Design Work of Tunnel Models

IETF 94, Yokohama, Japan

Draft list of Tunnel Models (1)

- IPv6/IPv4 over IPv4 tunnel
  - draft-liu-rtgwg-ipipv4-tunnel-yang
  - draft-zheng-intarea-tunneling-for-ipv6-yang
    - Consolidated as draft-liu-intarea-ipipv4-tunnel-yang
- GRE Tunnel
  - draft-zheng-intarea-gre-yang
  - draft-liu-intarea-gre-tunnel-yang
    - Will be consolidated in the future.
- IPSec/IKE Tunnel
  - draft-wang-ipsecme-ike-yang-00
  - draft-wang-ipsecme-ipsec-yang-00
  - draft-tran-ipecme-yang-ipsec-00
    - Consolidated as draft-tran-ipsecme-yang-00
- VXLAN Tunnel
  - draft-wilton-netmod-intf-vlan-yang
- L2TP Tunnel
  - draft-ietf-l2tpext-keyed-v6-tunnel-yang-00

Draft list of Tunnel Models(2)

- MPLS Tunnels
  - Topology Driven Tunnel
    - LDP LSP: draft-raza-mpls-ldp-mldp-yang
    - SR-BE Path: draft-ietf-spring-sr-yang-01
  - TE Tunnel
    - RSVP-TE Tunnel: draft-ietf-teas-yang-te-00
    - SR-TE Tunnel may reuse draft-ietf-teas-yang-te-00.
    - Static LSP: draft-saad-mpls-static-yang
    - MPLS TP is in plan.
- Generic/Universe Tunnel
  - draft-wwz-netmod-yang-tunnel-cfg: Unify IP Tunnel Models
  - draft-li-rtgwg-utunnel-yang: Universal tunnel operational data for bearing VPN services.
- Tunnel Policy
  - draft-li-rtgwg-tunnel-policy-yang

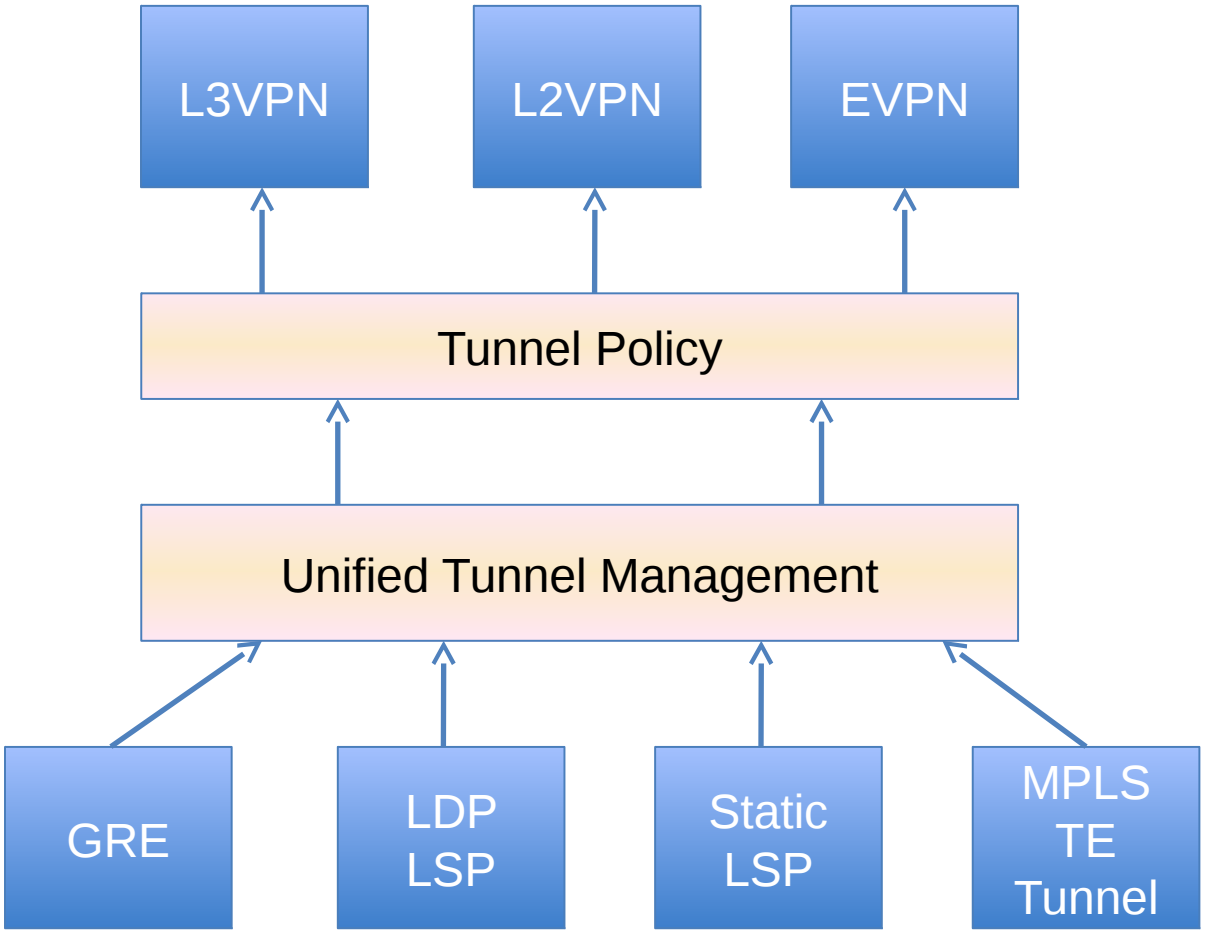
Progress of Design of Tunnel Yang Models

- IP Tunnels
  - There are Yang models for each type of IP Tunnels.
  - The overlapping Yang models for specific tunnel are being consolidated.
  - Yang models of IP Tunnels found appropriate home other than RTGWG.
  - draft-wwz-netmod-yang-tunnel-cfg is to try to unify configurations of several types of IP tunnels.
- MPLS Tunnels
  - The MPLS Yang model design team is developing Yang models in plan including different MPLS Tunnel models.
  - The Yang design work is being done in MPLS WG and TEAS WG.

draft-li-rtgwg-tunnel-policy-yang/draft-li-rtgwg-utunnel-yang

- Requirements of Mapping between Different VPN and Different Tunnel Types
  - Universal tunnel operational data to facilitate search of appropriate tunnels: draft-li-rtgwg-utunnel-yang.
    - It covers operational data of some types of IP tunnels to bear VPN services since not all kinds of IP tunnels will be used to bear VPN services.
    - It can cover operational data of all types of MPLS tunnels for VPN bearing.
  - Flexible mapping policy: draft-li-rtgwg-tunnel-policy-yang.
- The design work is related with multiple WGs of Routing Area. RTGWS should be the appropriate home of these work.

Unified Tunnel Management for Mapping between VPN and Tunnels



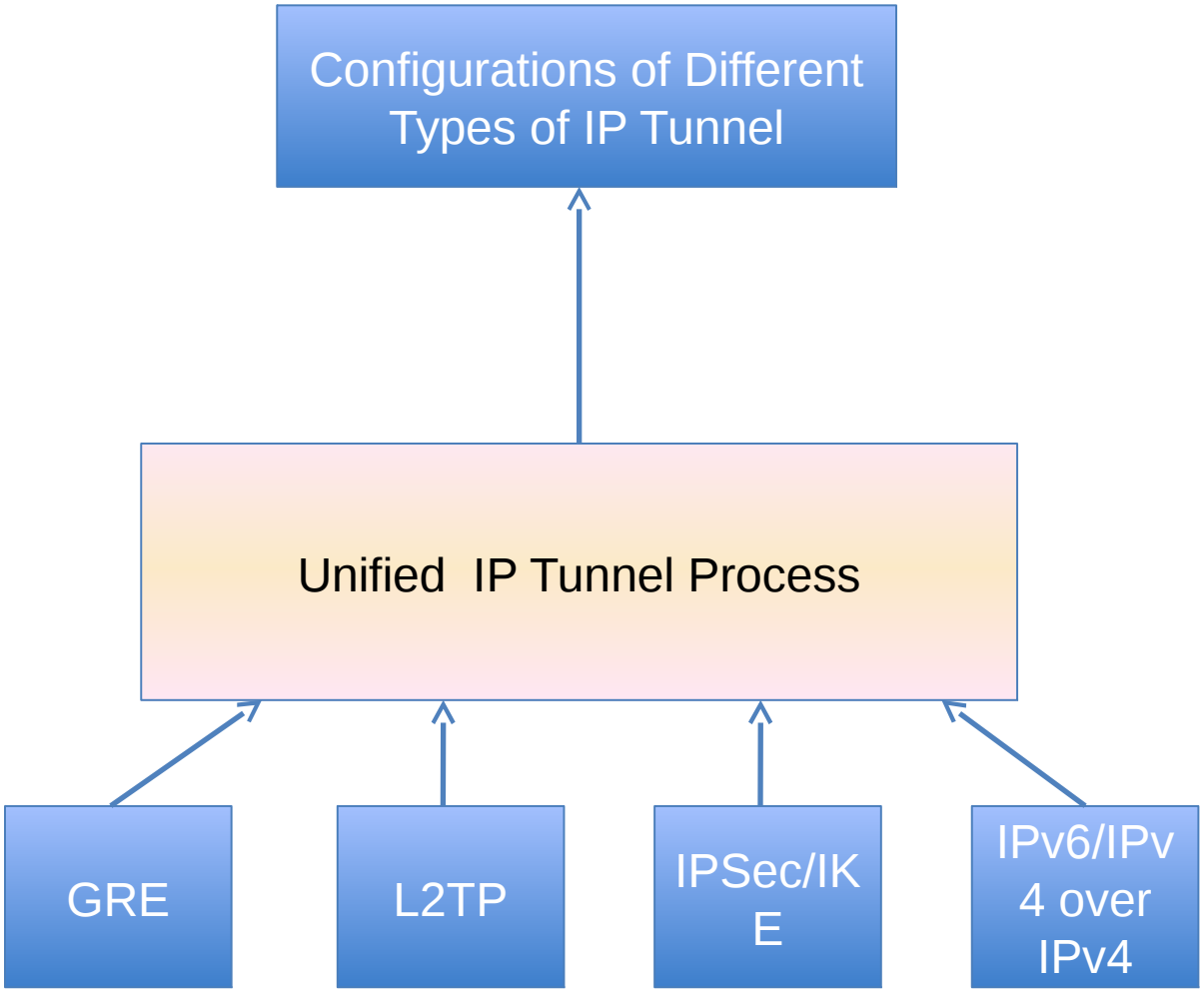
Open Questions (1)

- Should configuration of all or some IP tunnels be unified?
  - Tunnel Design Philosophy from Aijun Wang: The design of tunnel models should from top to down, find the general aspects of every model branch first and augment them with specific technology later.
  - The base YANG model is only abstracted from ip-based tunnels, which MAY include IP-in-IP, GRE, IPSec, L2TP, L2F and ATMP tunnels. Just like what RFC4087 (IP tunnel MIB) does. Separate YANG models should be defined for protocol specific objects and attributes, and should be augmented into the base IP tunnel YANG model. For example, GRE model will only include its specific attributes, and will be augmented from base IP tunnel YANG model.

Open Questions (2)

- Challenges: Is it late?
- Implementation: There may be no hierarchical implementation at the beginning or it has been tried but given up at last owing to following possible reasons:
  - Though these IP tunnels may share common aspects, they may have essentially different usages which is does matter.
  - Different IP tunnels may need more pre-configuration and operational data which are different from each other which is difficult to be accommodated in the module.
  - Common Tunnel modules may need more interaction with modules implementing different types of modules. The complexity may increase as the number of tunnel types. It may need very smart people to understand all possible types of IP tunnels for implementation of the tunnel modules.
- Some Yang models has bee adopted by WG without thinking about the unifying IP tunnel models such as L2TP. If necessary, how to coordinate the work?

Unified IP Tunnels Process



Next Steps

- Solicit comments and go on to consolidate the possible Yang models of different IP tunnels. Will RTGWG be the home for the discussion?
- Promote draft-li-rtgwg-tunnel-policy-yang and draft-li-rtgwg-utunnel-yang in RTGWG WG.