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ABSTRACT

A method for transmitting data in a network from a source node to a destination node includes the steps of transmitting data packets from the source node to an intermediary point, and assigning each of the packets a corresponding sequence number. A copy of each packet is stored in a buffer at the source node until receiving an acknowledgment that each packet was successfully received by the intermediary point. Upon successfully reaching the intermediate point, the intermediate point assigns an intermediate point sequence number to each packet. A copy of each packet is retained in a buffer at the intermediate point until receiving an acknowledgment that the packet was successfully received at the next delivery point. Once a particular packet is successfully received at an intermediary point, the particular packet is de-allocated at the source node, as are any other packets in the buffer between the particular packet and the last acknowledged packet. Upon receipt of an error indication, each packet is retransmitted along with all subsequent packets. At the receiving end, all received packets following the packet associated with the error indication are dropped until successfully receiving a retransmitted version of the packet. In addition, a single negative acknowledgment is used to indicate that a packet associated with the negative acknowledgment includes at least one error and to simultaneously indicate that all previous packets received prior to the packet associated with the negative acknowledgment were received correctly. Finally, a link sequence number is assigned to each of packet before transmitting it from a origination point in a link. Subsequently, each new link origination point assigns a sequence number that is independent from the sequence number assigned by the source node or the previous origination point.

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