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# **A YANG Data Model for Routing Management**

`draft-ietf-netmod-routing-cfg-17`

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# I-D Status

The document is now long overdue.

In -17, the data model was reduced to a bare minimum: features were left in the model only if they are required by all implementations and/or cannot be added by augmentation.

Discussions took place in the `rtg-yang-coord` mailing list.

# Major Changes Between -16 and -17

- Route filters were completely removed. A data model of a route filtering framework will be addressed separately by routing experts.
- Numeric IDs of list entries in state data were removed – they can be added via augmentation when needed.
- Choice of next-hop cases was considerably reduced.
- Feature “multipath-routes” was removed.

# Next-Hop Choice

Only two next-hop cases remained in both RIBs (state data) and configuration of static routes.

Next-hop in RIB routes:

```
+--ro next-hop
|  +--ro (next-hop-options)
|    +--:(simple-next-hop)
|      |  +--ro outgoing-interface?
|      |  +--ro v6ur:next-hop-address?
|      |  +--ro v4ur:next-hop-address?
|      +--:(special-next-hop)
|        +--ro special-next-hop?
```

More complicated next-hop cases (ECMP, recursive next-hops) can be added by augmenting the next-hop-options schema node.

# Instance- v. Protocol-Centric Design

## routing-instance-centric

```
+--rw routing-instance*
|  +--rw name
|  +--rw type?
|  ...
|  +--rw routing-protocols
|     +--rw routing-protocol*
|         +--rw type
|         +--rw name
|         ...
```

Used by Juniper, Alcatel-Lucent  
(and *ietf-routing*).

## routing-protocol-centric

```
+--rw routing-protocol*
|  +--rw name
|  +--rw type?
|  ...
|  +--rw routing-instances
|     +--rw routing-instance*
|         +--rw type
|         +--rw name
|         ...
```

Instance means VRF. Used by  
Cisco, Brocade, HP, Huawei.

NETMOD WG: strong consensus for keeping the routing-instance-centric design.

# RIB List Placement

## global

```
+--rw routing-instance*
|  +--rw name
|  +--rw type?
|  ...
+--rw ribs
    +--rw rib*
        +--rw name
        +--rw address-family
    ...
```

## per routing-instance

```
+--rw routing-instance*
    +--rw name
    +--rw type?
    ...
    +--rw ribs
        +--rw rib*
            +--rw name
            +--rw address-family
    ...
```

Proposal: Define the ribs list inside routing-instance.

# Other Proposed Changes

1. Remove configurable connections of routing protocols to RIBs, and connections between RIBs.
2. Assign interfaces to routing-instances inside interface configuration; provide backward links (routing-instance→interfaces) as state data.
3. Move IPv6 RA parameters under `interface` as well, both in configuration and state.

# Next Steps

- Stabilisation of the core routing data model is needed – many groups are developing data models on top of it.
- Benoît Claise suggested to postpone publication of the I-D until routing protocols data models etc. are developed on top of it.