

# OLSRv2 Extensions

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# Three Internet Drafts

draft-dearlove-manet-olsrv2-rmpr-optimization-00

- Legitimises optimisation described in RFC 6966-to-be.

draft-dearlove-manet-olsrv2-multitopology-01

- Multi-topology OLSRv2 (MT-OLSRv2).
- Proposed as Experimental.

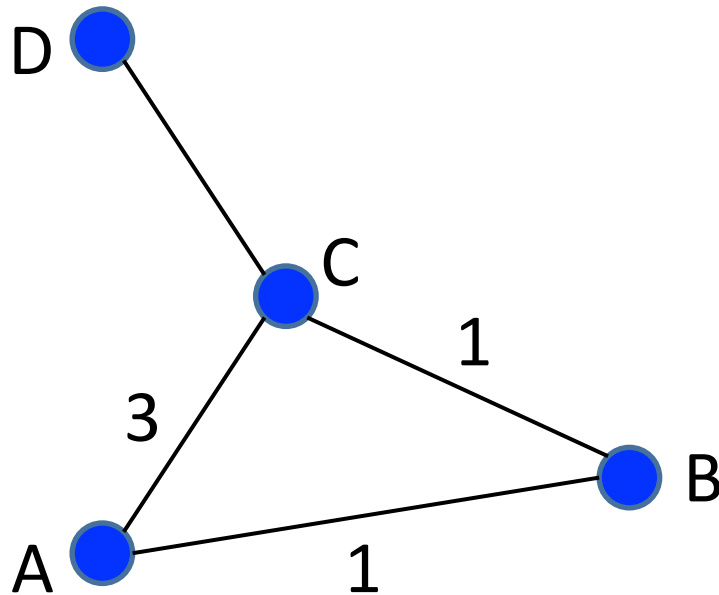
draft-dearlove-manet-nhdp-olsrv2-tlv-extension-01

- Minor changes (may not affect most implementations) to NHDP & OLSRv2 TLV handling.
- Allows efficiency/simplicity improvements.
- Used by MT-OLSRv2.

draft-dearlove-manet-olsrv2-rmpr-optimization-00

# Routing MPR Optimization

Consider this network



A must pick B as routing MPR.

OLSRv2 requires A to pick C as routing MPR.

RFC 6966-to-be notes latter is unnecessary.

# Updating OLSRv2

Proposal is to update OLSRv2 to allow not selecting such routing MPRs.

- Includes generalisation to other topologies.

No effect on interoperability:

- Could already not select such MPRs – this works, just not technically allowed.
- Works because link will be advertised but never used.
- Existing implementations unaffected, because MPR selection is always permissive.
- Can always pick any neighbour as MPR.

draft-dearlove-manet-nhdp-olsrv2-tlv-extension-01

# An existing example

In a HELLO message you have an Address Block containing addresses A, B, C, D, E in that order.

You want to attach metrics 1,2,1 (all four cases, in/out, link/neighbour) to A, C, E, but not to B, D.

(Why not reorder? – Cannot order for all characteristics simultaneously, and there is also link status ... Also gets more complicated when four link metrics are different.)

Could use three TLVs, but that is not efficient.

Want to use one multivalue TLV:

- And we already can.

# Link metric structure

Link metric structure:

- 4 bits for in/out link/metric combination.
- 12 bits for compressed value.

What about 0000 for 4 bits?

- Does not mean any metric type.
- Should not trigger any OLSRv2 specification.
- Can be used as value in multivalue TLV, no metric.

So example can use multivalue TLV with values:

- 0xf000, 0x0000, 0xf001, 0x0000, 0xf000.



# Wider use of concept

It would be convenient (simpler and/or more efficient) to allow this for other TLVs:

- For example LINK\_STATUS.
- Need a “null” value, UNSPECIFIED (defined as 255).

This is presented as part of wider generalisation:

- Convert three allowed link status values LOST, SYMMETRIC, HEARD to registry, adding UNSPECIFIED.
- Allows creating extensions that can interoperate with existing implementations of NHDP/OLSRv2.
- Requires existing extensions to ignore new values.

# One change needed

NHDP and OLSRv2 grant permission to implementations to reject messages for additional reasons than necessary reasons specified.

Need to withdraw this permission when the only “problem” is an unrecognised TLV value.

Otherwise specification should look only for specific values:

- Need line-by-line verification of “pseudo-code” to check if any details (“otherwise” clauses) to update.

# An additional change

Two TLVs (MPR, NBR\_ADDR\_TYPE) have values that can be 1, 2 or 3:

- 3 indicates “1 and 2”.

Propose to redefine these as bit fields.

- May or may not change implementation.
- Requires an implementation seeing e.g. 7 to interpret this as 1 and 2 (i.e. 3) and ignore 4.

This change is used by MT-OLSRv2.

(May later want to make values not always one octet.)

draft-dearlove-manet-olsrv2-multitopology-01

# Multi-topology OLSRv2 (MT-OLSRv2)

Not a new concept.

Maintain multiple routing tables, per metric type:

- Possible discussion on that assumption.

Send different types of packet using appropriate routing table:

- May use DSCP, but outside this specification.

Idea dates from when OLSRv2 metrics were defined with multiple type extensions.

Not included in basic OLSRv2: “walk before run”.

Aim to interoperate with non-MT-OLSRv2.

# Specification

Draft contains specification changes for MT-OLSRv2

- Each OLSRv2 interface gets list of metric types supported (IFACE\_METRIC\_TYPES).
- Reported in MPR\_TYPES TLV in HELLO .
- Various elements in protocol sets change from single values to map from metric type to value.
- Use bit vector valued MPR TLV to report MPR status – now have set of MPRs per supported metric type.
- Use already defined link metric reporting (multiple).
- Calculate Routing Set per supported metric type.

# A compatibility option

The existing MPR TLV implicitly has single octet values (as only needs values 1,2,3).

The proposed conversion to bit vector does not (currently) consider whether to relax this.

If not relaxed, then limited to 7 metric types.

- One bit (lsb) used for flooding MPR.

Options:

- Limit to 7 topologies (per OLSRv2 interface).
- Extend MPR TLV, to also allow longer single lengths.

# Interworking with non-MT-OLSRv2

If there may be any non-MT-OLSRv2 routers in MANET then:

- First supported link metric on each interface must be that used by non-MT-OLSRv2.
- Management considerations section discusses some issues. More work needed here to verify.



# Proposed Direction

All three Internet Drafts offered for adoption by WG:

TLV extensions:

- Proposed Standard Track update to NHDP/OLSRv2.
- May need to allow  $>1$  octet bit vectors depending on MT-OLSRv2.

MT-OLSRv2:

- Work needed as indicated, possible generalisation.
- Proposed as Experimental.

OLSRv2 MPR optimisation:

- Simple optional compatible permission. Proposed ST.