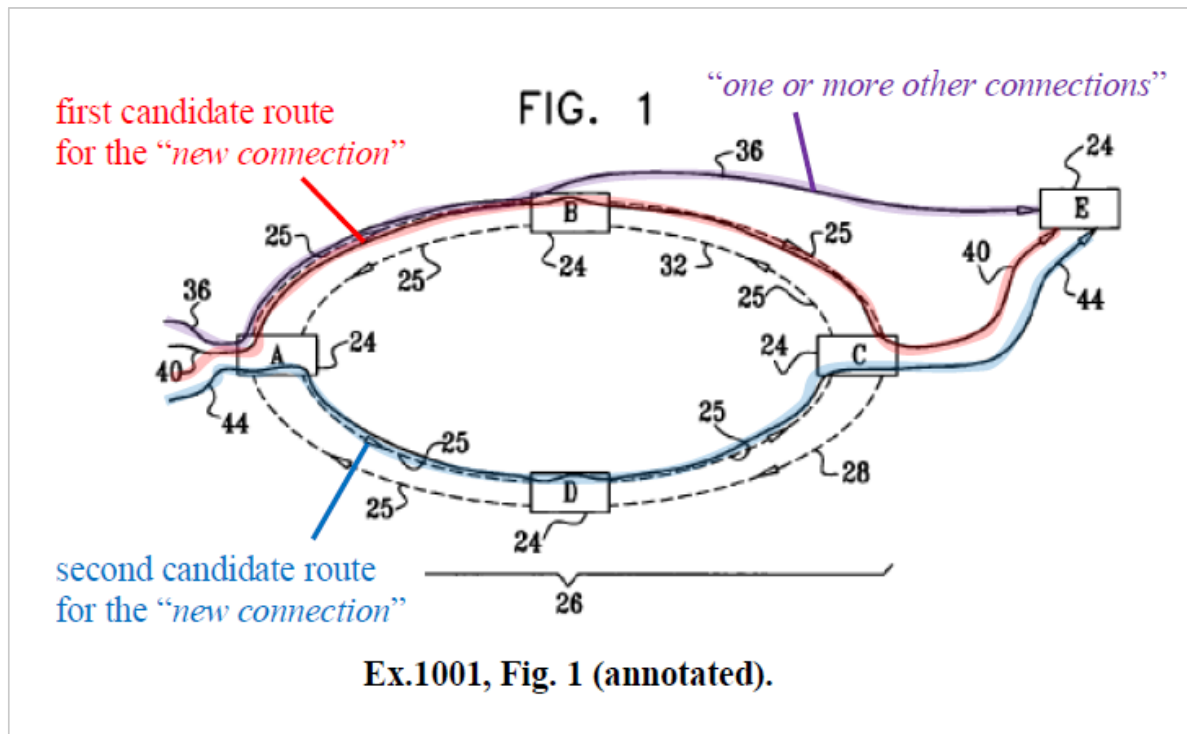
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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Key Points

1. The prior art teaches the same bandwidth sharing technique that is claimed by the '088 patent.
2. Dziong's link detour paths teach "connections" as claimed.
3. Dziong's determination of link detour paths considers the total amount of bandwidth allocated for protection.

The '088 Patent



Ex.1001, Fig. 1; Petitioner Reply, 14.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

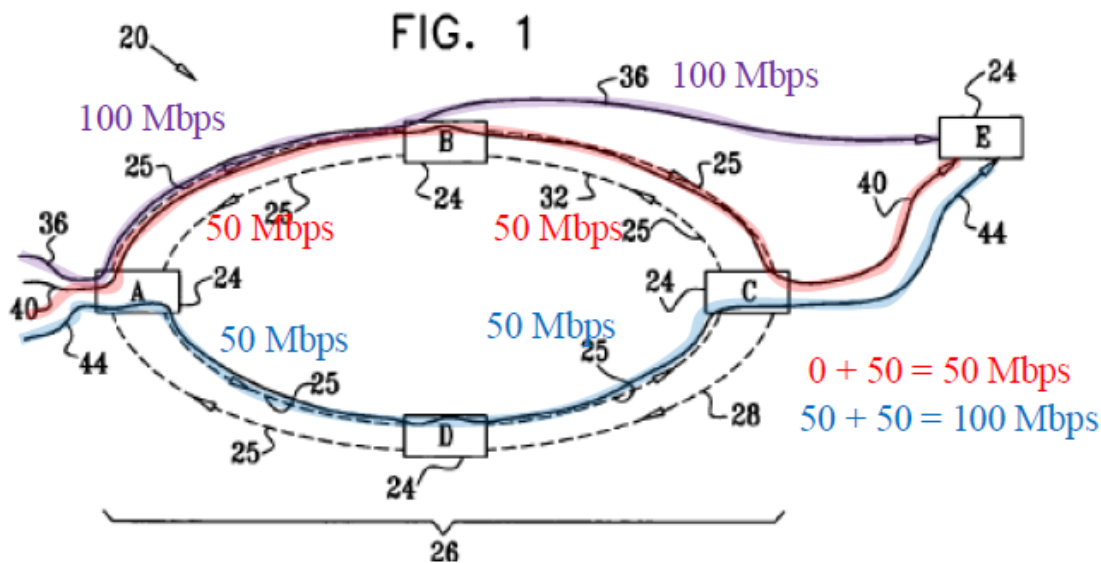
for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1001, Claim 1.

The '088 Patent



Ex.1001, Fig. 1; Petitioner Reply, 15.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

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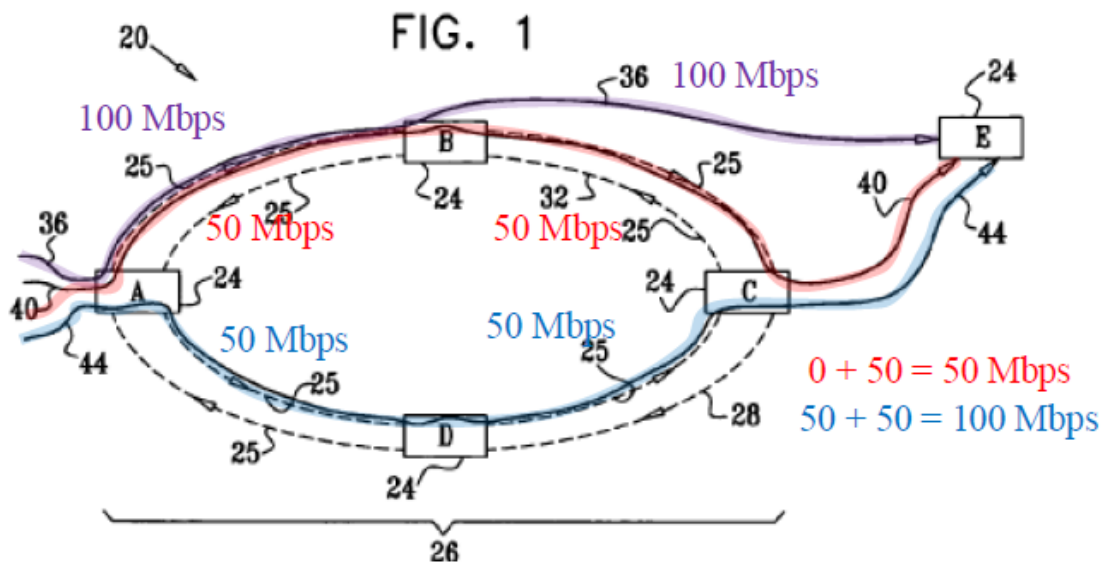
for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

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Ex.1001, Claim 1.

The '088 Patent



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for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

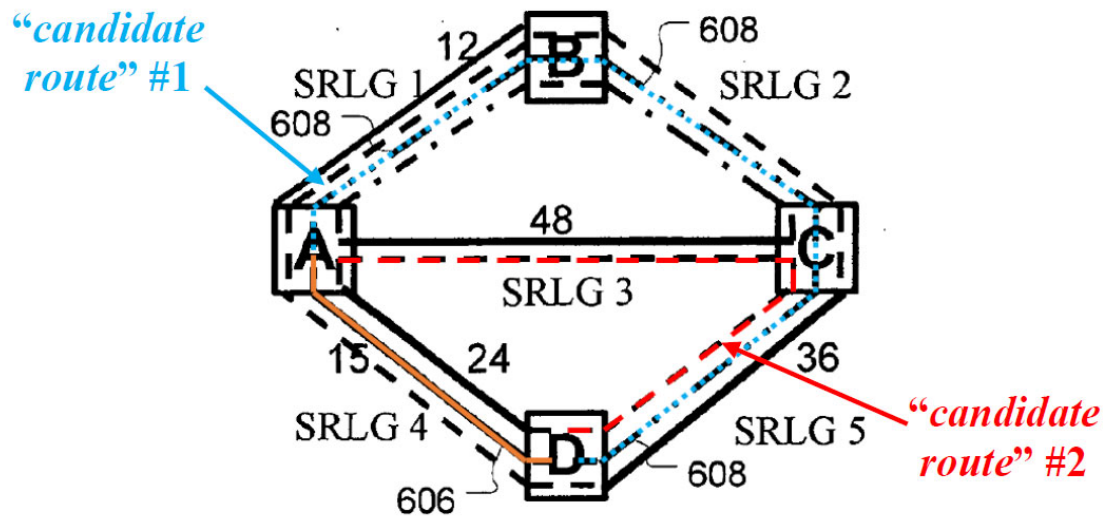
selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1001, Fig. 1; Petitioner Reply, 15.

Ex.1001, Claim 1.

Prior Art



Ex.1005, Fig. 6a; Petition, 29.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

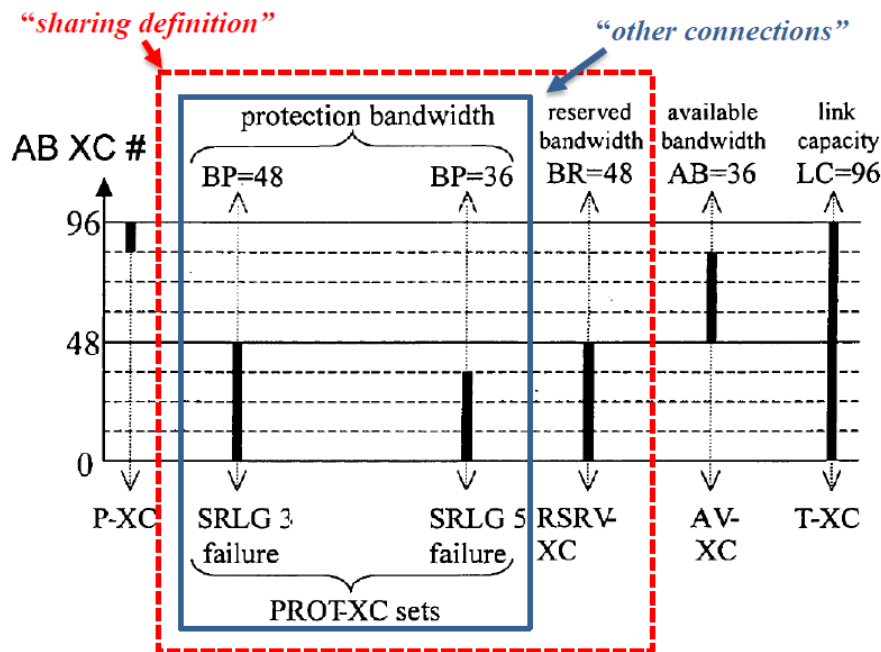
for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1001, Claim 1.

Prior Art



Ex.1003, ¶69; Ex.1005, Fig. 6b (modified to remove protection bandwidth allocated for SRLG 4).

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

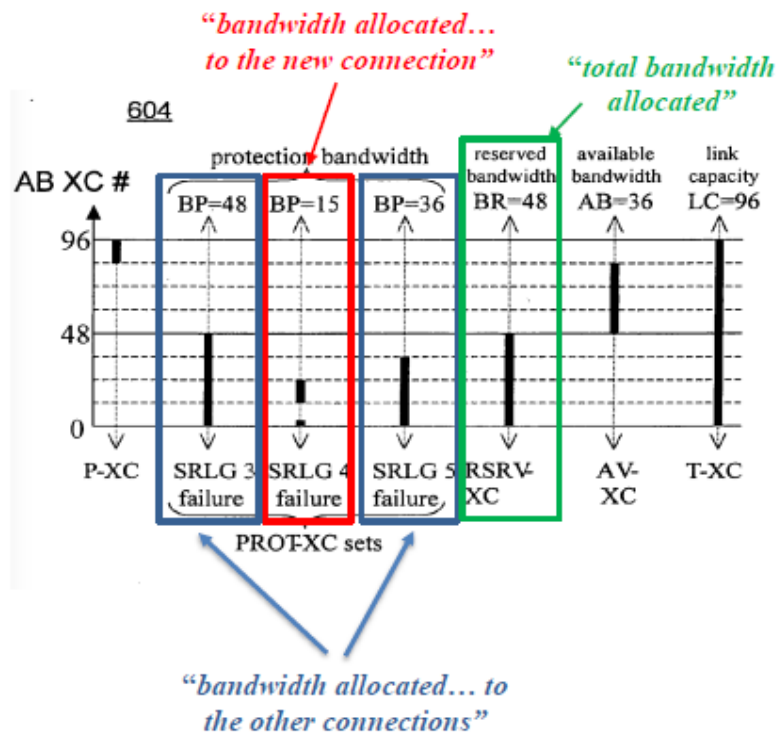
selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1005, Fig. 6b; Petition, 35.

Ex.1001, Claim 1.

Prior Art



Ex.1005, Fig. 6b; Petition, 41.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition; selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and establishing the new connection using the preferred route.

Ex.1001, Claim 1.

Prior Art

$$(STS 12: CPP = [9*AW1 + 2*AW2 + 7*AW3]/12)$$

Ex.1005, Fig. 9 (partial, annotated).

For clarity, the Fig. 9 equation calculates a protection path cost as:

$$CPP = [9*AW1 + 2*AW2 + 7*AW3]/12.$$

Ex.1005, Fig. 9; Petition, 45.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1001, Claim 1.

Prior Art

bandwidth along a calculated protection path for a link. A source node may assume that bandwidth for a new connection is available, and then start to signal to establish the primary path and link-detour paths for the connection.

Ex.1005, [0058]; Petition, 50.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition; selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1001, Claim 1.

Key Points

1. The prior art teaches the same bandwidth sharing technique that is claimed by the '088 patent.
2. Dziong's link detour paths teach “connections” as claimed.
3. Dziong's determination of link detour paths considers the total amount of bandwidth allocated for protection.

Patent Owner's Response interprets the claimed “connections” as “working paths” or “primary paths.”

Dr. Mir further confirmed that the bandwidth sharing discussed by Dziong relates only to the “recovery paths” in Dziong and not the “working paths” or “primary paths” as required by the '088 Patent. Ex. 2010, 64:7-:66:7.

Patent Owner's Response, 13.

mention, “reserved bandwidth.” This is because the primary concern of '088 Patent is the efficient distribution and sharing of resources between active, existing connections so as to minimize additional bandwidth allocation, rather than failure protection that draws on reserved bandwidth when an active link fails. Ex. 2008, ¶58.

Patent Owner's Response, 9.

The claimed “*connection*” includes failure protection

Accordingly, to the extent any formal claim construction is applied beyond the plain and ordinary meaning, the term “*connection*” should be interpreted to include connections intended for failure protection.

Petitioner Reply, 9.

5. The method according to claim 4, wherein the new connection and the at least one of the other connections are established to protect one another against a failure in at least one of a network segment and a network node.

Ex.1001, claim 1; Petitioner Reply, 8.

In some cases, the new connection may be allowed to share its bandwidth allocation with existing connection 36. For example, the new connection may be set up to protect the existing connection against failure of a node or segment along its route. In other cases, bandwidth may be allocated to con-

Ex.1001, 5:4-8; Petitioner Reply, 8.

Patent Owner's Sur-reply interprets the connections as “*established connections*.”

Contrary to Petitioner's incorrect strawman assertion, Patent Owner does not dispute that the term “connection” can include connections that provide failure protection. The distinction that Patent Owner seeks to make, that Petitioner disregards, is that the “new connection” claimed by the '088 Patent is an *established* connection rather than one that is merely calculated but not actually set up. A

Patent Owner's Sur-reply, 2.

In contrast, Petitioner's cited references relate to merely *calculating* various protection paths rather than establishing an actual connection. This is evident in the disclosures of both patents. For example, Figure 4 of Dziong (reproduced below)

Patent Owner's Sur-reply, 4.

Dziong's link detour paths are “*established connections*.”

bandwidth along a calculated protection path for a link. A source node may assume that bandwidth for a new connection is available, and then start to signal to establish the primary path and link-detour paths for the connection.

Ex.1005, [0058]; Petition, 50.

[0175] In the enhanced loop avoidance embodiment, the reservation setup message is sent along the full-LD path. The message carries information that classifies nodes as branching, merging, signaling, or transit nodes. The message also carries associated failure IDs, if applicable. The failure IDs are used to avoid having more than one shortened-LD path associated with the set of links in the protected segment associated with the shortened-LD path.

Ex.1005, [0175]; Petition, 50.

Key Points

1. The prior art teaches the same bandwidth sharing technique that is claimed by the '088 patent.
2. Dziong's link detour paths teach "connections" as claimed.
3. Dziong's determination of link detour paths considers the total amount of bandwidth allocated for protection.

Patent Owner's interpretation of "*bandwidth allocation*" excludes failure protection

recovery of other links. Ex. 1005, [0088]; Ex. 1006, [0060]-[0063]. Critically, both references teach that the protection bandwidth associated with the "link detour paths" is merely *reserved* and *not allocated* until a failure is detected in the primary path. Ex. 1005, [0088]; Ex. 1006, [0060]-[0063]; Ex. 2008, ¶¶39-42.

Patent Owner Response, 6.

connections or connections that are established to protect against failure. The claims and the specification of the '088 Patent teach *allocating* bandwidth to these established connections such that they can carry network traffic. Ex. 1001, 2:21-32;

Patent Owner Sur-reply, 6.

1. A method for establishing a connection through a communication network that includes multiple segments, comprising:

identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;

providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment;

for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and

establishing the new connection using the preferred route.

Ex.1001, Claim 1.

The term “*bandwidth allocation*” applies to protection paths

language. The terms “allocation” and “allocated” should be interpreted to include bandwidth that is reserved for failure protection because such bandwidth cannot be allocated to another use—it is unavailable.

Petitioner Reply, 9.

5. The method according to claim 4, wherein the new connection and the at least one of the other connections are established to protect one another against a failure in at least one of a network segment and a network node.

Ex.1001, claim 1; Petitioner Reply, 10.

for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;

Ex.1001, claim 1; Petitioner Reply, 10.

The term “*bandwidth allocation*” applies to protection paths

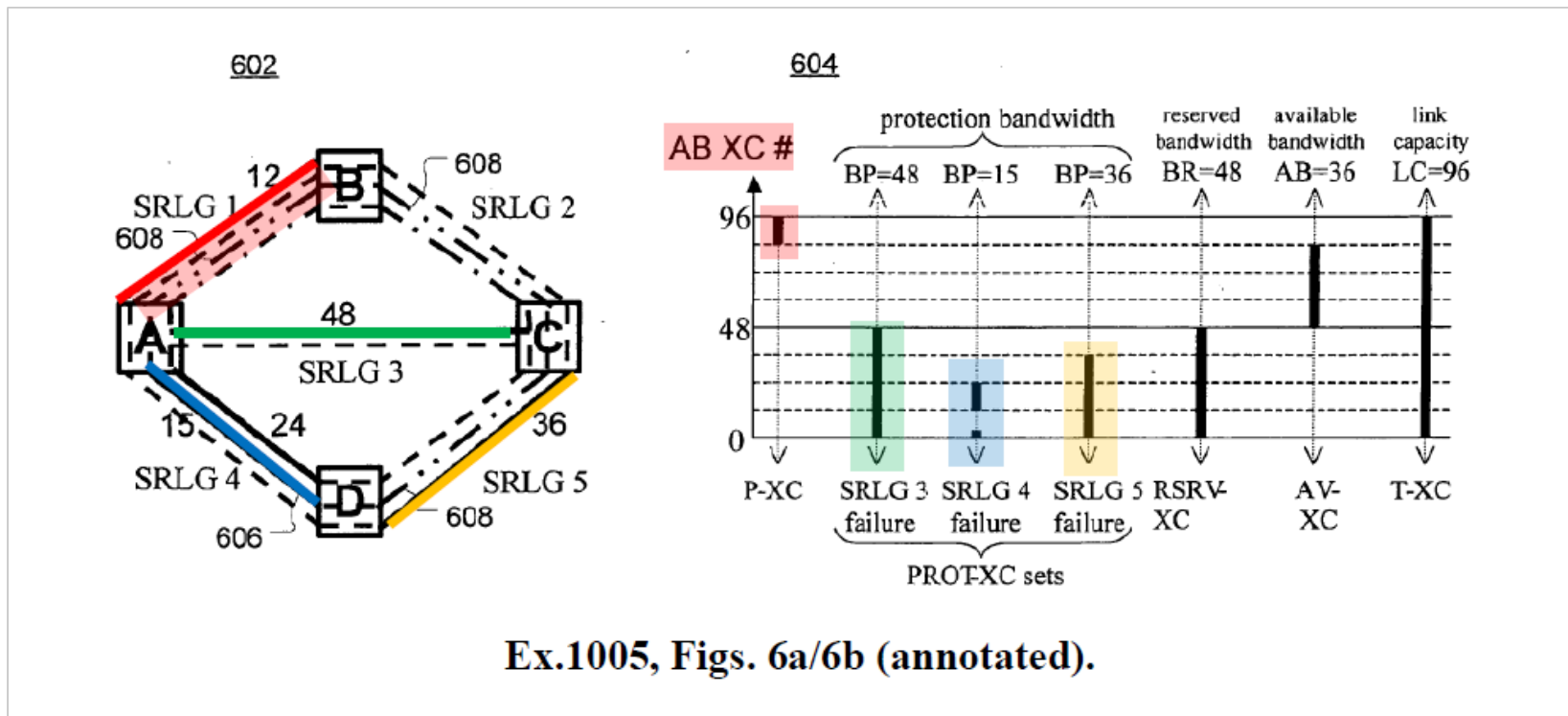
An advantage of using RSVP [Resource Reservation Protocol] to establish LSP tunnels is that it enables the allocation of resources along the path. For example, **bandwidth can be allocated to an LSP tunnel using standard RSVP reservations** and Integrated Services service classes [4].

Ex.1040, 6; Petitioner Reply, 11.

A similar situation [double-counting of bandwidth] can arise when one wants to increase the bandwidth of a TE tunnel. The **new reservation** will be for the full amount needed, but **the actual allocation** needed is only the delta between the new and old bandwidth.

Ex.1040, 12; Petitioner Reply, 12.

The term “*bandwidth allocation*” applies to protection paths



Ex.1005, Figs. 6a/6b (annotated).

Ex.1005, Figs. 6a/6b; Petitioner Reply, 17.

Additional Slides



Claim 4: Dziong's link detour paths are “*new connection[s]*”

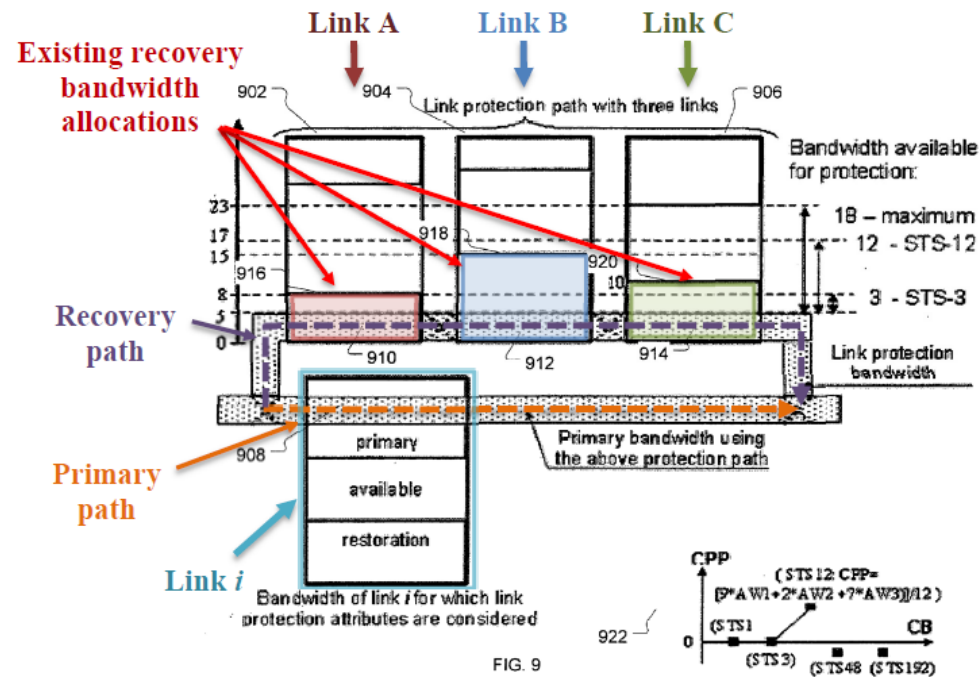
4. The method according to claim 1, wherein the new connection and at least one of the other connections specified in the sharing definition traverse at least one common segment along the preferred route, and wherein **establishing the new connection** comprises allocating the maximum of the requested bandwidth and of the bandwidths of the at least one of the other connections in the at least one common segment to the new connection and to the at least one of the other connections.

Ex.1001, Claim 4; Petition, 30, 57-58.

Any of Dziong's recovery paths (any link-detour path, recovery path, or protection path) is itself “*a new connection.*” Dziong provides that during setup “for a new service,” a working path is computed “with **protection paths** for each link in the working path.” Ex.1005, [0052]. A POSITA would have found it

Petition, 30-31.

Dziong Fig. 9



Dziong, Fig. 9 (annotated).

Ex.1005, Fig. 9; Ex.1003, ¶98.

Dziong teaches a method for establishing a connection

[0084] In the present invention, link-recovery mechanisms can be implemented with different reservation granularities varying from reservation per link/fiber/line/port to reservation per demand/connection/service. All these choices are viable from a bandwidth efficiency viewpoint since, although the flexibility exists in the present invention to route each demand along a different LD path, demands can still be routed along common LD paths if so desired from a bandwidth flexibility perspective. Still, the choice of granularity has an impact on implementation complexity, bandwidth efficiency, and restoration speed. While each of the alternatives has some advantages and disadvantages, a preferred embodiment of the present invention involves reservation per demand that provides:

Ex.1005, [0084], Petition, 23.

[0072] Different embodiments of the present invention employ a variety of link-based recovery mechanisms that trade off bandwidth efficiency with implementation complexity and cost. The framework is defined by the following assumptions:

[0073] a) Recovery paths are calculated for each connection separately,

Ex.1005, [0072]-[0073], Petition, 23.

The prior art describes using MPLS, like the '088 patent

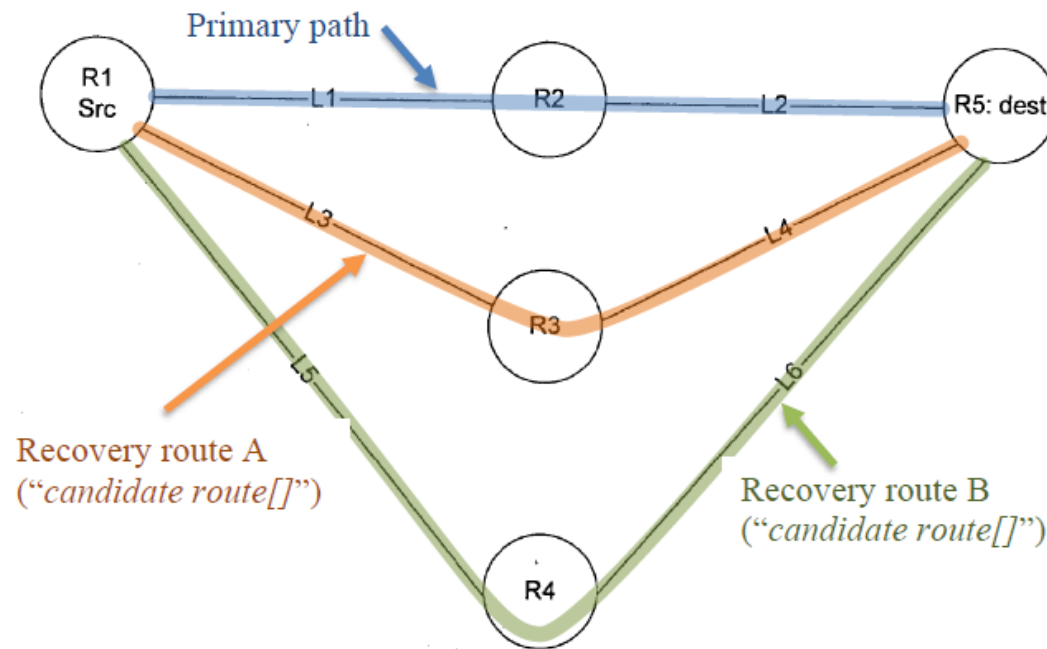
[0049] The concepts of the present invention are discussed in the context of exemplary shared mesh data networks. However, without loss of generality, they may be applied generally to any mesh network (e.g., Sonet, ATM, frame relay, MPLS) that provides traffic-switching control at the nodes incident to the links in the network. A mesh data network is a network in which data is communicated asynchronously between nodes in packetized form and it is a specific case of the more general mesh network. In the present example, SMDN 100 supports the multiprotocol label switching (MPLS) architecture standard per Rosen, E., et al., “RFC3031—Multiprotocol Label Switching Architecture,” Network Working Group, The Internet Society, January 2001, incorporated herein by reference in its entirety; however, as would be understood by one skilled in the art, other data technologies that offer similar data traffic engineering features (e.g., ATM and frame relay) could be substituted for MPLS.

Ex.1006, [0049], Petition, 24.

Connection 36, as well as the new connection and the other connections described hereinbelow, may comprise MPLS label-switched paths (LSP), or MPLS tunnels, in accordance with the MPLS tunnel creation protocols cited above. Alternatively, the connections may be defined using any other suitable communication protocol, such as ATM tunnel creation protocols.

Ex.1001, 4:64-5:3; Ex.1003, ¶27.

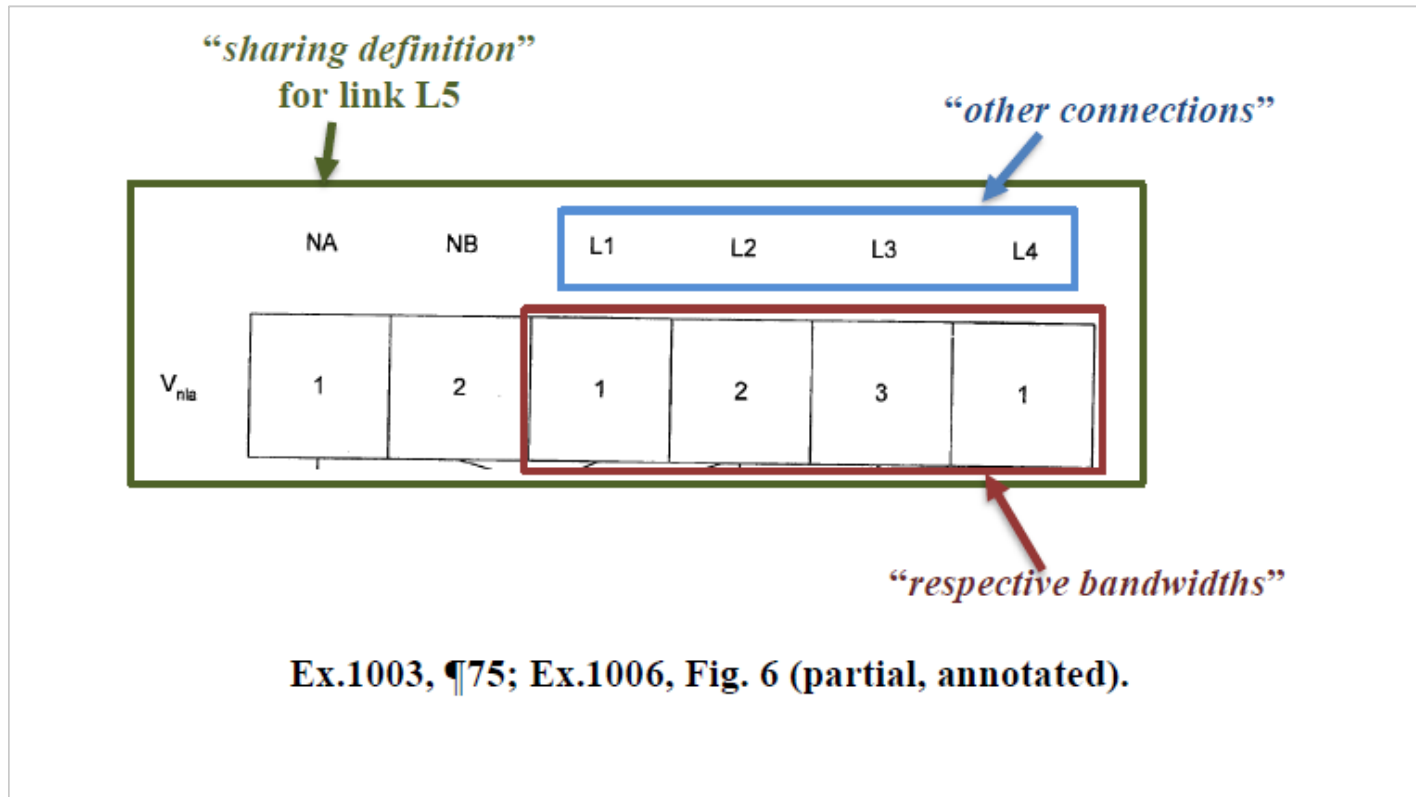
Sathyanath Fig. 17



Ex.1003, ¶61; Ex.1006, Fig. 17 (annotated).

Ex.1006, Fig. 17; Petition 32.

Sathyanath Fig. 6



Ex.1006, Fig. 6; Petition 38.



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