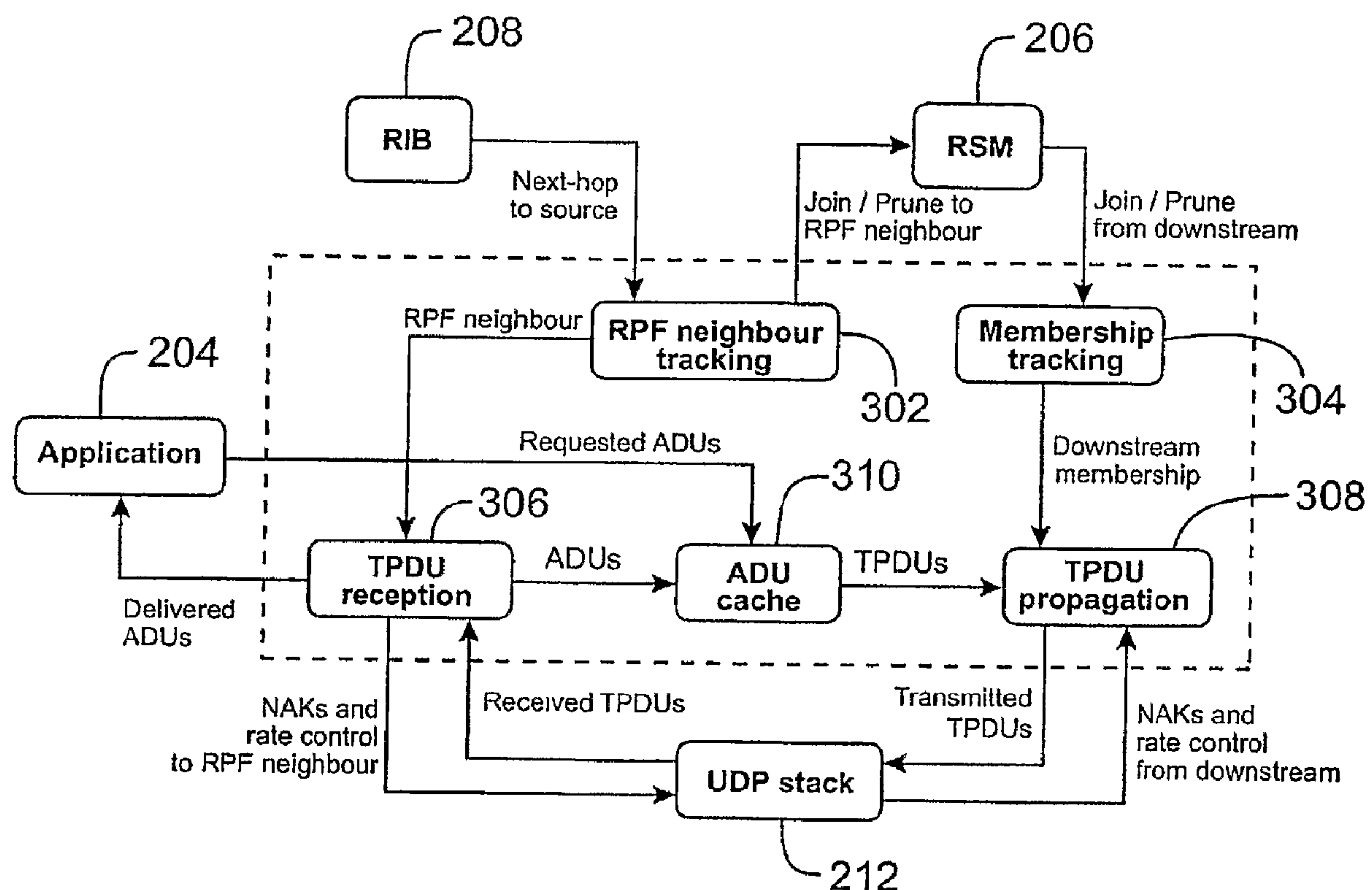




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A multi-party reliable transport protocol for use by a higher layer application. A single session source distributes database updates to multiple receivers via a distribution tree. A node desiring to join a session selects a directly-connected node on a path upstream to a source by accessing unicast routing protocol information and sends a "Join" message to this upstream neighbor. Each node participating in the scheme handles retransmission requests from its directly-connected downstream neighbors. A supported application provides storage of previously transmitted information for potential retransmission.



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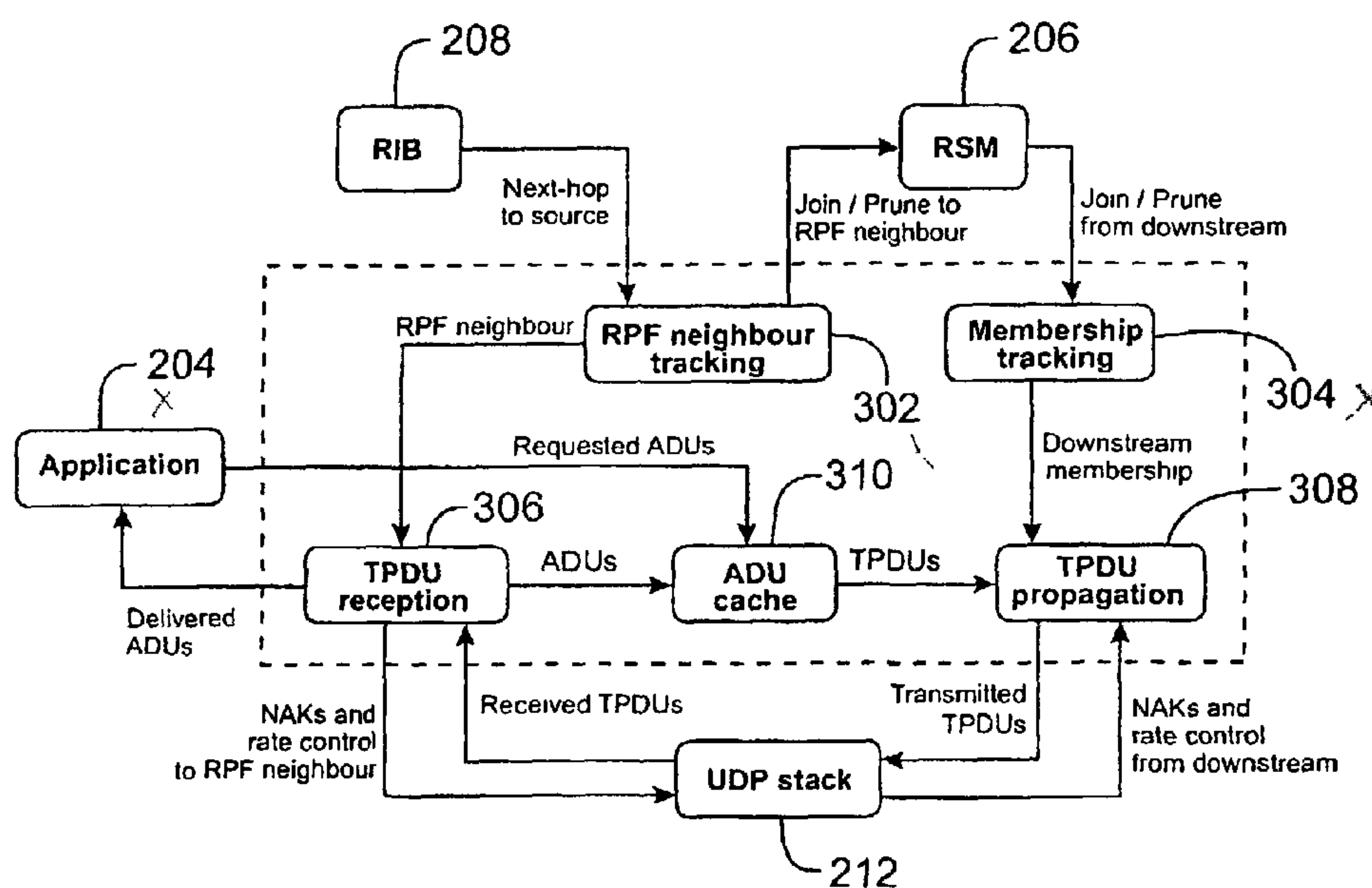
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RPF MULTI-PARTY RELIABLE TRANSPORT**STATEMENT OF RELATED APPLICATIONS****BACKGROUND OF THE INVENTION**

5 The present invention is related to data networking and more particularly to protocols for distributing information among multiple parties.

 Communication of packets across the internet typically involves the use of a specific transport protocol called TCP. TCP provides certain services to higher layer applications that are not inherently provided by IP itself. For example, TCP guarantees message delivery, guarantees that packets will be
10 transferred to the receiver application in the order they are transmitted, provides flow control to prevent overflow of receiver buffers, and throttles packet transmissions when network traffic conditions would lead to packet loss.

 The TCP protocol assumes a single pair of nodes, one a transmitter and one a receiver. The transmitter and receiver may be multiple hops away from one another and packets traveling as a part
15 of the same TCP session need not always traverse the same paths. To facilitate guaranteed message delivery, the transmitter maintains a cache of previously transmitted packets to allow for necessary retransmissions.

 TCP is the “work horse” of the internet, carrying traffic for mail applications, web applications, etc. However, applications with certain characteristics are not well-served by TCP. For
20 example, consider a database update distribution application. It is desirable for a selected node to distribute database updates to a number of nodes including nodes that are not directly-connected. Guaranteed message delivery is required as is in-order delivery. It is also desirable to be able to add nodes to the session and have them receive all the information that has been transmitted since the session’s beginning.

25 A specific example of this type of distributed database updating is the distribution of routing information updates using BGP (Border Gateway Protocol) from border routers at the

