

A YANG Data Model for NTP

draft-wu-ntp-ntp-cfg-02



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Introduction

Yang Data Model

Management of NTP
demon – client and server

Configurations

State

NTP as per RFC 5905

Most features of NTPv4 are
covered

Extensions

Auto-key

New Author

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Ankit, Dhruv (*new recruits*)

Recent Changes

Non Standard Port

- Port leaf added

Authentication

- A list of 'trusted' keys
- Auto-key

Association

- Handling of association-type

Interface

- Multicast etc

Non Standard Port

- New leaf for non-standard Port configuration
 - This leaf can enhance NTP security

```
module: ietf-ntp
  +-rw ntp-cfg!
  | +-rw ntp-enabled?      boolean
  | +-rw port?            uint16
  | +-rw refclock-master
  | | +-rw master?        boolean
  | | +-rw master-stratum? ntp-stratum
  +-rw authentication!
  | +-rw auth-enabled?      boolean
  | +-rw trusted-keys* [key-id]
  | | +-rw key-id          leafref
  | +-rw authentication-keys* [key-id]
  | | +-rw key-id          uint32
  | | +-rw algorithm?      enumeration
  | | +-rw password?       ianach:crypt-hash
  +-rw autokey
  | +-rw automax?         uint8
  | +-rw crypto
  | | +-rw digest?        enumeration
```

Authentication

- A list of trusted keys
 - as there can be more than one trusted key
- New container for Auto-key

```
module: ietf-ntp
  +--rw ntp-cfg!
  |   +--rw ntp-enabled?      boolean
  |   +--rw port?            uint16
  |   +--rw refclock-master
  |   |   +--rw master?      boolean
  |   |   +--rw master-stratum? ntp-stratum
  |   +--rw authentication!
  |   |   +--rw auth-enabled?      boolean
  |   |   +--rw trusted-keys* [key-id]
  |   |   |   +--rw key-id      leafref
  |   |   |   +--rw authentication-keys* [key-id]
  |   |   |   |   +--rw key-id      uint32
  |   |   |   |   +--rw algorithm? enumeration
  |   |   |   |   +--rw password?  ianach:crypt-hash
  |   |   +--rw autokey
  |   |   |   +--rw automax?      uint8
  |   |   |   +--rw crypto
  |   |   |   |   +--rw digest?    enumeration
```

Association

- Association-type
 - Server
 - Peer
 - Pool
- Auto-Key Container

```
+--rw associations* [address vrf]
  +--rw version?      ntp-version
  +--rw address       inet:host
  +--rw association-type? enumeration
  +--rw authentication
    +--rw (authentication-type)?
      +--:(symmetric-key)
        | +--rw key-id?    leafref
        | +--:(auto-key)
        |   +--rw auto-key? empty
      +--rw minpoll?      ntp-minpoll
      +--rw maxpoll?      ntp-maxpoll
      +--rw prefer?       boolean
      +--rw burst?        boolean
      +--rw iburst?       boolean
      +--rw vrf           string
      +--rw source?      -> /if:interfaces/interface/name
```

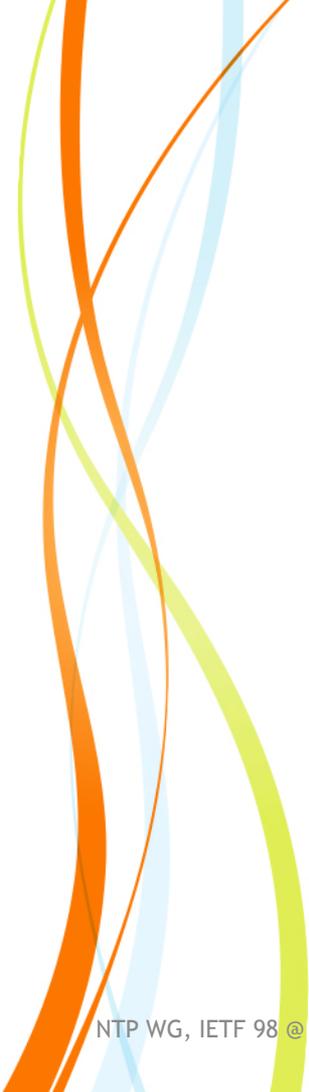
Interface

- Interface
 - Broadcast and multicast server is added in same container
 - as mode of operation is same (mode 5)
 - Added with auto-key configuration option
 - New container for manycast server and client

```
+--rw ntp-interfaces
+--rw ntp-interface* [ntp-ifname]
+--rw ntp-ifname
|   -> /if:interfaces/interface/name
+--rw broadcast-multicast-server
+--rw address?          inet:ip-address
+--rw ttl?              uint8
+--rw version?          ntp-version
+--rw authentication
|   +--rw (authentication-type)?
|   |   +--:(symmetric-key)
|   |   |   +--rw key-id?      leafref
|   |   +--:(auto-key)
|   |   |   +--rw auto-key?    empty
|   +--rw minpoll?      ntp-minpoll
+--rw broadcast-client
+--rw broadcast-client-enabled?  boolean
+--rw multicast-client
|   +--rw multicast-client-address?  union
+--rw manycast-server
|   +--rw address?      inet:ip-address
+--rw manycast-client
+--rw address?          inet:ip-address
+--rw version?          ntp-version
+--rw authentication
|   +--rw (authentication-type)?
|   |   +--:(symmetric-key)
|   |   |   +--rw key-id?      leafref
|   |   +--:(auto-key)
|   |   |   +--rw auto-key?    empty
+--rw ttl?              uint8
+--rw minpoll?          ntp-minpoll
+--rw maxpoll?          ntp-maxpoll
+--rw minclock?         uint8
+--rw maxclock?         uint8
+--rw beacon?           uint8
```

Next Step

- Some Open Issues
 - Need for NTP state enhancement for manageability, statistics etc
- Draft is ripe for WG Adoption.
- More reviews
 - Review comments are always welcome!



Thank You!