Use of the OSPF-MANET Interface in Single-Hop Broadcast Networks (draft-retana-ospf-manet-single-hop-00)

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What is this draft about?

• Abstract: “describes the use of the OSPF-MANET interface [rfc5820] in single-hop broadcast networks.”

• Extensions to OSPF to Support Mobile Ad Hoc Networking [rfc5820]
  — Experimental / March 2010

  The OSPF-MANET interface uses the point-to-multipoint adjacency model over a broadcast media to allow the following:
  • all router-to-router connections are treated as if they were point-to-point links
  • Link metric can be set on a per-neighbor basis
  • Broadcast and multicast can be accomplished through the Layer 2 broadcast capabilities of the media

• Single-Hop Broadcast Networks
  The interfaces considered in this document have the following characteristics:
  • direct connectivity between all the nodes
  • different link metrics may exist per-neighbor
  • it has broadcast/multicast capabilities
MANET Interface Considerations

• The operation of the MANET interface doesn't change. However, some of the proposed enhancements are not needed:

  – Incremental Hellos and Overlapping Relays are not required due to the connectivity model.
    • If Overlapping Relays are used, then the A-bit SHOULD NOT be set by any of the nodes: the result is an empty set of Active Overlapping Relays.

  – Smart Peering can be used to reduce the burden of requiring a full mesh of adjacencies.
    • ...a new adjacency is not required if reachability to the node is already available through the existing SPT.
Use of Router Priority

• For its use with the MANET interface, the Router Priority is defined as:
  Router Priority
  An 8-bit unsigned integer. Used to determine the precedence of which router(s) to establish a FULL adjacency with during the Smart Peering selection process. When more than one router attached to a network is present, the one with the highest Router Priority takes precedence. If there is still a tie, the router with the highest Router ID takes precedence.

• The heuristic for the smart peering state machine is described as:
  – If the number of existing adjacencies is < the maximum configured value, then
  – Determine if the neighbor has the highest (Router Priority, Router ID) combination

To avoid churn in the selection and establishment of the adjacencies, every router SHOULD wait Wait Time [RFC2328] before running the Smart Peering state machine.
It is RECOMMENDED that the maximum number of adjacencies be configured to at least 2.
Unsynchronized Adjacencies

• An unsynchronized adjacency [RFC5820] is one for which the database synchronization is postponed, but that is announced as FULL because SPT reachability can be proven.

• A single-hop broadcast network has a connectivity model in which all the nodes are directly connected to each other. This connectivity results in a simplified reachability check through the SPT: the adjacency to a specific peer MUST be advertized as FULL by at least one Smart Peer.
Summary

• The OSPF-MANET interface model can be applied to single-hop broadcast networks.
  – Incremental Hellos and Overlapping Relays are not needed.
  – Smart Peering can be used to reduce the need for a full mesh of adjacencies.
    • Use Router Priority to deterministically select the Smart Peers.
  – No additional signaling is needed for Unsynchronized Adjacencies.
Next Steps

• Adopt this draft as a WG Document
  – Updates rfc5820
  – Category: Experimental