



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution



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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19EC402- WIRELESS ADHOC AND SENSOR NETWORKS

IV ECE / VII SEMESTER

UNIT 3 – ROUTING PROTOCOLS

TOPIC 5 –ON DEMAND ROUTING PROTOCOL : AODV



ON -DEMAND PROTOCOLS



- Source - initiated on demand routing is **reactive** in nature, unlike table driven routing. This type of protocols generates routes only when a source demands it.
- In other words, when a source node requires a route to a destination, the source initiates a route discovery process in the network. This process finishes when a route to the destination has been discovered or all possible routes have been examined without any success.
- The discovered route is maintained by a route maintenance procedure, until it is no longer desired or the destination becomes inaccessible.



ON -DEMAND PROTOCOLS



The source initiated on demand routing is categorized as follows:

Ad hoc on demand distance vector routing (AODV)

- AODV is a routing protocol for MANETs (mobile ad hoc networks) and other wireless ad hoc networks.
- It is a reactive routing protocol; it means it establishes a route to a destination only on demand.
- AODV routing is built over the DSDV algorithm. It is a significant improvement over DSDV.
- The devices that are not on a particular path do not maintain routing information, nor do they participate in the routing table exchanges.



ON -DEMAND PROTOCOLS

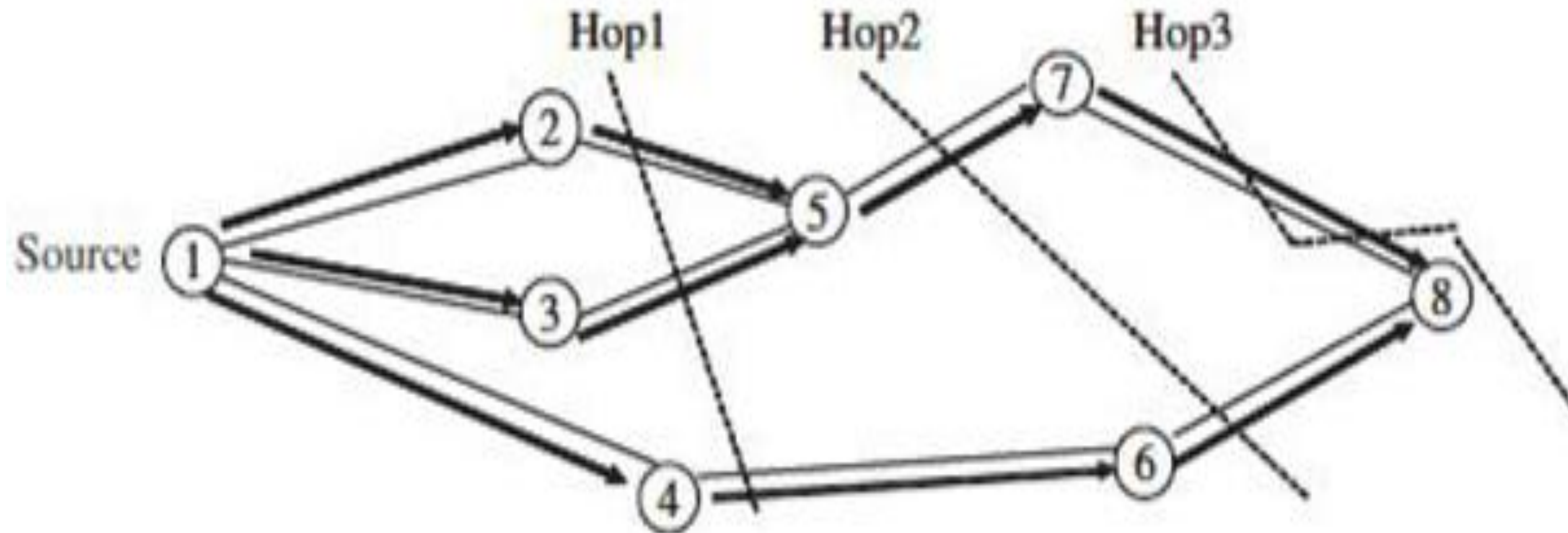


Ad hoc on demand distance vector routing (AODV)

- When a source requires sending a message to a destination and does not have a valid route to the latter, the source initiates a route discovery process.
- Source sends a route request (RREQ) packet to all its neighbors, the latter forward the request to all their neighbors, and so on, until either the destination or an intermediate mobile (node) with a "fresh enough" route to the destination is reached.



AD HOC ON DEMAND DISTANCE VECTOR ROUTING (AODV)



(a) Propagation of route request (RREQ) packet



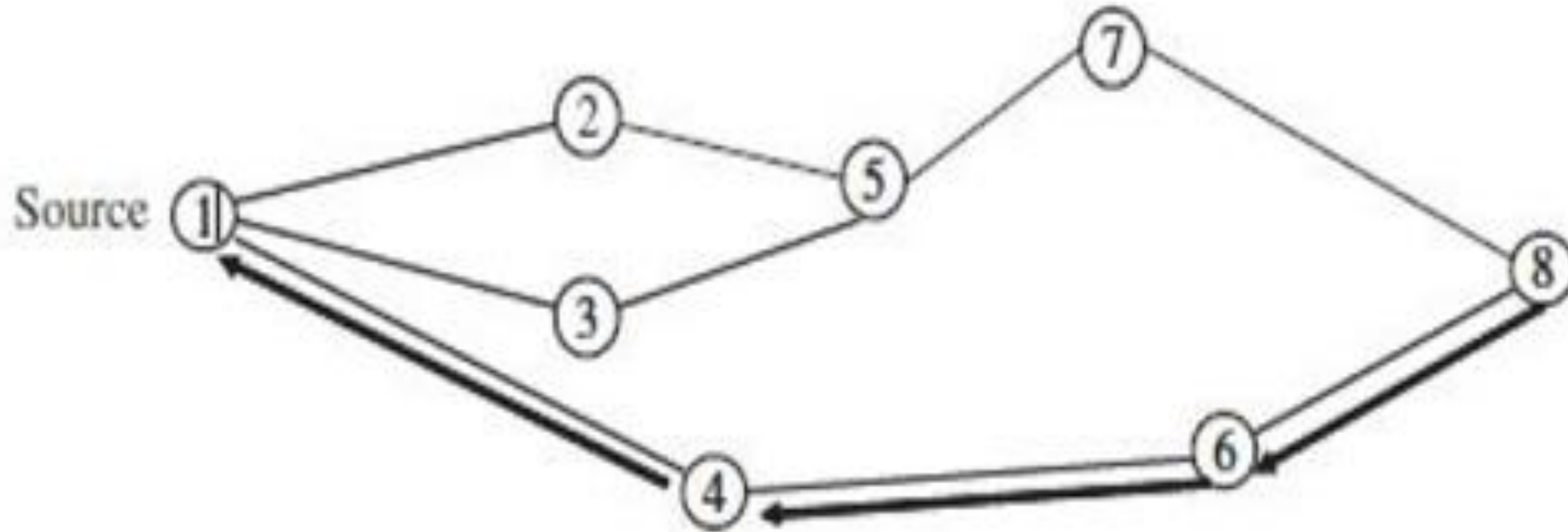
AD HOC ON DEMAND DISTANCE VECTOR ROUTING (AODV)



- The above figure illustrates the propagation of the broadcast request (RREQs) across the network. Since in DSDV, destination sequence numbers are used to ensure that all routes are loop free and contain the most recent route information. Each node has a unique sequence number and a broadcast ID, which is incremented each time the node, initiates RREQ.
- The broadcast ID, together with the IP address of node, uniquely identifies every RREQ.
- Intermediate mobile reply only if they have a route to the destination with a sequence number greater than or at least equal to that contained in the RREQ. To optimize the route performance, intermediate nodes record the address.



AD HOC ON DEMAND DISTANCE VECTOR ROUTING (AODV)



(b) Path taken by the route reply (RREP) packet



NEED FOR ROUTING



- From the above figure, since RREP (route reply packet) travels back on the reverse path, the nodes on this path set up their forward route entries to point to the node from which RREP had just been received. These forward route records indicate the active forward route. The RREP continues traveling back along the reverse path till it reaches the initiator of the route discovery. Thus, AODV can support only the use of symmetric links.



THANK YOU