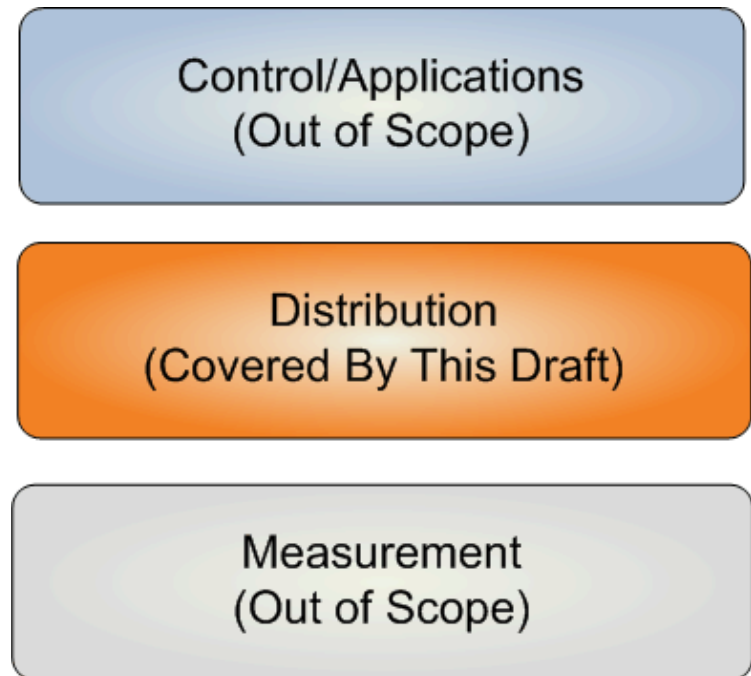# OSPF Traffic Engineering (TE) Express Path Updates

draft-giacalone-ospf-te-express-path-01.txt

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Overview

- OSPF TE Express Path Automatically <u>distributes</u> network performance data
  – Independent from measurement protocols and "applications"
- Introduced at IETF 80
- Updated to version 01 on May 30th 2011

Control/Applications
(Out of Scope)

Distribution
(Covered By This Draft)

Measurement
(Out of Scope)

Efficiency Updates

- Consolidated some sub-TLVs for efficiency
  - No longer have nominal and anomalous sub-TLVs
  - Steady and abnormal state data carried in two sub-TLVs (where we used to have four)
- Anomalous (A) bit added to consolidated sub-TLVs
  - Indicates whether the update pertains to normal or abnormal network performance state
  - A bit is set when configured threshold(s) exceeded
  - If A bit clear, sub-TLV represents steady state link performance

Encoding Updates

- Changed encodings of the variables in delay and jitter sub-TLVs from floating point to integer
  - Allows reserved bit-space
  - Provides space for A bit (when necessary)
  - Permits common TLV structure across most sub-TLVs in the draft
- Clarified how values are to be interpreted and added detail on units of measurement to address concerns about granularity and interoperability
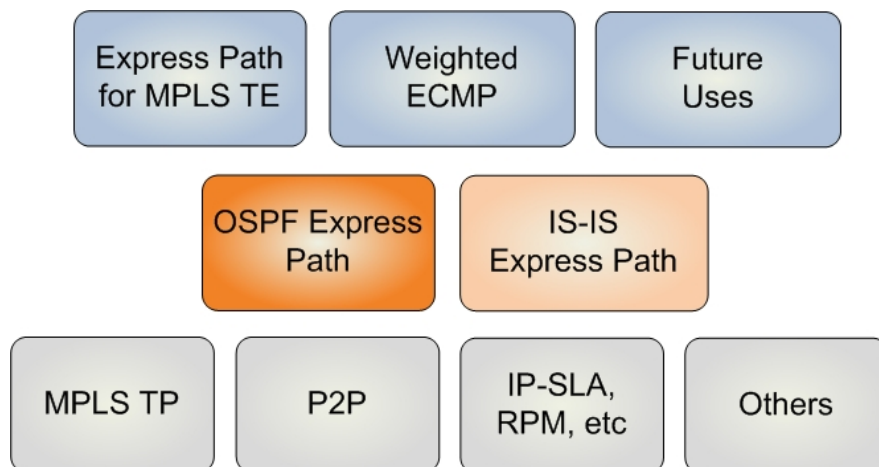
Structural Updates

- Added sub-TLVs for Residual Bandwidth and Available Bandwidth

    - Residual bandwidth is the Maximum Bandwidth [RFC3630] minus the bandwidth currently allocated to RSVP-TE LSPs

    - Available bandwidth is the residual bandwidth (above) minus the *measured* bandwidth used for forwarding non-RSVP-TE LSP packets

Other Updates

- Made various clarifications across the draft
  - Especially around thresholds and averaging
  - Added a section on network stability
    - Specified minimum inter-update timer
- Agreed with CCAMP working group that OSPF encodings will remain in OSPF Express Path
- Agreed to review CCAMP draft(s)

Next Steps

- Propose OSPF WG adoption
- Revise draft
  - Modifications based on feedback
- Begin IS-IS TE Express Path draft
- Begin application drafts (e.g. weighted ECMP)

Questions