draft-ietf-6tisch-6top-interface-02

Qin Wang (Ed.)
Xavier Vilajosana
Thomas Watteyne

Scope

Apps

6top CoAP

CoAP

UDP

RPL

6LoWPAN

6top sublayer

IEEE802.15.4e **TSCH**

IEEE802.15.4 (PHY)

Platforms

draft-ietf-6tisch-6top-interface

draft-wang-6tisch-6top-sublayer
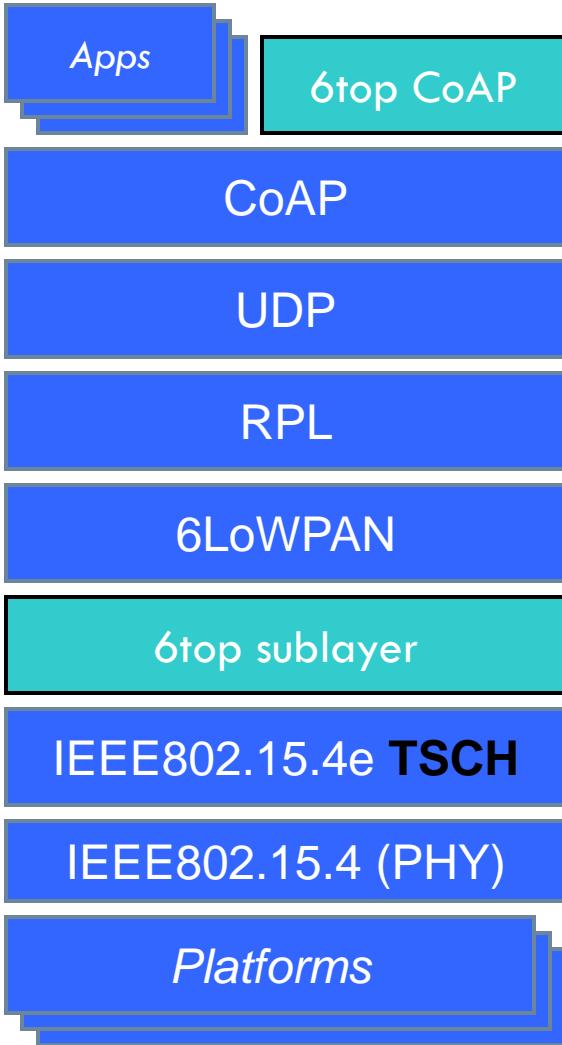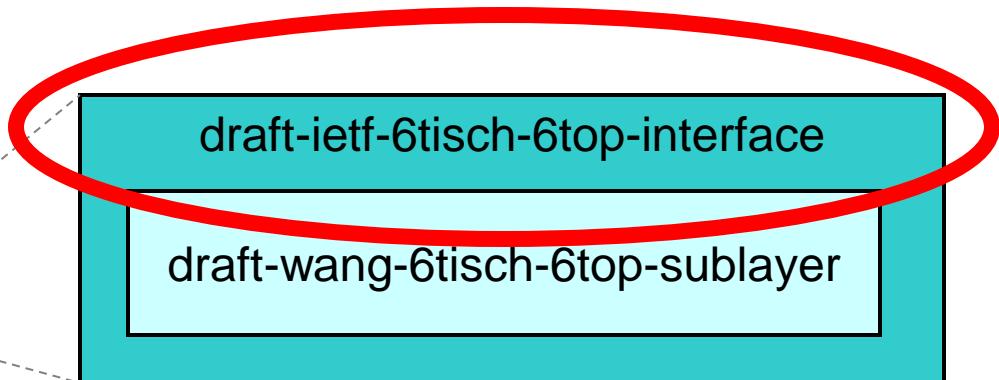
Contents:
• some "tweaks" to IEEE802.15.4e-2012:
  • hard/soft cells
  • queuing
• conceptual interface
(function upper layer can call)
• **generic YANG data model**

Status

- ## Status:

  - Adopted at IETF89 London

  - Latest version (draft-ietf-6tisch-6top-interface-02) published on October 27, 2014 https://datatracker.ietf.org/doc/draft-ietf-6tisch-6top-interface/

- ## Changes since IETF90

  - Minor fixes with respect to 15.4e variable types

  - Added monitoring to MAC counters

  - YANG model validation (YANG doctor)

Changes since IETF90

- YANG model validation (YANG doctor) → see next slide
- Minor fixes with respect to 15.4e variable types
  - e.g. channelOffset is "type uint16", not "type uint8"
- Added monitoring to MAC counters
  - macCounterOctets
  - macRetryCount
  - macMultipleRetryCount
  - macTXFailCount
  - macTXSuccessCount
  - macFCSErrorCount
  - macSecurityFailure
  - macDuplicateFrameCount
  - macRXSuccessCount
  - macNACKcount

YANG Model Validation

1. use min-elements constraint
2. use type leafref { path " " }
3. use mandatory true
4. use range "1..max"
5. use default
6. use must
7. use unique
8. define type nodeaddresstype

→ next revision "very soon"

Remarks [1/2]

- We need reviewers to verify this interface is complete
  - "can I manage a IEEE802.15.4e TSCH network with this interface?"

Remarks [2/2]

- No security-related elements for the moment
  - Waiting for security DT to add a list of elements
  - Probably not blindly exposing the IEEE802.15.4-2011 security related

- FYI, 11 Security-related MAC PIB attributes defined in Table 60:
  - macKeyTable, macDeviceTable, macSecurityLevelTable, macFrameCounter, macAutoRequestSecurityLevel, macAutoRequestKeyIdMode, macAutoRequestKeySource, macAutoRequestKeyIndex, macDefaultKeySource, macPANCoordExtendedAddress, macPANCoordShortAddress

Questions [1/3]

- Should we expose PIB attributes through YANG interface?

  - 52 MAC PIB attributes defined in 6.4.2 of IEEE802.15.4-2011

  - aBaseSlotDuration, aBaseSuperframeDuration, aGTSDescPersistenceTime, aMaxBeaconOverhead, aMaxBeaconPayloadLength, aMaxLostBeacons, aMaxMACSafePayloadSize, aMaxMACPayloadSize, aMaxMPDUUnsecuredOverhead, aMaxSIFSFrameSize, aMinCAPLength, aMinMPDUOverhead, aNumSuperframeSlots, aUnitBackoffPeriod, macExtendedAddress, macAckWaitDuration, macAssociatedPANCoord, macAssociatedPANCoord, macAutoRequest, macBattLifeExt, macBattLifeExtPeriods, macBeaconPayload, macBeaconPayloadLength, macBeaconOrder, macBeaconTxTime, macBSN, macCoordExtendedAddress, macCoordShortAddress, macDSN, macGTSPermit, macMaxBE, macMaxCSMABackoffs, macMaxFrameTotalWaitTime, macMaxFrameRetries, macMinBE, macLIFSPeriod, macSIFSPeriod, macPANId, macPromiscuousMode, macRangingSupported, macResponseWaitTime, macRxOnWhenIdle, macSecurityEnabled, macShortAddress, macSuperframeOrder, macSyncSymbolOffset, macTimestampSupported, macTransactionPersistenceTime, macTxControlActiveDuration, macTxControlPauseDuration, macTxTotalDuration,

  - Options: none, all, selection

Questions [2/3]

- Currently, YANG mode describes all components of 6top:
  - Soft cells
  - Chunks
  - Tracks
  - Label switching

  unlikely that all nodes will require all options all the time

- Allow for nodes to implement only a subset of the features?
  - Use YANG feature
  - Add discovery mechanism

Questions [3/3]

- Protocol to interact with YANG data model?
- Options
  - Remotely ("centralized management" → PCE)
    - draft-ietf-6tisch-coap
    - draft-vanderstok-core-comi
  - neighbor-to-neighbor ("distributed management")
    - draft-wang-6tisch-6top-coapie

- → outcome discussion on Wednesday 11/12