Intro to Multi-Path Traffic Engineering

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draft-kompella-teas-mpte

Traffic Engineering with Multipath Capabilities

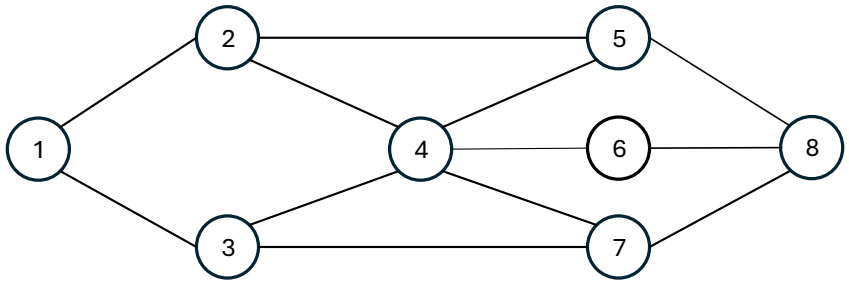
- “Classical TE” builds a single path from one ingress to one egress that satisfies a set of constraints (RSVP-TE or Adj SIDs)
  - This scenario is set up for paths with a single ingress and a single egress
- Non-TE traffic management allows packets to take any of the equal-cost next hops in a path to the egress (IP, LDP, Node SIDs)
  - This scenario is set up for a single egress but possibly many ingresses
- MPTE combines the two features (and adds a couple more) to provide a more powerful tool for managing traffic in networks

→ So, we’re working with Directed Acyclic Graphs (DAGs), not paths

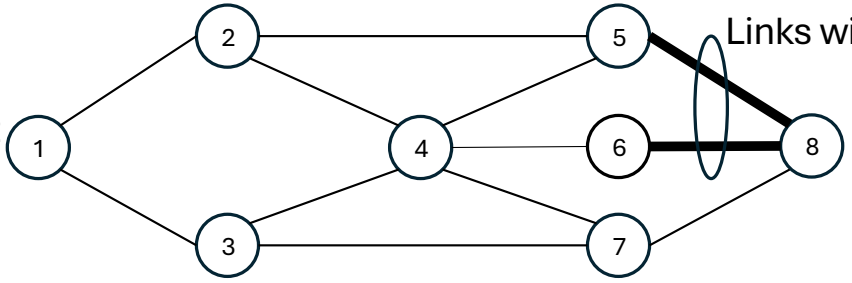
COLORS

Features of MPTE DAGs: full TE features and full MP features

A



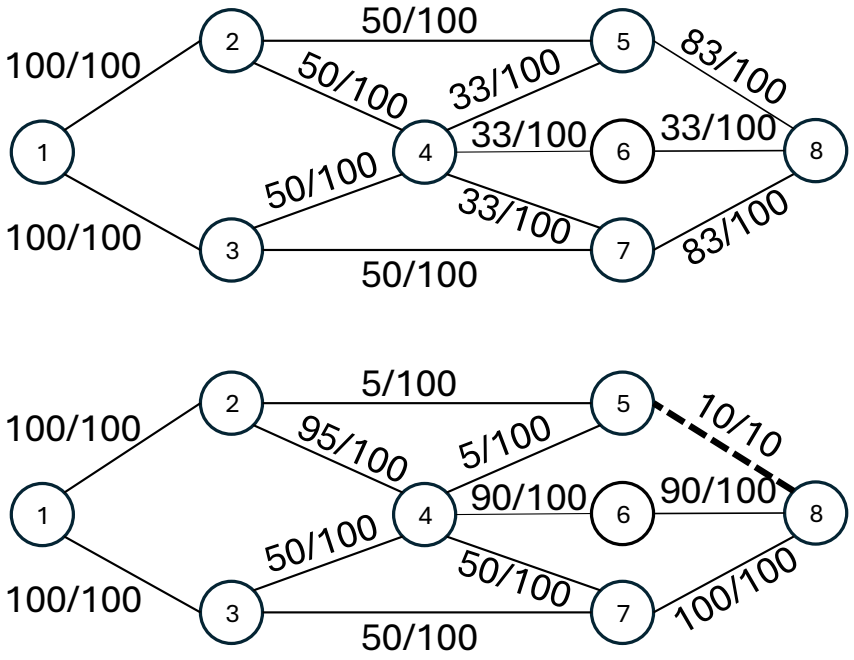
B “LSP” asked not to use black links



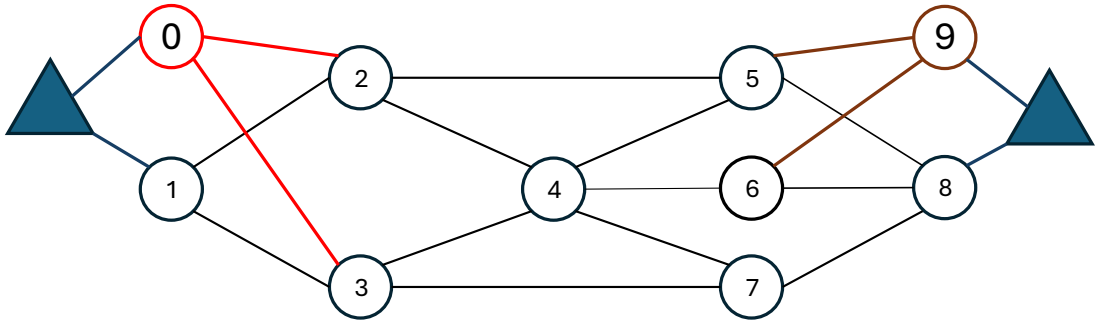
Links with color black

Features of MPTE
proper bandwidth control

weighted multipath



Features of MPTE multi-ingress/multi-egress



Protocols to Provision MPTE DAGs

- -00 version of the base draft suggested using a TCP-based protocol (or a new AFI/SAFI in BGP)
- Much discussion later, we decided on RSVP-TE with new messages
  - Many new techniques have been added to RSVP-TE to improve scalability, reduce signaling and reduce churn (while retaining its “soft state”)
  - A new protocol can slow deployment and cost more in retraining OPS
  - Using RSVP-TE allows incremental deployment (will add more later)
- (There is still background work on BGP for MPTE; will compare when we have a prototype)