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# BGP Color-Aware Routing (CAR)

## draft-ietf-idr-car-02

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# Context

- Adopted by WG at IETF 114
- Broad multi-vendor support, two interoperable implementations
- Draft updated to address adoption issues, clarifications
- Preparation for WGLC
  - Draft updates
  - Implementation report

# Draft Updates - CAR SRv6 support

- Service steering over BGP CAR SRv6 multi-domain paths
  - Cases as per RFC 9252

- Routed Service SID
  - SRv6 Locator or Summary IPv6 prefix reachability via BGP CAR ( E )
  - Routable prefixes, IPv6 longest-prefix match forwarding
  - BGP specific or IGP-FlexAlgo shared per-intent locators
  - Advertisement from BRs (redistribution from IGP-FlexAlgo), or from PE

- Non-routed Service SID
  - SR-Policy redistributed into BGP CAR (E, C)

# CAR SRv6 Deployment Designs

- Routed SID
  - Use of widely deployed BGP routing designs
  - Hop-by-hop routing based
    - PE, BR and P routers learn and install eBGP CAR SRv6 locator/summary routes
    - No intra-domain encapsulation needed
    - Recursive resolution via IGP-FlexAlgo to eBGP next-hop
  - Encapsulation based (BGP-free core)
    - Only PEs and BRs learn and install eBGP SRv6 locator/summary routes
    - Shared End SID of BGP next-hop provides encapsulation for all BGP SRv6 routes of a given intent
- Non-routed SID
  - Distribution of (E, C) BGP CAR routes to ingress PEs from egress BRs
  - Underlay reachability to egress BRs via locator prefix routes
  - Recursive resolution at ingress PEs to build encapsulation based on SIDs

# CAR SRv6 - IPv6 Prefix Route

- New route-type: IP Prefix as key ( E )
  - IP Prefix == Intent
  - Routable, installed in IPv6 forwarding table
  - Route processing semantics same as RFC 4271, RFC 2545 (IPv6 Unicast)
  - Consistent CAR semantics for color-aware next-hop/SID selection, resolution, route policies, AIGP
    - Route E2E color carried in LCM-EC
  - Complete reuse of well-known, existing BGP routing and CAR mechanisms

- Use-cases
  - SRv6 locator distribution
  - Best effort transport path (~BGP-LU)

# Operational benefits of CAR SAFI for SRv6 locator distribution

- Separate SAFI for infrastructure prefixes
  - Avoids overloading IPv6 Unicast SAFI that carries service (Internet) prefixes
- Automatic separation of routes
  - Avoids need for route filtering policies for separation
  - Enables infrastructure route prioritization

# Links

- WG adoption call issues & comments

https://github.com/ietf-wg-idr/draft-ietf-idr-bgp-car/blob/working_tree/github_issues_update.txt

- Implementation Report

https://wiki.ietf.org/group/idr/implementations/draft-ietf-idr-bgp-car

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