

# YANG Data Model for ARP

*RTGWG IETF 101*

draft-ding-rtgwg-arp-yang-model-01

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# Recap

- This draft was firstly discussed in last RTGWWG meeting in Singapore and there was agreement to proceed this work in RTGWWG working group.
- After IETF 100 Singapore meeting, comments were received from *Reshad Rahman* and *Robert Wilton* from Cisco in rtgwwg mailing list, *Alex Campbell* from *Aviatnet* in the netmod mailing list.
- Update since last IETF 100:
  - Aligned with RFC 7223bis & RFC 7277bis
  - Removed VRF related parameters in version -00
  - Clarified the relationship of static ARP entries configuration in RFC 7277bis
  - NMDA compliant
  - New co-author (Robert Wilton)

# Why this draft in RTGWG

- Different vendor has different private YANG module to implement ARP functions(e.g., aging (timeout(vendor A), expire-time(vendor B)), interval (detect-interval(vendor A), arp-interval(vendor B))).
- Each private model requires vendor specific mapping.
- Service providers need many interoperability test tool to manipulate massive devices running proprietary ARP from various different vendors.
- This YANG model will be useful for service providers running BNGs (Broadband network gateway) with **tens of thousands of subscribers** per BNG which perform proxy ARP.

# Model Overview

## Static ARP entries

```
module: ietf-arp
  +--rw arp
  |
  |  +--rw global-static-table {global-static-table}?
  |  |  +--rw static-entry* [ip-address]
  |  |  |  +--rw ip-address      inet:ipv4-address-no-zone
  |  |  |  +--rw mac-address    yang:mac-address
  |  |
  |  |  +--ro statistics
  |  |  |  +--ro in-requests-pkts?      uint64
  |  |  |  +--ro in-replies-pkts?       uint64
  |  |  |  +--ro in-gratuitous-pkts?     uint64
  |  |  |  +--ro out-requests-pkts?     uint64
  |  |  |  +--ro out-replies-pkts?      uint64
  |  |  |  +--ro out-gratuitous-pkts?   uint64
  |  |  |  +--ro in-drops?              uint64
  |  |  |  +--ro in-total?              uint64
  |  |  |  +--ro out-total?            uint64
  |  |  |  +--ro all-dynamic-pkts?     uint64
  |  |  |  +--ro all-static-pkts?      uint64
```

Global statistics    Local statistics

Statistics

## Dynamic ARP learning

```
submodule: ietf-arp-dynamic-learning (belongs-to ietf-arp)
  augment /if:interfaces/if::interface:
    +--rw arp-dynamic-learning
    |  +--rw expire-time?      uint32
    |  +--rw learn-disable?   boolean
    |  +--rw proxy-enable?    boolean
    |  +--rw if-limit* [vlan-id]
    |  |  +--rw vlan-id        uint16
    |  |  +--rw limit-number   uint32
    |  |  +--rw threshold-value? uint32
    |  +--rw probe
    |  |  +--rw interval?     uint8
    |  |  +--rw times?       uint8
    |  |  +--rw unicast?     boolean
    |  +--rw gratuitous
    |  |  +--rw gratuitous-enable? boolean
    |  |  +--rw interval?     uint32
    |  |  +--rw drop?        boolean
    |
    |  +--ro statistics
    |  |  +--ro in-requests-pkts?      uint64
    |  |  +--ro in-replies-pkts?       uint64
    |  |  +--ro in-gratuitous-pkts?     uint64
    |  |  +--ro out-requests-pkts?     uint64
    |  |  +--ro out-replies-pkts?      uint64
    |  |  +--ro out-gratuitous-pkts?   uint64
    |
    |  augment /if:interfaces/if::interface/ip:ipv4/ip:neighbor:
    |  |  +--ro remaining-expire-time?  uint32
```

Query of ARP entries

# Next Steps

- Have addressed comments received so far.
- Ask for WG adoption