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RSVP: A New Resource ReSerVation Protocol

The current IP network protocol provides a very simple service model(best effort service). Due to this simplicity, IP does not adequate to deal with a variety of qualities of service. In this paper, the authors present a new resource reservation protocol, RSVP. RSVP is a simple protocol which reserves resources in one direction and is receiver oriented. There are seven RSVP Design goals.

1. Accommodate heterogeneous receivers
2. Adapt to changing multicast group membership
3. Exploit the resource needs of different applications in order to use network resources efficiently
4. Allow receivers to switch channels
5. Adapt to changes in the underlying unicast and multicast routes
6. Control protocol overhead so that it does not grow linearly (or worse) with the number of participants
7. Make the design modular to accommodate heterogeneous underlying technologies

To achieve the seven design goals, they also used six design principles.

1. Receiver initiated reservation: receiver choose the level of resources reserved and are responsible for initiating and keeping the reservation active as long as they want to receive the data.
2. Separating reservation from packet filtering: packet filter selects those packets that can use the resources and filter is set by the reserving entity. RSVP allows this filter to be dynamic; the receiver can change it during the course of the reservation.
3. Providing different reservation styles: dynamic filter reservation style allows receivers to change channels.
4. Maintaining soft-state in the network: sender sends path message via the data delivery path and receiver send reservation message on the reverse path by specifying the reservation style and QoS desired, and setting up the reservation state at each router.
5. Protocol overhead control
6. Modularity: making RSVP as independent from the other components as possible

The main contribution of this paper is the uniqueness of RSVP protocol. It provides receiver-initiated reservation, separates the filter from the reservation, supports a dynamic multipoint to multipoint communication model, and decouples the reservation and routing functions.