Yang Data Model for Routing Policy
draft-yan-rtgwg-routing-policy-yang-00

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Introduction

- This document defines a YANG data model that can be used to configure and manage routing policies.

- Routing policies serve the following purposes:
  - Control route advertising
  - Control route receiving
  - Filter and control imported routes
  - Modify attributes of specified routes Attributes of the routes
  - Configure fast reroute (FRR)
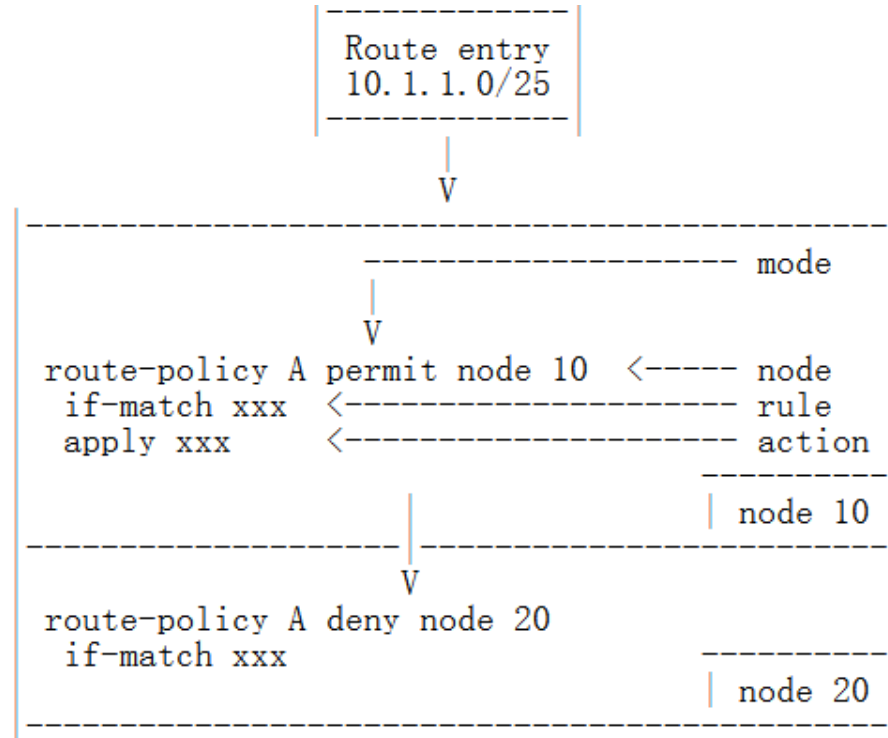
Design of Data Model

```
module: routing-policy
  +--rw routing-policy
     +--rw asPathFilters
     ...
     +--rw communityFilters
     ...
     +--rw extendCommunityFilters
     ...
     +--rw extendCommunitySooLists
     ...
     +--rw rdFilters
     ...
     +--rw prefixFilters
     ...
     +--rw ipv6PrefixFilters
     ...
     +--rw routePolicys
        +--rw routePolicy* [name]
           +--rw name                    string
           +--rw routePolicyNodes
              +--rw routePolicyNode* [nodeSequence]
                 +--rw nodeSequence      uint32
                 +--rw matchMode?        enumeration
                 +--rw description?      string
                 +--ro matchCount?       uint32
                 +--rw matchCondition
                 |  +--rw matchCostValue              uint32
                 ...
                 |  +--rw matchExtCmntySooList?        string
                 +--rw applyAction
                    +--rw applyAsPaths
                    ...
                    +--rw applyPriorityValue          uint16
```

- The routing policy Yang module is divided in following containers :
  - asPathFilters
  - ACLFilters
  - communityFilters
  - extendCommunityFilters
  - extendCommunitySooLists
  - rdFilters
  - prefixFilters
  - ipv6PrefixFilters
  - **routePolicys**: A Route-Policy is a complex filter. A Route-Policy can use the preceding filters to define its matching rules.

Composition of a Route-Policy

- A Route-Policy consists of node IDs, matching mode, if-match clauses, and apply clauses.
  - Node ID: A Route-Policy consists of one or more nodes.
  - Matching mode: 1) permit; 2) deny.
  - if-match clause: The if-match clause defines the matching rules.
  - apply clause: The apply clauses specify actions.

- Matching results of a Route-Policy:
  - The matching results of a Route-Policy are obtained based on the following aspects:
    1. Matching mode of the node, either permit or deny
    2. Matching rules (either permit or deny) contained in the if-match clause (such as ACLs or IP prefix lists)

```
          --------------
         | Route entry  |
         | 10. 1. 1. 0/25|
          --------------
                |
                V
  ------------------------------------------------
                --------------------- mode
                  |
                  V
  route-policy A permit node 10  <----- node
    if-match xxx   <-------------------- rule
    apply xxx      <-------------------- action
                                        ----------
                                       | node 10
  --------------------  --------------------
                  V
  route-policy A deny node 20
    if-match xxx
                                        ----------
                                       | node 20
  ------------------------------------------------
```

Route-Policy Configuration

```
+--rw routePolicys
   +--rw routePolicy* [name]
      +--rw name                    string
      +--rw routePolicyNodes
         +--rw routePolicyNode* [nodeSequence]
            +--rw nodeSequence      uint32
            +--rw matchMode?        enumeration
            +--rw description?      string
            +--ro matchCount?       uint32
            +--rw matchCondition
            |  +--rw matchCostValue               uint32
            ...
            |  +--rw matchExtCmntySooList?         string
            +--rw applyAction
               +--rw applyAsPaths
               ...
               +--rw applyPriorityValue           uint16
```

- A Route-Policy is a complex filter. It is used to match attributes of specified routes and change route attributes when specific conditions are met.
- A Route-Policy can use the following filters to define its matching rules:
  - asPathFilters, ACLFilters, communityFilters, extendCommunityFilters, extendCommunitySooLists , rdFilters , prefixFilters, ipv6PrefixFilters

Next Steps

- Request for suggestions
- Solicit comments and collaboration