
ON-DEMAND MULTICAST ROUTING PROTOCOL
(ODMRP) FOR MOBILE AD-HOC NETWORKS

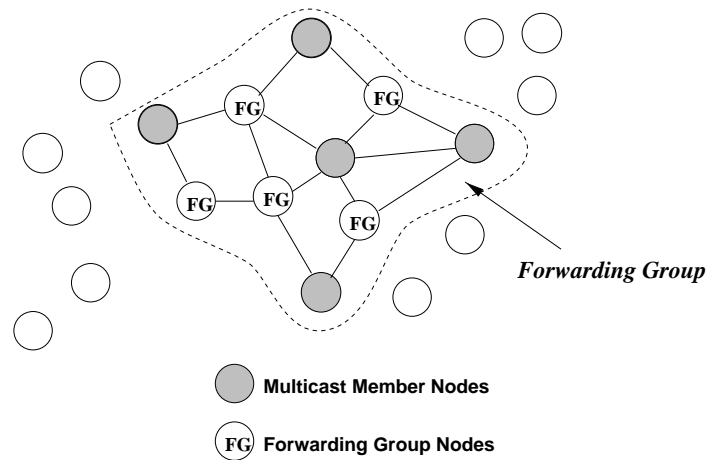
M. Gerla, G. Pei, S.J. Lee, and C.C. Chiang
WAM Lab, UCLA
`http://www.cs.ucla.edu/NRL/wireless`

December 10th, 1998

KEY CONCEPTS OF ODMRP

- Mesh topology
- Forwarding Group concept
- On-Demand approach
- Soft state

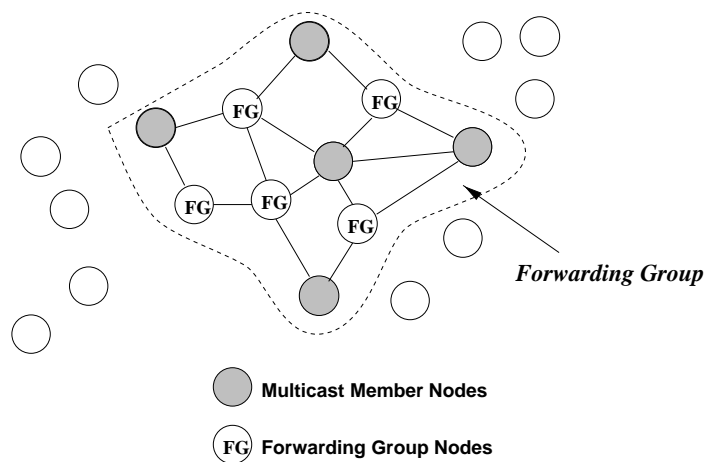
FORWARDING GROUP CONCEPT



- *Forwarding Group*

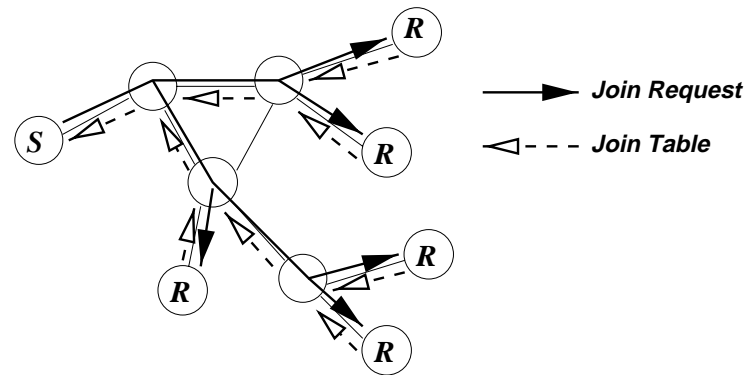
- Supports shortest paths between any member pairs
- A set of nodes which is in charge of forwarding multicast packets

FORWARDING GROUP CONCEPT - CONT'D



- All nodes inside the “bubble” forward the M-cast packets
- Flooding redundancy helps overcome displacements and channel fading

FG MAINTENANCE (ON-DEMAND APPROACH)

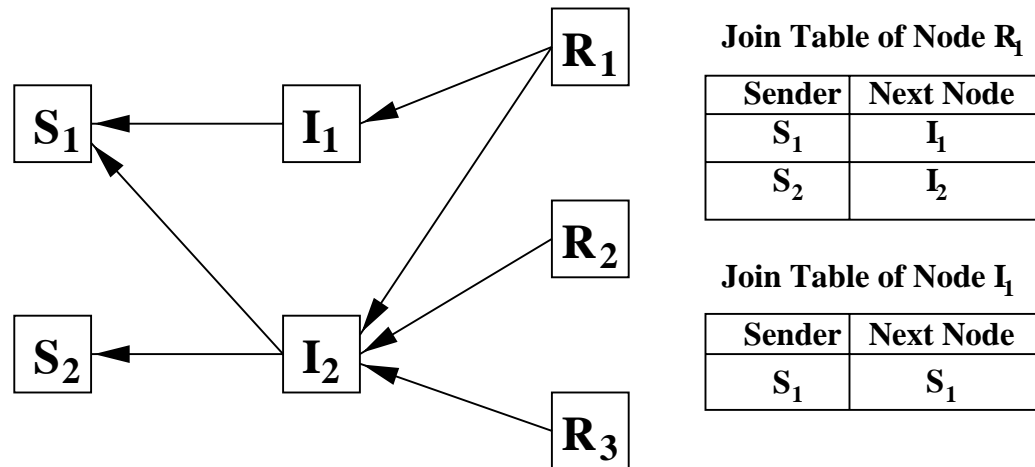


- A sender periodically floods control messages (*Join Request*) only if it has data to send
- All intermediate nodes set up or refresh pointer(route) to sender (*Backward Learning*)

FG MAINTENANCE (ON-DEMAND APPROACH)

- Receivers update their *Member Tables* when they receive Join Requests from senders; while valid entries exist in Member Table, *Join Tables* are broadcasted to all neighbors periodically
- Neighbors which match the route set/refresh the **FG_FLAG**
- FG nodes create and forward *Join Tables* to their neighbors
- All the *Join Table* exchanges are confined within the “bubble”
- *Soft State*: No explicit messages required to join/leave multicast group (or FG)

EXAMPLE OF JOIN TABLE FORWARDING



An intermediate node builds its own Join Table and forwards it only when any of the received tables' *Next Node* field matches its own ID

PROPERTIES & STATUS

- Functions *reactively*
- Requires periodic messaging - however, no control messages are exchanged when there is no traffic to send
- It reduces to on-demand unicast routing if there is only one receiver
- Internet Draft: `draft-gerla-manet-odmrp-00.txt`
- Simulation in progress for performance evaluation and optimization
- Future Work: Reliability, QoS, Security, etc.