

MANET Simplified Multicast Forwarding (SMF) ID 04 Update

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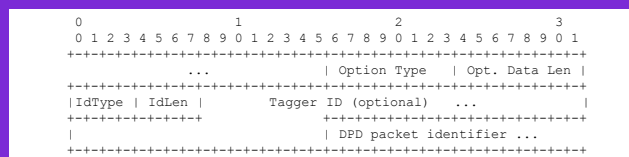
SMF -04 Draft Review

- Version -04 has been posted
 - draft-ietf-manet-smf-04.txt
- Review: Work proposal announced at last meeting (IETF 68)
 - Firm up TLV definitions and gain experience with NHDP prior to IETF 68
 - Revise ID to -04 then consider for EXP RFC submission
 - Ongoing Issues: Multiple Gateway and Dynamic Extension Approaches
 - Leave mostly open for experimentation and future specification
- Update: Actual specification updates/changes
 - OPTIONAL Tagger ID Approach added for IPv6 SMF-DPD Header Extension
 - Better supports border transition from non-MANET to MANET
 - Some editorial rewrite throughout

Tagger ID Change

- SMF-DPD IPv6 hop-by-hop header option modified to include this option and described in DPD Section
- Some usage discussion provided in later Section

SMF-DPD Header Option



IdType : type of "Tagger ID"

IdLen : length of non-NULL "Tagger ID" (1-16 bytes)

TaggerID : identifies who applied DPD marking (optional)

DPD Pkt ID : sequence number for DPD

Some SMF-DPD Examples

```

0          1          2          3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-----+-----+-----+-----+
| NextHdr =0 | HdrExtLen = 0 | OptType=SMF_DPD| OptDataLen = 3 |
+-----+-----+-----+-----+
| Type=0| Len=0 | 16-bit DPD packet identifier | PAD1 (0) |
+-----+-----+-----+-----+

```

SMF-DPD Ext. Header, no TaggerID, 16-bit PktID

```

0          1          2          3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-----+-----+-----+-----+
| NextHdr =0 | HdrExtLen = 1 | OptType=SMF_DPD| OptDataLen = 5 |
+-----+-----+-----+-----+
| Type=1| Len=3 | 32-bit Tagger ID
+-----+-----+-----+-----+
| 32-bit DPD Pkt ID
+-----+-----+-----+-----+
| OptType=PADN | OptDataLen = 1 | 0 |
+-----+-----+-----+-----+

```

SMF-DPD Ext. Header, 32-bit TaggerID, 32-bit PktID

Further 03->04 Changes

- Editorials Throughout
- Implementation guidance/warning in Relay Set Selection
 - Case: CDS sharing with co-existent unicast routing protocol
 - NOTE: Additional CDS pruning may sometimes be required for efficient use by SMF
 - Subset of total control plane CDS is often needed
 - Valuable lessons learned from recent MANET-OSPF and SMF CDS information sharing experimentation
- Multi-gateway text
 - Additional usage/forwarding rules discussion based upon potential use of Tagger ID extension

Goal Review and Next Steps

- IF YOU HAVE NOT HEARD:
 - The SMF MANET WG ID is targeting EXPERIMENTAL RFC submission initially
- At present ID has been implemented and used across several working projects
 - OLSR and MANET-OSPF experience
 - All CDS's specified have been tested, we encourage more EXPERIMENTATION, see first bullet
 - IPSEC use has been tested and some basic multiple interface capability (see other presentation)
 - NHDP+SMF prototype implementation expected

3 Ways to SMF

- Non-optimized
 - Classical flooding, DPD and filtered forwarding
 - Can be done independent of NHDP/other state info
- Optimized with old style CDS sharing
 - Maintain CDS state from other unicast routing information sharing
 - E.g., Present SMF+MANET-OSPF and SMF+OLSRv1 implementations
- Optimized with neighborhood state
 - Use CDS algorithm independent of coexistent unicast routing protocol
 - Requires NHDP or other neighborhood state input

Goal Review and Next Steps

- Work Proposal Prior to Chicago
 - Look at the potential to improve implementor readability
 - Move some design discussion/historical to Appendix
 - IMHO MUST retain strong scope and applicability statement
 - Possible inclusion of representative pseudocode for CDS variants in Appendix (planned but not done yet)
 - Revise ID to -05 before Chicago
 - Get group input and Last Call if deemed ready
 - Submit for EXPERIMENTAL consideration

Future Work

- If EXP RFC leads to some maturity and confidence, consider refinement and submission for STD track
- Ongoing areas that may be considered in the future
 - Approaches for Border Interoperability with SMF
 - PIM <-> SMF
 - Potential for group-specific and policy-related extensions
 - Forwarding filter interaction

Key Design/Implementation Issues

- Forwarding Method Specification
- Duplicate Packet Detection Mechanism
- Supports a variety of optimized CDS algorithms including a non-optimized mode with no a priori state knowledge or signaling requirements (DPD Only)
- Multiple Interfaces Supported
- Supports and Uses MANET Neighborhood Discovery Protocol (NHDP)
 - Can operate in modes without NHDP
- Experimental Mechanisms for MANET Site Border (e.g., Tagger ID)