Update on BIER Architecture and BIER MPLS Encapsulation

- A few changes to the encapsulation

- A few clarifications and corrections to the architecture

Architecture Clarifications

- BIER *domain* definition modified slightly:
  - Clarifies that getting from one BFR to another within a domain might require traversing a non-BFR
  - *Domain* is the scope of the BIER layer control plane
    - E.g., IGP area or IGP network, if IGP is used for BIER layer signaling
- Once BFIR assigns packet to sub-domain, packet remains in that sub-domain until it reaches BFERs; no changing of sub-domains while in flight.

More Architecture Clarifications

- Minor clarifications to forwarding process for the case where a packet reaches one of its BFERs

- Clarification re use of SPF when sub-domain is bound to particular IGP topology (usual case)

  - "Ordinary" SPF is used, producing same tree as for unicast

  - No attempt to route around non-BFRs

  - No attempt to route around mis-provisioned BFRs

    - Mis-provisioning example: a BFR that has not been provisioned with the same BSL as the other BFRs in the sub-domain

Clarification on Some BitStringLength (BSL) Issues

- Introduces distinction between *Imposition BSL* and *Disposition BSL*
    - Imposition: BSL used by BFIR when imposing header
    - Disposition: BSLs used by BFRs when parsing header
- Every BFR must be provisioned with at least one Imposition BSL per sub-domain
- Every BFR must be capable of being provisioned with at least two Disposition BSLs per sub-domain.
    - Disposition BSL is the BSL advertised in the BIER layer signaling
- Allows for easy transition from one BSL to another

More on BSLs

- A BFIR can tell (from BIER layer signaling) whether the Imposition BSL it is using for a particular packet in a particular sub-domain is a Disposition BSL of all BFRs in the sub-domain

- What should BFIR do if it is provisioned to use **X** as Imp-BSL but some BFRs in sub-domain are not provisioned to use **X** as Disp-BSL?
    - Send packet anyway, but log an error (mis-provisioning)
    - Packet may not reach everywhere, but at least it will get somewhere

Encountering a BSL Mismatch in Flight

- If a packet encounters a BSL mismatch while in flight, several *options*:
    - Drop packet
    - Tunnel through BFR that has "wrong" BSL, just as if it were a non-BFR
    - Change BSL of packet (may require duplicating packet)
- No heroic efforts to hide the provisioning error:
    - No change to the SPF computation (does not take BSLs into account)