

ODMRP

ODMRP_ASYM

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draft-gerla-manet-odmrp-02

draft-gerla-manet-odmrp-asym-00

IETF 89, London, March 5th 2014

Outline

- [ODMRP, ODMRP_ASYM].each
 - Main concepts
 - Protocol overview
 - Draft status
 - Implementation status

ODMRP

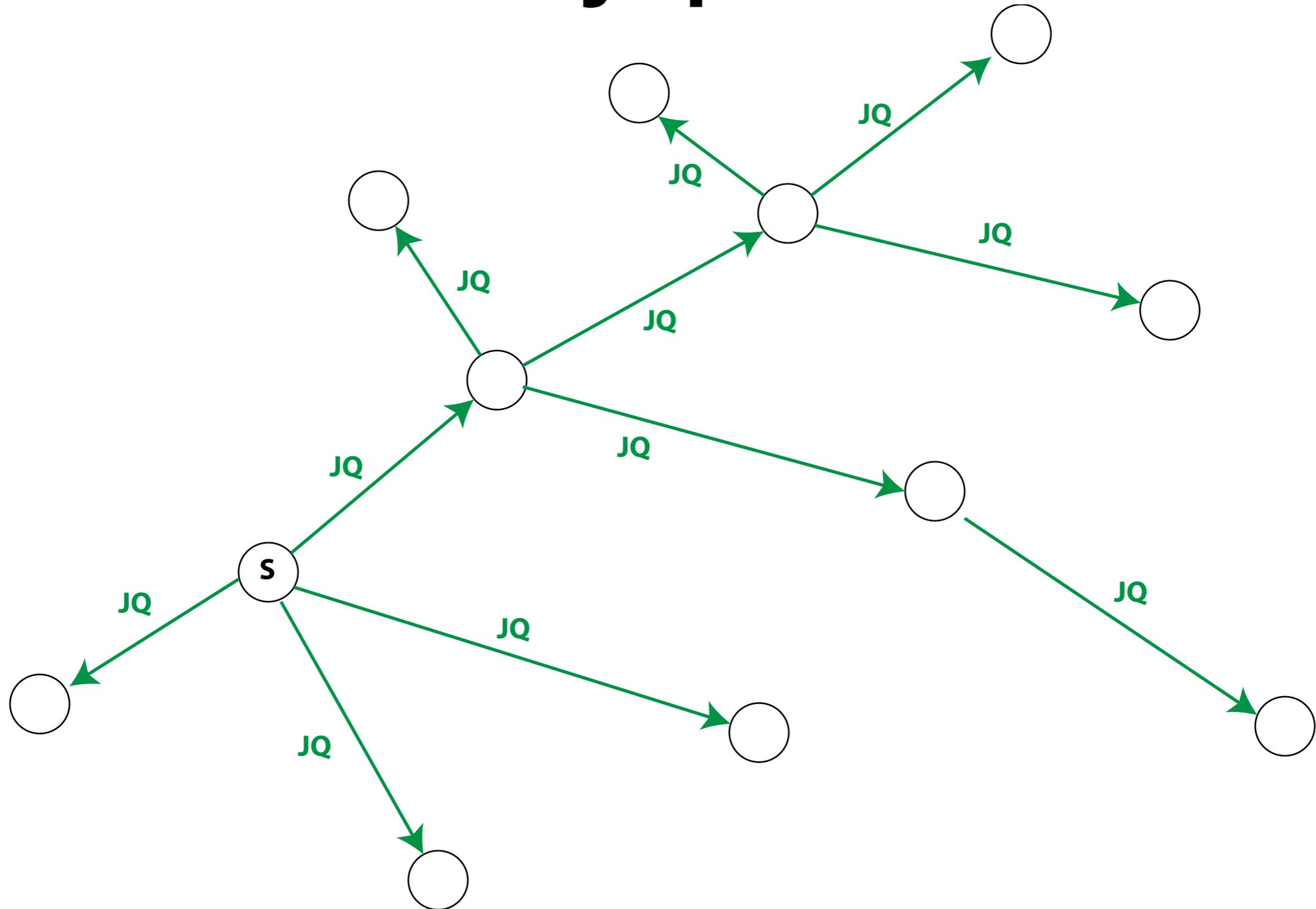
Main concepts

- Reactive approach
- Builds & maintains a multicast overlay with membership info
- Routers join the overlay if they (or their attached network) belong to the multicast group
- Very reactive to mobility

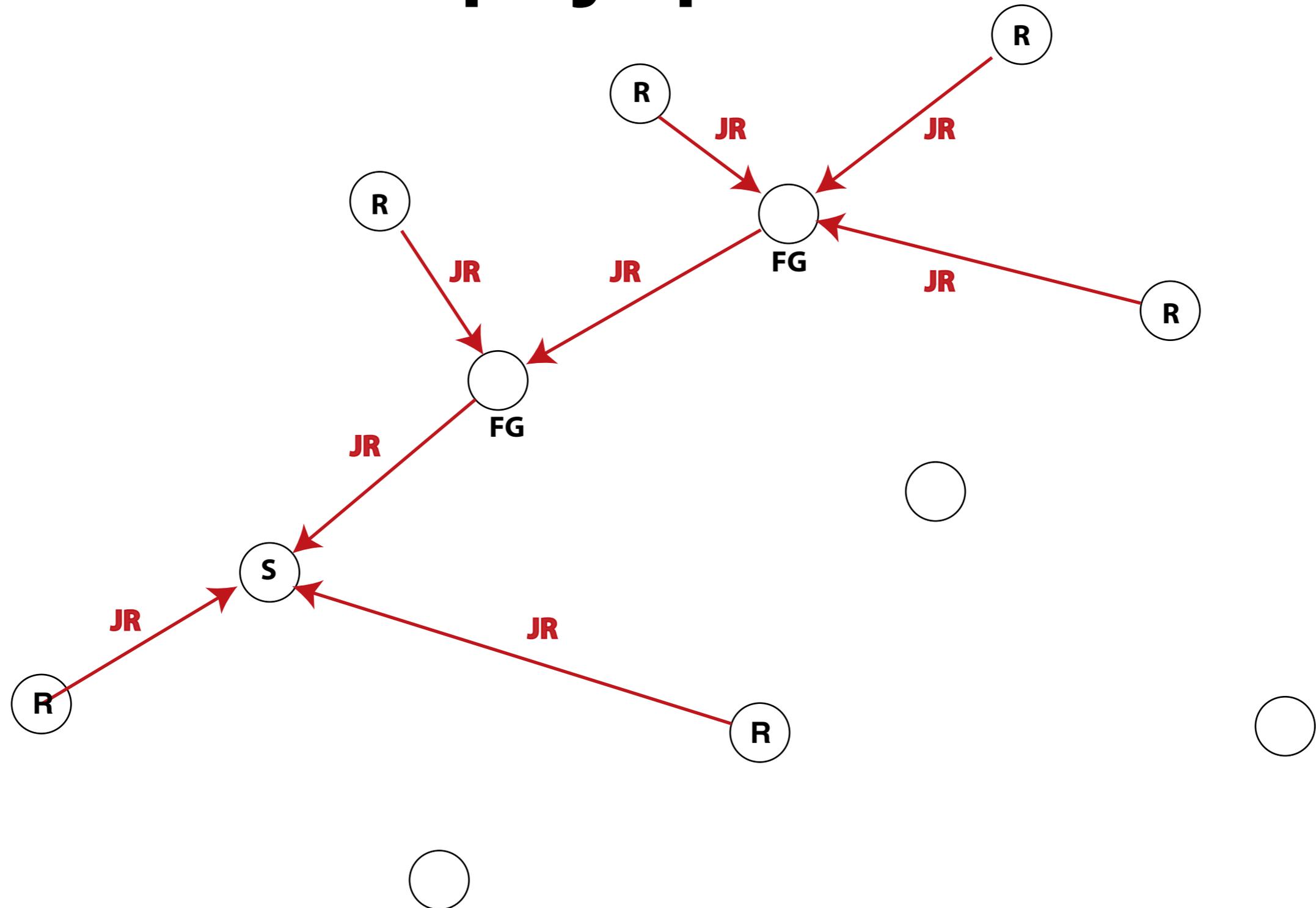
Protocol overview

- Join Query
 - Generated by source
 - Network-wide flood (can use optimized flooding)
- Join Reply
 - Generated by member routers
 - Routed back towards the source (w/o duplication)

Query phase



Reply phase



Draft status

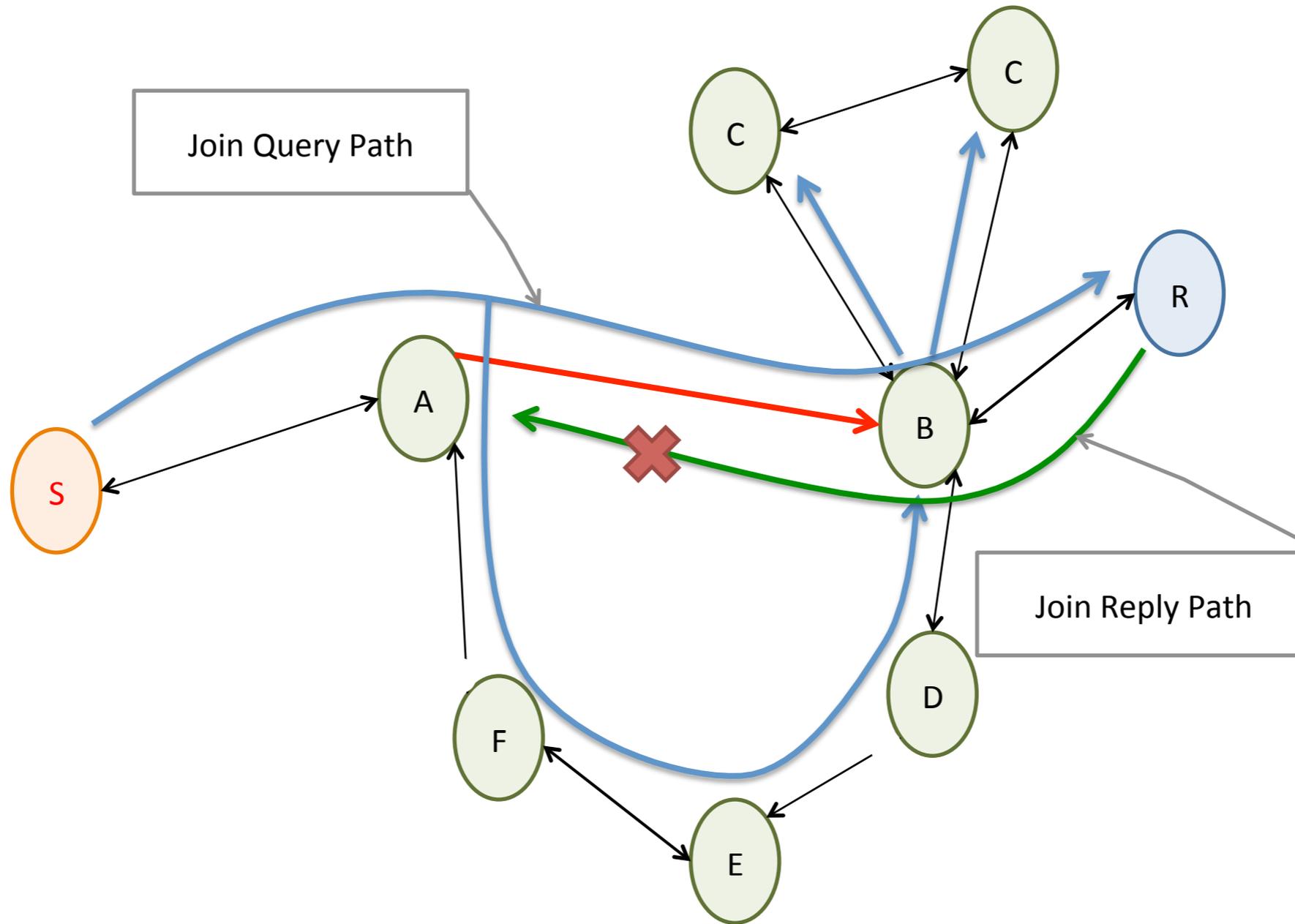
- Complete rewrite of the 2002 version
- RFC5444 packet format
- Default way of handling unidirectional links: blacklist
- Reworked sequence numbers, acknowledgements
- Join Reply aggregation optional
- Need work on some aspects of the protocol, e.g., timeouts, multiple interfaces, relationship with other protocols

Implementation status

- Open-source Java version available here: <https://github.com/axelcdv/jODMRP> (work in progress)
- Will add AgentJ to run some more ns2 simulations

ODMRP_ASYM

Main concepts



Main concepts

- Triggered when a unidirectional link is detected
- Objective: find a detour path around the unidirectional link
- No additional overhead if there is no such link

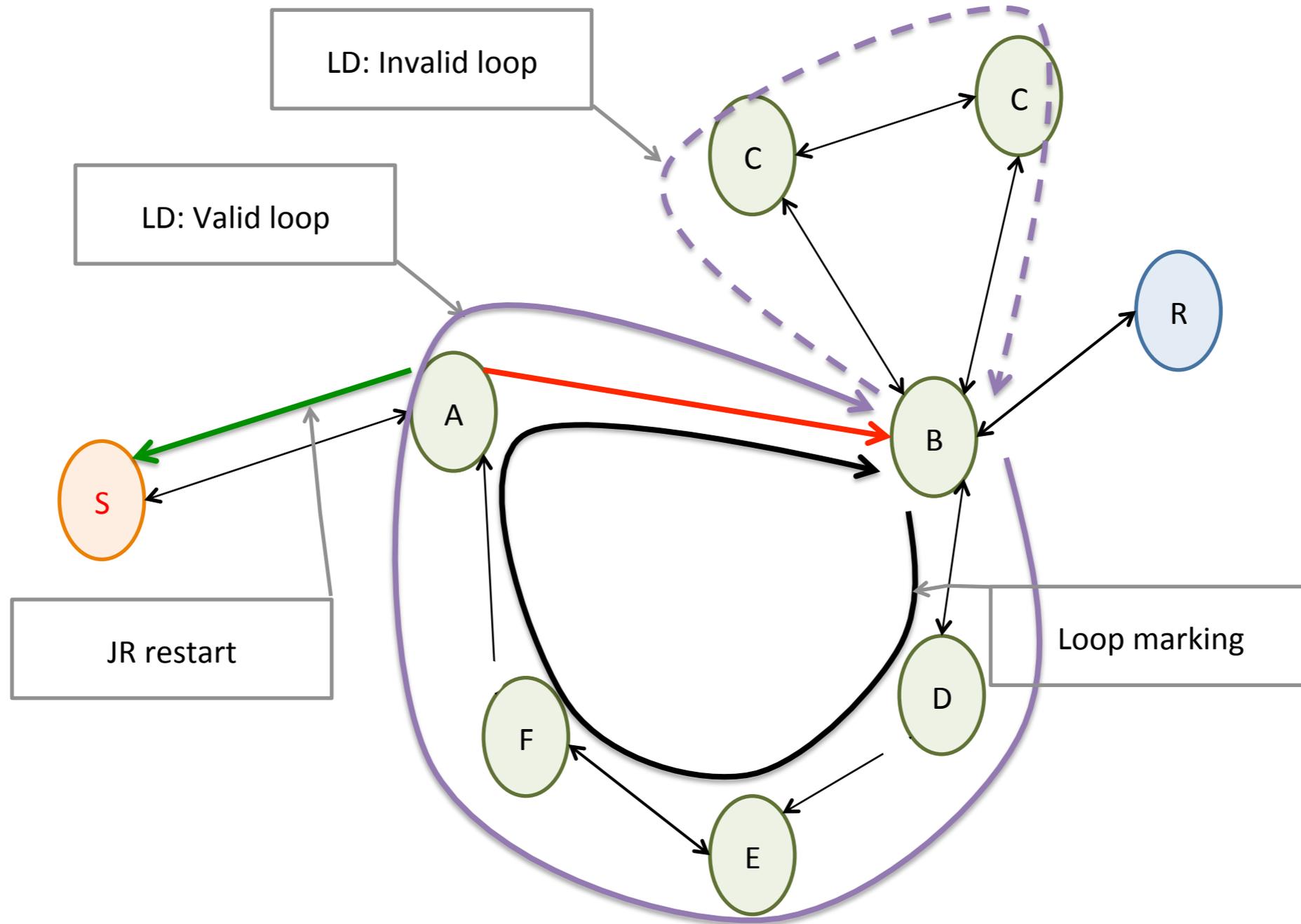
Definition

- Loop: main construct of ODMRP_ASYM, an **ordered** list of routers $A(1), A(2), \dots, A(n)$ where there is a link $A(i) \rightarrow A(i+1)$ and $A(n) = A(1)$
- Links can be unidirectional

Protocol overview

- Aim: find a loop with a router (Loop Summit) closer to the destination
- 2 steps
 - Loop discovery: find a valid loop (i.e. with a Loop Summit)
 - Loop marking: tag the members of the loop, notify the Loop Summit
- Loop summit restarts the Join Reply transmission

Protocol overview



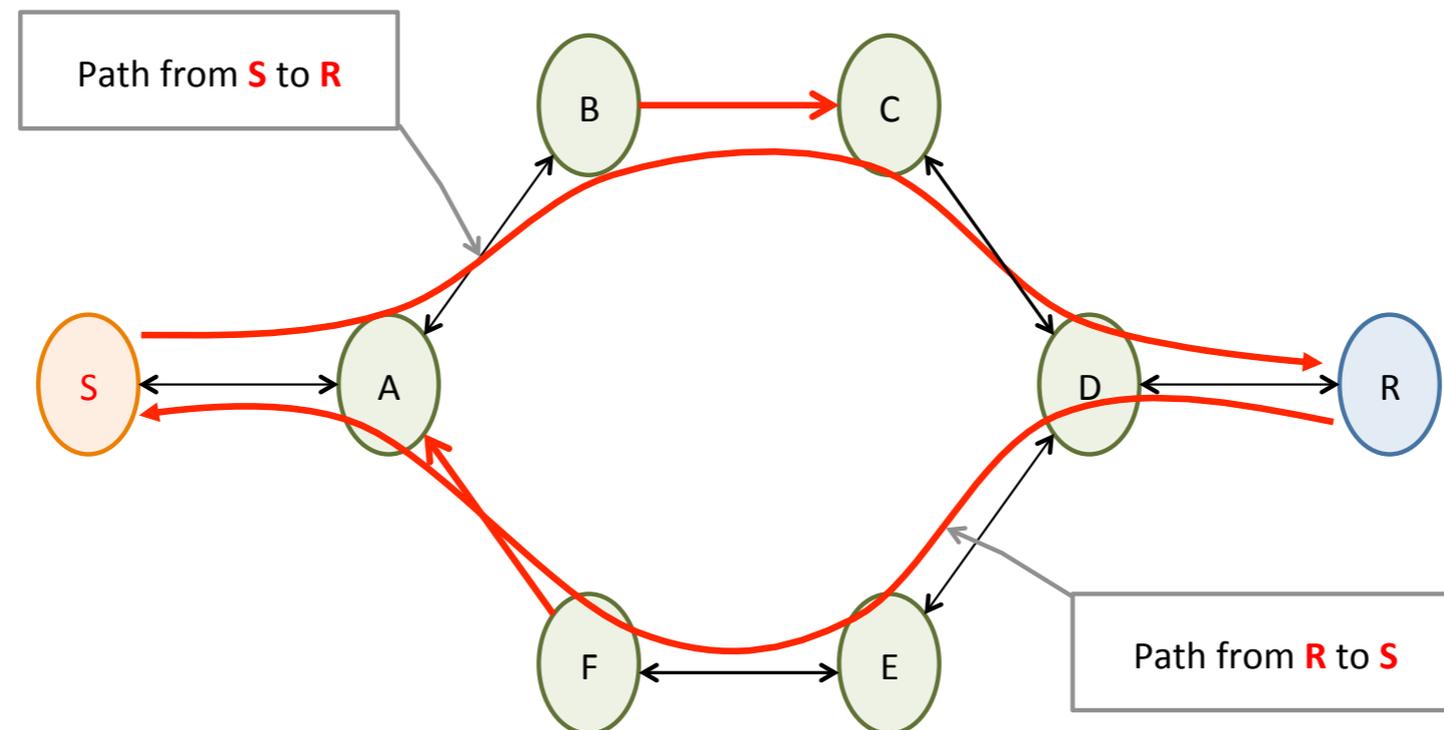
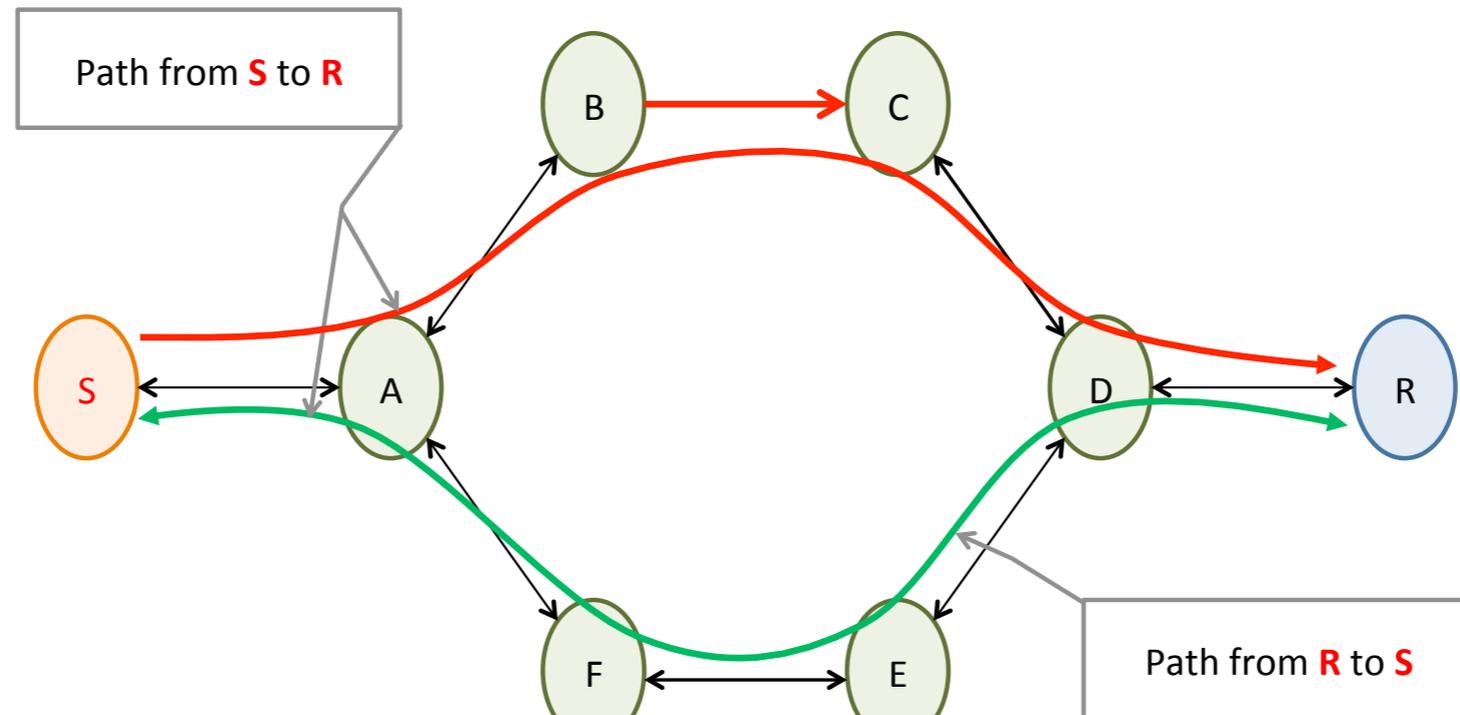
Protocol overview

- Loop Discovery message
 - Group address
 - Destination address
 - Ordered list of addresses (Loop)
 - Index to Loop Summit
 - HC + Hop Limit
 - Flooded with a low Hop Limit (can use expanding ring)

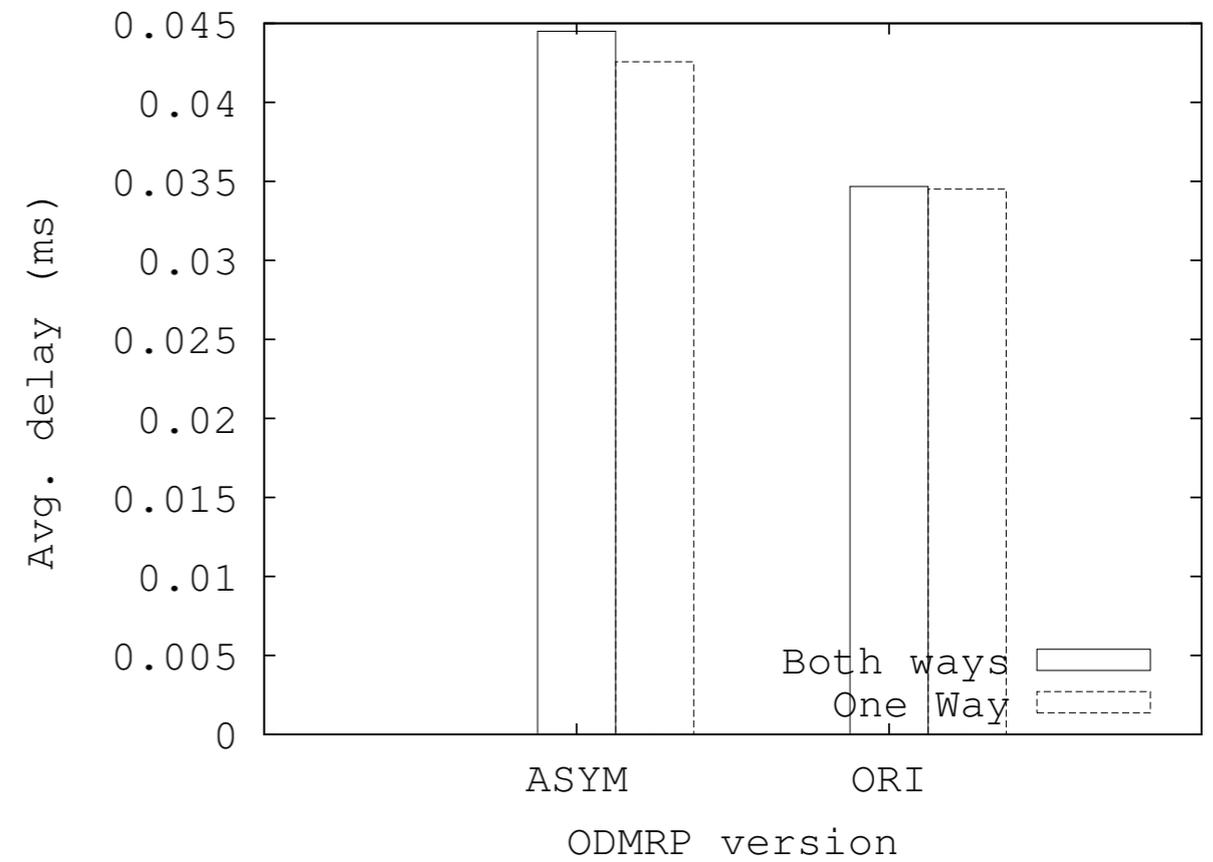
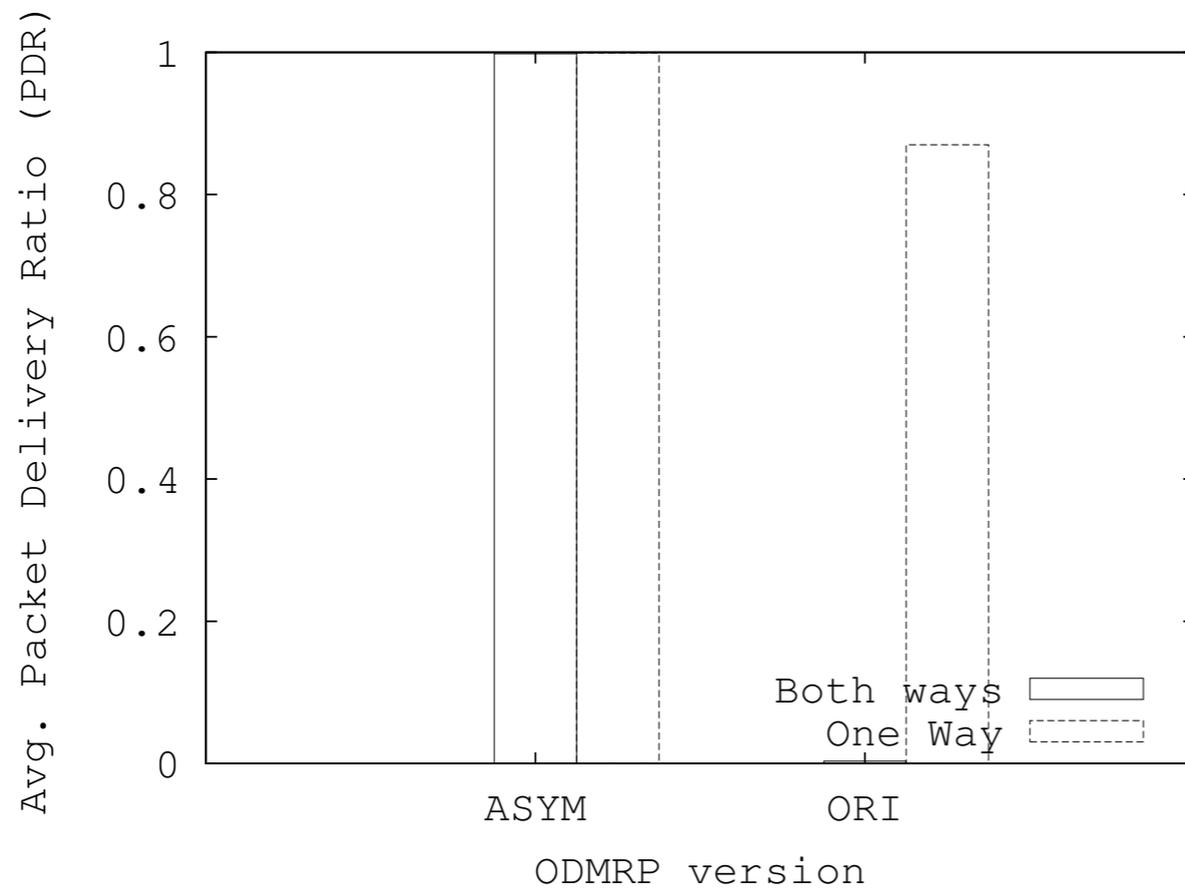
Protocol overview

- Loop Marking message
 - Group address
 - Destination address
 - Ordered list of addresses (Loop)
 - Index to Loop Summit
 - Sequence number (corresponds to Join Reply's sequence number)

Simulation



Simulation results



Draft status

- -00 version using RFC5444
- Extends ODMRP draft
- No open source implementation as of yet, will add to jODMRP

Summary

- ODMRP
 - Reactive protocol, suited for small to medium, dynamic networks
 - Handles group membership
 - Could work conjointly with SMF and benefit from optimized flooding
- ODMRP_ASYM
 - Routes through unidirectional links
 - No additional overhead in normal (bidirectional) situations
- Comments more than welcome!