

Exercises of lecture
Mobile Ad Hoc Networks
Summer 2007
Sheet 8

SECTION 1:
MANET Routing Protocols

1. Compared to pure flooding, a route discovery based on LAR reduces the control packet overhead and possibly avoid the broadcast storm. Consider the MANET provided in Figure 1, which topology does not change during the route discovery, node S wishes to send data to node D that is two hop away from node S. Assume that location information can be obtained, for instance, by the GPS receiver.

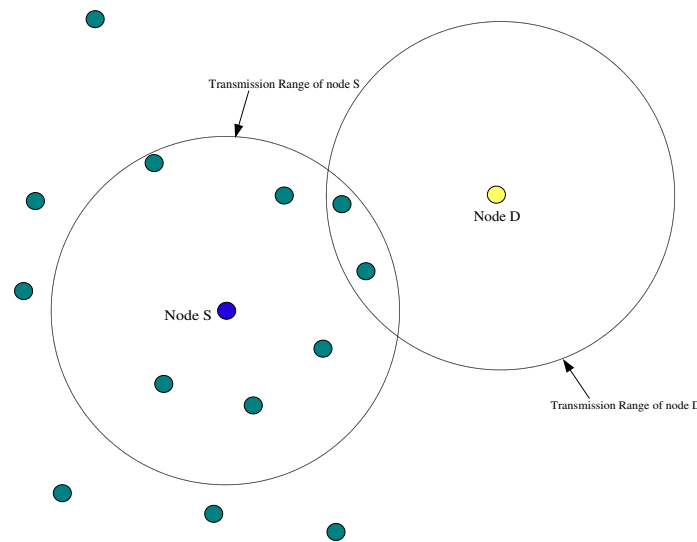


Figure 1: MANET

- (a) Propose a simple LAR algorithm that utilizes the distance information of each node to reduce the number of control message during route discovery.
- (b) If this MANET is using DSR, how can the RREQ packet be modified to adopt your proposed algorithm in its route discovery?

SECTION 2:
Distance Vector Routing

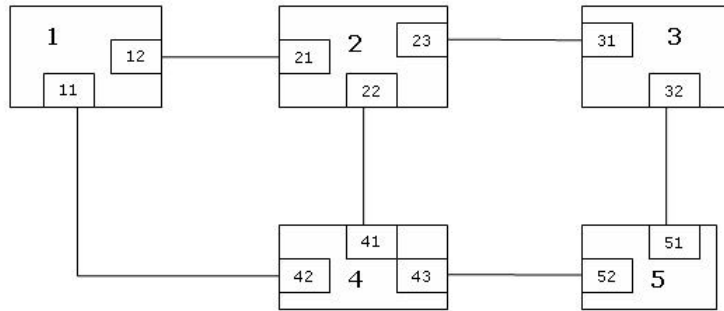


Figure 2: Topology

- Figure 2 shows five routers, and links connected them. Furthermore, pseudo port IPs forming end point of links is also showed. Assume that each link has unit cost. Each router-x has a single initial routing table entry as shown in figure-3, where Next hop is the port-IP though which router-x can be reached to a destination router. Assume that all the routers advertise their routing table at the same time and there are no collisions. Apply well known and simplest distance-vector routing algorithm called Routing Information Protocol (RIP) and show each new entry created in routing table after receiving advertisements until they have no more new entries. RIP makes use of Bellman-Ford algorithm.

Destination router	Cost	Next hop
x	0	-

Figure 3: Routing-table initial entry