



8 September 2017 Webex

IPv6 over the TSCCH mode of IEEE 802.15.4

Chairs:

Pascal Thubert

Thomas Watteyne

Etherpad for minutes:

<http://etherpad.tools.ietf.org:9000/p/6tisch?useMonospaceFont=true>

Note Well

This summary is only meant to point you in the right direction, and doesn't have all the nuances. The IETF's IPR Policy is set forth in BCP 79; please read it carefully.

The brief summary:

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- You understand that meetings might be recorded, broadcast, and publicly archived.

For further information, talk to a chair, ask an Area Director, or review the following:

- BCP 9 (on the Internet Standards Process)
- BCP 25 (on the Working Group processes)
- BCP 78 (on the IETF Trust)
- BCP 79 (on Intellectual Property Rights in the IETF)

Reminder:

Minutes are taken *

This meeting is recorded **

Presence is logged ***

* Scribe; please contribute online to the minutes at:

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*** From the Webex login



Agenda [7min]

- Administrivia
 - Agenda bashing, Approval minutes from last meeting, Addressing todo's
 - IETF 99 summary
- draft-ietf-6tisch-dtsecurity-zerotouch-join (Michael) [10min]
 - Agree on reshaping and renaming
- draft-vanderstok-core-coap-est (Peter, Michael) [10min]
 - Need and applicability for 6TiSCH
- 6P finalization (Xavi, Qin) [15min]
 - Issues discussed at IETF 99
 - Prepare for WGLC
- SFx finalization (Diego) [5min]
- RPL+6TiSCH (Thomas) [10min]
 - Local Repair without desync
- AOB [3min]

IETF 99 to-do's

- Xavi and Qin to publish an update to 6P
- Diego to publish SF0 as Experimental SFx
- XXX to start a draft at ROLL for join preference
- Milestones update (next slide)

Milestones

Before

Date	Milestone
Dec 2017	6TiSCH architecture and terminology in RFC publication queue
Apr 2017	Initial submission of 6TiSCH architecture to the IESG draft-ietf-6tisch-architecture
Apr 2017	Initial submission of 6TiSCH terminology to the IESG draft-ietf-6tisch-terminology
Dec 2016	Evaluate WG progress, propose new charter to the IESG
Dec 2016	Initial submission of draft-ietf-6tisch-6top-sf0 to the IESG
Dec 2016	Initial submission of draft-ietf-6tisch-6top-protocol to the IESG draft-ietf-6tisch-6top-protocol

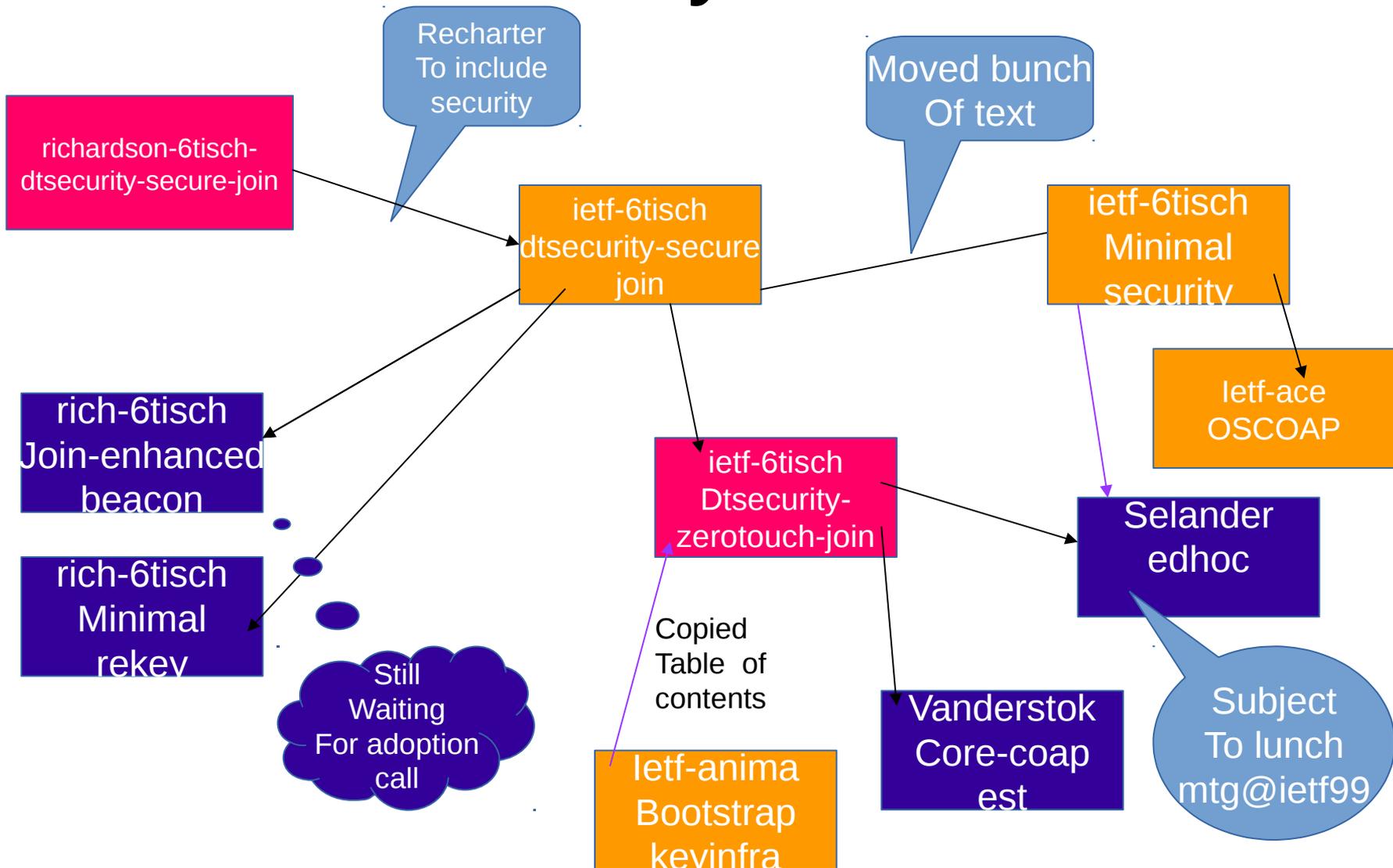
After

Date	Milestone
Dec 2018	6TiSCH architecture and terminology in RFC publication queue
Nov 2018	Initial submission of 6TiSCH architecture to the IESG draft-ietf-6tisch-architecture
Oct 2018	Initial submission of 6TiSCH terminology to the IESG draft-ietf-6tisch-terminology
Jul 2018	Initial submission of draft-ietf-6tisch-dtsecurity-zerotouch-join to the IESG draft-ietf-6tisch-dtsecurity-zerotouch-join
Feb 2018	Initial submission of draft-ietf-6tisch-minimal-security to the IESG draft-ietf-6tisch-minimal-security
Oct 2017	Initial submission of draft-ietf-6tisch-6top-sfx to the IESG draft-ietf-6tisch-6top-sfx
Oct 2017	Initial submission of draft-ietf-6tisch-6top-protocol to the IESG draft-ietf-6tisch-6top-protocol



draft-ietf-6tisch-dtsecurity- zerotouch-join

The story so far



The story in words

- Renamed document from “secure-join” to “zerotouch-join” to reflect focus.
- Re-organized document to be 1:1 with ANIMA’s BRSKI document
 - (as I promised I would do in the spring)
- Renewed doubt whether/where EDHOC will progress. EDHOC is optional for minimal-security, but a MUST for zerotouch.

Use of EST/COAP

- P.Vanderstok and co. have core-coap-est to map HTTP to minimal CoAP methods.
 - Significant interest in this from less constrained systems (WiSun, building lighting) that still use constrained networks.
 - *This group is also okay with using DTLS*
- Originally planned to copy&paste from core-coap-est into zerotouch-join, but instead will ***normatively*** reference.

DTLS and EDHOC

- Zerotouch-join needs an application layer key management protocol that works with CoAP.
 - EDHOC is the obvious candidate
 - CoAP/DTLS will be an alternative



Links for the viewers at home

ietf-6tisch-dtsecurity-secure-join → ietf-6tisch-dtsecurity-zerotouch-join

<https://goo.gl/7NKmE6>

Draft-ietf-anima-bootstrapping-keyinfra-07 →

<https://bitbucket.org/6tisch/draft-richardson-6tisch-dtsecurity-secure-join/raw/b84347549d469806067cf60b323444f97a98ee83/dtsecurity-zerotouch-join.txt>

For diff: <https://goo.gl/mc7S2q>

ID posted to datatracker
Is still in limbo until
Rename is approved

Questions to WG

1. Do you agree with the renaming of the document?
2. Do you agree with the restructuring of the document?
3. Do you agree with making DTLS optional?
4. Do you agree with normative reference to core-coap-est?

draft-vanderstok-core-coap- est



draft-ietf-6tisch-6top-protocol

Updates on the draft

- Comments received during the IETF 99
 - Signal command would be useful to support specific SF commands transparently to 6P
 - Generation numbers use is redundant with SeqNum.
- Open discussion:
 - Relocation behaviour

Signal Command

- Added SIGNAL Command.

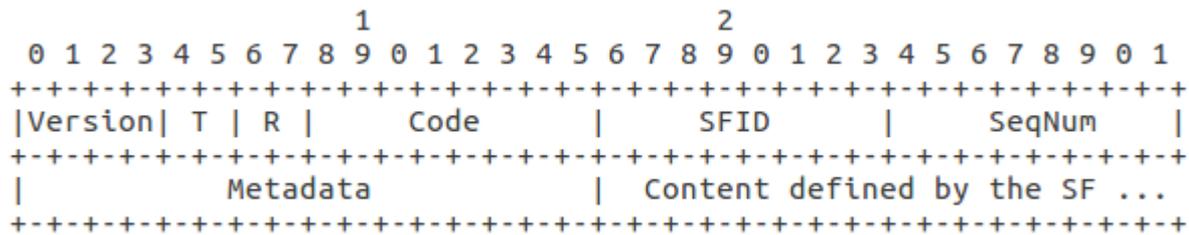


Figure 20: 6P SIGNAL Request Format.

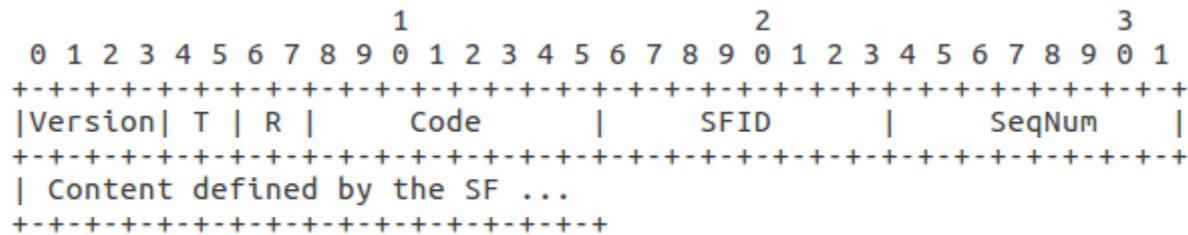


Figure 21: 6P SIGNAL Response Format.

The function of the SIGNAL command is not specified in this document.

SFs making use of the SIGNAL command MUST specify its content and its

usage. 6P MUST verify that a SIGNAL transaction is executed correctly, verify Version, SFID and SeqNum fields in the same manner

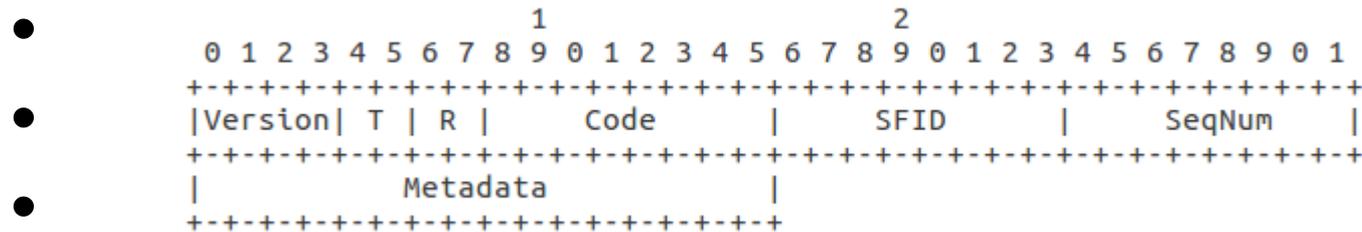
as other commands such as 6P ADD.

Handling Inconsistencies

- Generation numbers use is redundant with SeqNum.
 - The function carried out by GEN can be handled by the SeqNum.
- Actions taken:
 - Removed GEN
 - Expanded SeqNum to 1B (from 4b).
 - Clarified how inconsistencies are detected using timeouts and SeqNum.
-

SeqNum Management

- SeqNum uses now 1B



- Initialized to 0.
- Lollipop counter
 - Wraps to 1.
 - Only 0 after clear or upon start.

Value	Meaning
0x00	Clear or Reset
0x01-0xFF	Lollipop Counter values

Figure 24: Possible values of the SeqNum.

- Incremented at **every Request** message by 1.



SeqNum Management

- Each node stores the last successfully seen SeqNum from a neighbor (L-SeqNum).
-
- When a node resets or after a CLEAR transaction, both SeqNum and L-SeqNum MUST be set to 0.
-
- After every 6P Request the SeqNum MUST be incremented by exactly 1.
-
- The subsequent 6P Response and 6P Confirmation for that transaction MUST use the same SeqNum value as that in the Request.
-
- If the transaction succeeds, both sides MUST update the stored L-SeqNum value to the SeqNum used in the transaction.

When an inconsistency happen?



- Inconsistency may happen when L2 acknowledgement of the last packet in a transaction is lost
 - E.g → RESPONSE (in 2-step 6P transaction) or CONFIRMATION (in 3-step 6P transaction) have been received on one side while timeout happens on the other side.
- Inconsistency happens when a schedule CLEAR does not happen simultaneously on two neighbor nodes.
- E.g → a CLEAR transaction ends at one side (node A) while the L2 acknowledgement to the Response packet is lost on the other side (node B).



Handling the inconsistency

- Inconsistency may happen when L2 acknowledgement of the last packet in a transaction is lost.
 - Upon the timeout, the SF running on the node that timeout (e.g node B) **MUST** take action to validate the schedule state on both sides.
 - For example node B starts a COUNT transaction to node A to determine if there is inconsistency. If inconsistency is found, it is up to the SF to decide what to do next.
 - For example, node B starts a CLEAR transaction to node A to reset schedule on both sides.
 - Other options include node B listing the cells on node A and deleting those that are inconsistent.
- Inconsistency happens when a schedule CLEAR does not happen simultaneously on two neighbor nodes.
 - In this case, the inconsistency is detected with the value of the SeqNum and L-SeqNum.
 - Considering this case in a 2-step transaction, when node B receives a Request message from node A with SeqNum == 0 and its L-SeqNum from node A is not 0 or node B receives a Request message from node A with SeqNum != 0 and its L-SeqNum for node A is 0, an inconsistency is detected.
 - When such inconsistency is detected, node B **MUST** respond with the return code INCON_ERR and the transaction **MUST** be discarded.
 - It is up to the SF to decide what to do next. For example, upon receiving INCON_ERR, node A starts a LIST transaction to node B to obtain the scheduled cells with B.



SFx Finalization

Diego's plans about SFX:

- Provide a list of the required experiments
- Republish SF0 as SFX.

=> expects to work on this during the next two weeks.

=> anything missing?



RPL + 6TiSCH

Avoiding desynchronization

AOB ?



Thank you!