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## Efficiency analysis of zone based bidirectional multicast tree over MANET using RSGMP

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The challenge faced nowadays is to design a scalable and robust multicast routing protocol in a mobile ad hoc network (MANET). The use of mobile ad hoc networks (MANETs) is to be achieved with fast progress of computing techniques and wireless networking techniques. MANET is used because wireless devices could self-configure and form a network with an arbitrary topology. The difficulty is in achieving the group membership management, multicast packet forwarding and the maintenance of multicast structure over the dynamic network topology for a large group size or network size. Robust and scalable geographic multicast protocol is used for handling multicasting in mobile ad hoc networks. Virtual architectures are used in this protocol. MANETs have unstable wireless channels and node movements. Scalability and efficiency of group membership management is performed through a virtual-zone-based structure. The location service for group members is integrated with the membership management. The control messages as well as the data packets are forwarded along efficient tree-like paths. Geographic forwarding is used to achieve further scalability and robustness. Source tracking mechanism is designed for handling flooding of information. Other than that, empty-zone problem faced by most zone-based routing protocols is efficiently being handled. Overall advantages are higher delivery ratio in all circumstances with different moving speeds, node densities, group sizes, number of groups and network sizes. This has minimum control overhead and joining delay.

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## A robust gas plant inlet pressure control strategy

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The process of transferring the natural gas from the gas well to the gas separation plant encountered some delay time depending on the distance between this well and the factory, the cross section of the transport line, the geometry of this transport line, the well pressure and others. To control the factory inlet pressure by controlling the choke valve existing at the well head, the delay time makes the traditional control systems fail. In this framework, we aim to solve this problem by presenting a novel controller design and delay modeling technique. The presented technique is compared to the previous control system design and delay approximation techniques.

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