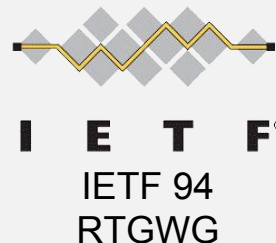# A Data Model for Locally Generated Routes

OpenConfig network operator working group
www.openconfig.net

draft-openconfig-rtgwg-local-routing-00

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# Locally generated routes

- routes that are created by configuration, not dynamic routing protocols

- may be redistributed via dynamic routing protocols, or advertised to neighbors similarly to routes learned via routing protocols.

- examples: static routes, aggregate routes, summary routes

- common in many operational contexts

# Modeling locally generated routes

On many implementations
- statics, aggregates, etc. are defined with protocol-specific attributes
- tags, communities, etc. are specified as part of definition

Ex: BGP-specific command on IOS-XR

```
aggregate-address address/mask-length [ as-set]
[as-confed-set] [summary-only] [route-policy
route-policy-name ]
```

Ex: JUNOS aggregate definition

```
aggregate {
    defaults {
            ... aggregate-options …
    }
    route destination-prefix {
        policy policy-name;
        ... aggregate-options …
    }
}
```

allows setting BGP attributes

# Modeling locally generated routes (contd)

- allowing arbitrary protocol-specific parameters on locally generated routes is problematic
  - assumes implementation and data structure flexibility that may not be present

- instead, model all locally generated routes as 'bare' routes
  - rely on policy to set attributes and redistribute between protocols
  - leverage the policy framework defined in `draft-ietf-rtgwg-routing-policy`

# Model structure

static routes

```
+--rw local-routes
   +--rw static-routes
      +--rw static* [prefix]
         +--rw prefix -> ../config/prefix
         +--rw config
         |  +--rw prefix?
         |  +--rw next-hop*
         |  +--rw set-tag?
```

local aggregates

```
+--rw local-routes
   +--rw local-aggregates
      +--rw aggregate* [prefix]
      +--rw prefix    -> ../config/prefix
         +--rw config
         |  +--rw prefix?   inet:ip-prefix
         |  +--rw discard?   boolean
         |  +--rw set-tag?   pt:tag-type
```

● generic route tags to allow filtering or control over import / export

● aggregate route 'discard' option to black-hole traffic destined for aggregate when no specific routes are present

● model follows operational state structure defined in draft-openconfig-netmod-opstate

# Next steps

- requesting feedback and suggestions

- generating additional examples to illustrate usage and interaction with policy, networking instances, and routing protocols

- currently working with several vendors to implement support