

BIER Use Cases

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Use Cases

- Multicast VPN
- IPTV
- Data Center Virtualization

Multicast in L3VPN

- Trade-off between optimality and scalability.
 - For optimal forwarding, more multicast state entries would be required in the core (e.g., S-PMSI). Otherwise, multicast traffic would have to be delivered unnecessarily to some unintended egress PE routers (e.g., I-PMSI).
 - Ingress replication doesn't require any state entry in the core, but it would consume more bandwidth, especially when the number of intended egress PE is large .
- BIER provides an optimal forwarding scheme W/O requiring per flow/VPN state entries in the core.
 - A single bit position for each egress PE.

IPTV

- BIER provides an simplified IPTV multicast forwarding scheme W/O requiring per channel (e.g., (*,G) or (S,G)) state entries in the core.
 - A single bit position for each last-hop DR.
 - No change to multicast sources and receivers (e.g., end hosts).
 - No change to egress node if the ingress node has been configured with all possible egress nodes for a given channel.

DC Virtualization

- In a multi-tenant DC (e.g., using VXLAN as a layer2 overlay technology), it would require 16M multicast groups in the underlay with each dedicated for a given VN instance.
 - Otherwise, by sharing a multicast group among multiple VN instances, it would cause the BUM traffic of a given VN to be unnecessarily flooded to unintended NVEs.
- Ingress replication would result in a serious bandwidth waste in the underlay and a significant replication burden on ingress NVEs.
- BIER provides an optimal forwarding scheme for overlay BUM traffic W/O requiring per VN state entries in the underlay.
 - A single bit position for each egress NVE.

Thank you!

Questions/Comments?