Flexible Ethernet (FlexE) In IETF

IETF 98, Chicago, IL, USA
March 26-31, 2017

FlexE Design Team

Presenter: Mach Chen/mach.chen@Huawei.com
FlexE Data Plane at a Glance

• A FlexE interface
  – Is a logical interface and consists of 1 to 254 100GBASE-R Ethernet interfaces
  – Can be channelized into multiple sub-interfaces

• A FlexE link connects two FlexE interfaces
  – The big pipe

• A FlexE sub-link connects two FlexE sub-interfaces
  – The small pipes
FlexE Control Plane Overview

- PCEP extensions for FlexE path computation
- BGP-LS extensions for FlexE link state collection
- RSVP-TE signaling or Segment Routing
- IGP extensions for FlexE link state advertisement
High Level FlexE Architecture

- FlexE DP
- FlexE GMPLS CP
- FlexE Path Computation
- FlexE Segment Routing
- FlexE Link State Distribution/Collection
- FlexE OAM
- FlexE DP
- Policy/Orchestration/Management
- FlexE Link State
- Distribution/Collection

Legend:
- PCE
- CCAMP
- OSPF/ISIS/BGP
- SPRING
- Outside IETF
- Unknown
FlexE with RSVP-TE

Option 1:
- A FlexE Path/LSP is a control plane representation;
- The allocated slots to the path are concatenated through RSVP-TE signaling;
- No MPLS label on the wire;

Option 2:
- An LSP is signaled as normal LSP;
- MPLS Label is used to map to the allocated slots at each hop;
FlexE with Segment Routing

- SR LSPs over the specified FlexE sub-links, by
  - constructing the MPLS Label stack with the specified Adj-SIDs
  - No per-flow state at intermediate nodes (merit of SR)
  - Bandwidth is reserved and guaranteed without RSVP-TE (Reservation is done in PCE/Controller)
Next Steps

• Under Discussion
  – Framework document (CCAMP)
    • Use cases
    • Requirements
    • Architecture
    • Solutions
  
• Next Steps
  – RSVP-TE extension (CCAMP or/and TEAS?)
  – Routing extensions for FlexE
    • OSPF extension (OSPF WG or CCAMP WG ?)
    • ISIS extension (ISIS WG or CCAMP WG ?)
    • BGP-LS extension (IDR)
  – PCEP extensions for FlexE (PCE WG)
  – SR with FlexE (SPRING)
  – FlexE OAM (CCAMP)
  – YANG model (CCAMP)