

MANET use cases and Proposed MANET Routing Protocols

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MANET Use cases

- RFC2501
 - Military requirement
 - Fire/Safety/Rescue Operations or other scenarios requiring
 - "wearable" computing and communications combined with satellite based information delivery
 - Efficient dynamic networking
 - MANET routing: Reactive, proactive, and hybrid routing
- New use cases
 - New layer 2 Technologies
 - 5G/6G networks, and IoT
 - Emergency Communication and disaster situations
- Experimental and standard MANET Routing RFCs
 - WG published two proactive and two reactive as experimental (2003-2007)
 - WG published OLSRv2 as standard for proactive routing (2014)

RFC2501 Measuring Protocol Performance

Essential parameters that should be varied while measuring:

- 1) Network size
- 2) Network connectivity (i.e. the average number of neighbors of a node)
- 3) Topological rate of change--the speed with which a network's topology is changing
- 4) Link capacity--effective link speed measured in bits/second
- 5) Fraction of unidirectional links
- 6) Traffic patterns--how effective is a protocol in adapting to non-uniform or bursty traffic patterns?
- 7) Mobility--when, and under what circumstances, is temporal and spatial topological correlation relevant to the performance of a routing protocol? In these cases, what is the most appropriate model for simulating node mobility in a MANET?
- 8) Fraction and frequency of sleeping nodes--how does a protocol perform in the presence of sleeping and awakening nodes?

Main Measuring Performance Metric

- 1) End-to-end delay
- 2) Packet Delivery Rate
- 3) Overhead
- 4) Efficiency

RFC2501

- It should be recognized that a routing protocol tends to be well-suited for particular network contexts, and less well-suited for others. In putting forth a description of a protocol, both its **advantages** and **limitations** should be mentioned so that the appropriate networking context(s) for its usage can be identified.

MANET Routing Proposals

- RFC3561 (AODV) and RFC4728 (DSR)
- AODVv2
- DSRv2 (draft-00 still not submitted)
 - Use of RFC5444 MANET Packet/message format
 - Use of RFC6130 MANET NHDP (optional)
 - Use of DLEP RFC8175 (optional)
- Hybrid Routing
- Multicast Routing