Simplified Multicast Forwarding (SMF) Update

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Outline

• SMF Goal Review
• Document Update
• SMF Node Architecture
• Some initial results with different relay set selection algorithms and mobility
• Next steps
SMF Goal Review

- Provide a basic multicast packet forwarding function
- Simple baseline (all nodes receive)
- Target native IP multi-hop forwarding
  - Both IPv4 and IPv6 design
- Support dynamic, optimized relay set algorithms (e.g., MPRs, CDS variant)
  - Experience with MPR-variants. Other CDS algorithms of interest being considered
- Internet connectivity and interoperability
- Support potential mix of “neighborhood aware” and “unaware” SMF nodes?
- “draft-ietf-manet-smf-01” was submitted since the last IETF.

Summary of Changes

- Document restructured to reflect a modular SMF framework:
  - Components: Forwarding process, Efficient relay set selection, Neighborhood Discovery
  - E.g., SMF forwarding might be done in context/presence of different protocols (OLSR, DYMO, MANET-OSPF) providing organic neighborhood discovery and/or relay set selection.
  - Also, portions of SMF framework might be useful to other protocols (Autoconf or even routing protocols)
- Addressed comments from mailing list
- Incorporated some of “SMURF” (draft-perkins-manet-smurf-00.txt) concepts
  - More to be done here if these documents are to be merged.
- Defined IPv6 Duplicate Packet Detection (DPD) hop-by-hop header option
- Document expanded to include “Gateway Considerations” section
  - More input and thoughts needed here
SMF Node Architecture

Flooding Algorithms

- Classical (simple) - All nodes forward
- NS-MPR - All MPR nodes forward all LSs
- S-MPR - Standard OLSR forwarding online pruning
- MPR-CDS - offline pruning of MPR nodes
- MDR (ecds) - Shared tree; All MDR nodes forward
- Cluster - Global knowledge CDS
Smf vs Unicast

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<th>adjacencies per LSA</th>
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*scalability in terms of bytes

**Only DR originating LSAs
Number of Forwarders per Flood

Max 3 hop diameter network (uda=2.12)

Number of Forwarders per Flood

Max 8 hop diameter network (uda=5.66)
Next Steps

- Define baseline neighborhood discovery mechanism (e.g. SMURF) and enumerate requirements specific to different relay set algorithms (and identify the proper “home” for this mechanism and its message formats)
- More exhaustive simulations of relay set algorithms & SMF in progress.
- Better address potential for mix of “aware” and “unaware” forwarding nodes
- Continue to explore and solicit input for “Gateway Considerations”
- Enumerate primitives for inputs/outputs (notional API) between the different SMF functional modules so that compatible implementations might be instantiated.