OLSR (Optimized Link State Routing) Protocol

P. Jacquet, P. Muhlethaler, A. Qayyum
INRIA Rocquencourt, France

Introduction

- Based on link state algorithm and exchange of neighbor information
- Volume of information is optimized to exchange MPRs of a node instead of all neighbors
- The flooding of these control messages is optimized by using MPRs

Database management

- Neighbor table
  - Information provided by IMEP
- Topology table
  - Information extracted from control packets
- Routing table
  - Routes calculated using the above information
- Duplicate table

Control packets

- TC (Topology Control) packet contains the list of multipoint relays of a node
- It is diffused in the whole network using MPR forwarding (provided by IMEP)
- It is sent periodically, and its frequency increases when a change in MPR set occurs

Topology Information Recording

- Upon reception of a TC packet
  - the node records an entry in its Topology table with the originator's address as a destination (T_dest)
  - each MPR in the TC message is recorded as a "last hop" (T_last) to that destination

Routing table calculation

- First of all, the one hop neighbors are entered as the known destinations
- Then the topology table is scanned and Djikstra's algorithm is applied on the graph made by the pair [T_dest,T_last]
- A route entry is recorded for a destination for which a route is found up to a one hop neighbor (R_next)

Protocol functioning

- Declaration of MPRs helps to build a route toward that node through these MPRs

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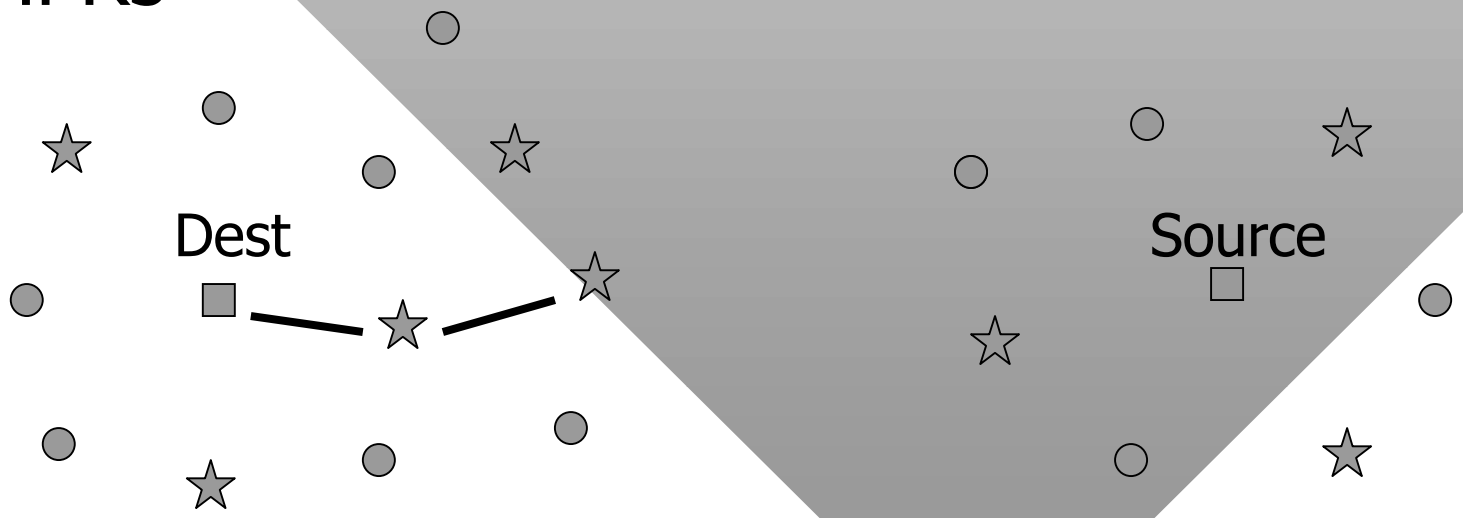

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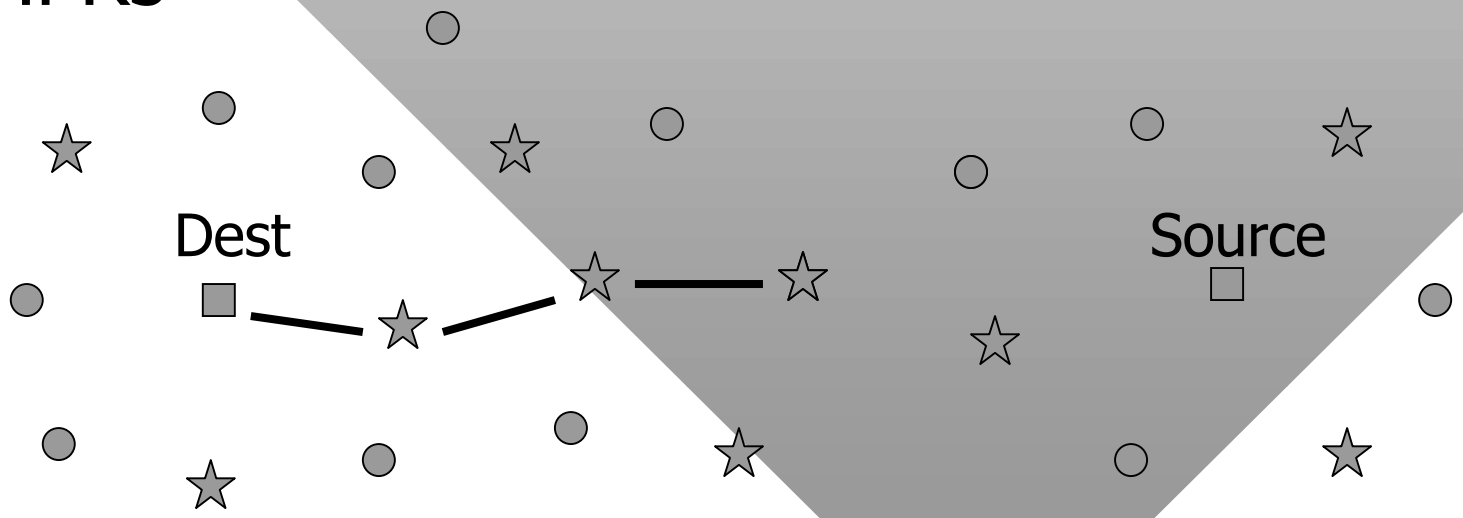

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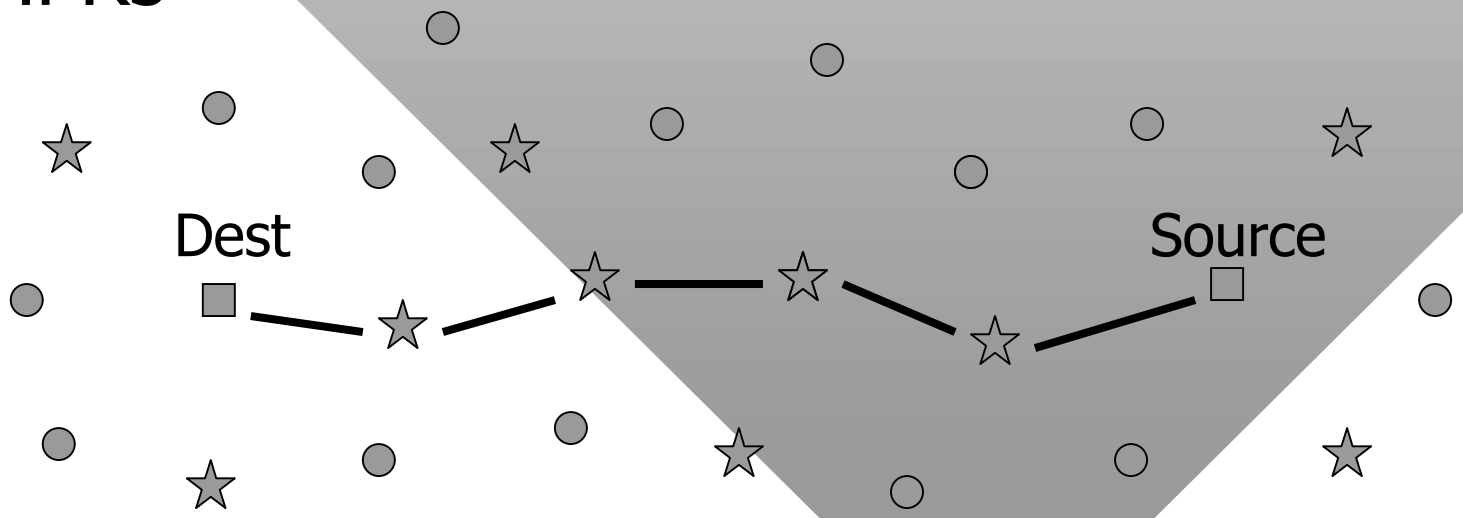

Data packet forwarding

- If a route to the destination exists in the routing table, then it is unicast to the next hop (R_next) in the route
- If no route to the destination exists, then the data packet is broadcast to the neighbors
- The data packets in broadcast/multicast will only be forwarded by the MPRs

Conclusions

- Optimal routes
- Optimized flooding of topology control messages with MPRs
- Route is immediately available when requested (pro-active protocol)
- Link state stability