



Thursday 2020/11/19

IETF 109 ROLL - Virtual

Routing over Low-Power And Lossy Networks

Chairs:

Dominique Barthel

Ines Robles

Secretary:

Michael Richardson



Note Well

This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully.

As a reminder:

- By participating in the IETF, you agree to follow IETF processes and policies.
- If you are aware that any IETF contribution is covered by patents or patent applications that are owned or controlled by you or your sponsor, you must disclose that fact, or not participate in the discussion.
- As a participant in or attendee to any IETF activity you acknowledge that written, audio, video, and photographic records of meetings may be made public.
- Personal information that you provide to IETF will be handled in accordance with the IETF Privacy Statement.
- As a participant or attendee, you agree to work respectfully with other participants; please contact the ombudsteam (<https://www.ietf.org/contact/ombudsteam/>) if you have questions or concerns about this.

Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

BCP 9 (Internet Standards Process)

BCP 25 (Working Group processes)

BCP 25 (Anti-Harassment Procedures)

BCP 54 (Code of Conduct)

BCP 78 (Copyright)

BCP 79 (Patents, Participation)

<https://www.ietf.org/privacy-policy/> (Privacy Policy)

Source: <https://www.ietf.org/about/note-well/>

Meeting Materials

- Session: Thursday, 19th November 2020 - 9:00-11:00 UTC
- Remote Participation
 - Etherpad: <https://codimd.ietf.org/notes-ietf-109-roll>
 - Slides: <https://datatracker.ietf.org/meeting/109/session/roll>
 - Minutes taker: **Please volunteer, thank you :)**

Agenda

IETF - ROLL IETF 109

Thursday, 19th November 2020 - 9:00-11:00 UTC

Thursday Session III

Material:

<https://datatracker.ietf.org/meeting/109/session/roll>

Etherpad/Bluesheet: <https://codimd.ietf.org/notes-ietf-109-roll>

Time	Duration	Draft/Topic	Presenter
9:00 - 9:15	15 min	WG Status	Ines/Dominique
9:15 - 9:35	20 min	draft-ietf-roll-dao-projection	Pascal
9:35 - 9:50	15 min	draft-ietf-roll-unaware-leaves	Pascal
9:50 - 10:00	10 min	draft-ietf-roll-turnon-rfc8138	Pascal
10:00 - 10:20	20 min	draft-jadhav-roll-storing-rootack	Rahul
10:20 - 10:55	35 min	RFC6550bis status	Michael/Everyone
10:55 - 11:00	05 min	Open Floor	Everyone

Done Milestones

Done milestones

Date	✚ Milestone
Done	Initial submission to the IESG of mechanism to turn on RFC8138 compression feature within a RPL network draft-ietf-roll-turnon-rfc8138
Done	Initial submission of routing for RPL Leaves draft to the IESG draft-ietf-roll-unaware-leaves
Done	Initial submission of a reactive P2P route discovery mechanism based on AODV-RPL protocol to the IESG draft-ietf-roll-aodv-rpl
Done	Initial Submission of a proposal with uses cases for RPI, RH3 and IPv6-in-IPv6 encapsulation to the IESG draft-ietf-roll-useofrplinfo
Done	Initial submission of a solution to the problems due to the use of No-Path DAO Messages to the IESG draft-ietf-roll-efficient-npdoa

Milestones

Date	✦ Milestone
Oct 2021	Recharter WG or close
Dec 2020	Initial submission of Mode of Operation extension and Capabilities for RPL to the IESG draft-ietf-roll-mopex-cap
Jul 2020	Initial submission of a root initiated routing state in RPL to the IESG draft-ietf-roll-dao-projection
Jul 2020	Initial submission of a YANG model for MPL to the IESG draft-ietf-roll-mpl-yang
Jun 2020	Initial submission of Enabling secure network enrollment in RPL networks draft to the IESG draft-ietf-roll-enrollment-priority
Jun 2020	Initial submission of a proposal to augment DIS flags and options to the IESG draft-ietf-roll-dis-modifications
Jun 2020	Initial submission of a proposal for Source-Route Multicast for RPL to the IESG draft-ietf-roll-ccast
Mar 2020	Initial submission of Common Ancestor Objective Functions and Parent Set DAG Metric Container Extension to the IESG draft-ietf-roll-nsa-extension

State of Active Internet-Drafts

	Draft	Status
2 IPRs	draft-ietf-roll-efficient-npdoa-18	RFC Ed Queue - New version
	draft-ietf-roll-turnon-rfc8138-17	Submitted to the IESG - Discussion Today
	draft-ietf-roll-unaware-leaves-23	Submitted to the IESG - Discussion Today
	draft-ietf-roll-useofrplinfo-42	Submitted to the IESG
1 IPR	draft-ietf-roll-capabilities-07	Work in progress
	draft-ietf-roll-dao-projection-14	Discussion Today
	draft-ietf-roll-enrollment-priority-03	Reviews needed
	draft-ietf-roll-mopex-02	Work in progress
2 IPRs	draft-ietf-roll-nsa-extension-10	Shepherd write up in progress
	draft-ietf-roll-aodv-rpl-08	AD Evaluation::Revised I-D Needed
	draft-ietf-roll-dis-modifications-01	Stand By
	draft-ietf-roll-rpl-observations-04	Work in progress

State of inactive Internet-Drafts

Draft	Status
Draft-ietf-roll-mpl-yang-02 (Expired)	To be continued
Draft-ietf-roll-bier-ccast-01 (Expired)	To be continued

Related Internet-Drafts

Draft	Status
draft-jadhav-roll-storing-rootack-01	Discussion Today
draft-thubert-roll-eliding-dio-information	Expired - To be Continued later -

Open tickets

<https://github.com/roll-wg/efficient-route-invalidation/issues>

roll-wg / [efficient-route-invalidation](#)

<> Code Issues 1 Pull requests 0 Actions

Filters

1 Open 0 Closed

- 🔔 RPL Status Code of 130 is incorrect
#4 opened on Nov 26, 2019 by nyrahul

roll-wg / [rpl-observations](#)

<> Code Issues 4 Pull requests 0 Actions Projects 0 Wiki

Filters

4 Open 3 Closed Author Label

- 🔔 Parent Address MUST be empty in Transit Information for storing MOP
#10 opened on Mar 16 by nyrahul
- 🔔 Implications of using smaller lollipop counter window
#9 opened on Dec 12, 2019 by nyrahul
- 🔔 Path Control bits handling
#6 opened on Nov 12, 2019 by nyrahul
- 🔔 DIS multicast handling issue **IETF104**
#2 opened on Mar 25, 2019 by nyrahul

<https://github.com/roll-wg/rpl-observations/issues>

<https://github.com/roll-wg/Capabilities/issues>

roll-wg / [Capabilities](#)

<> Code Issues 6 Pull requests 0 Actions Projects 0 Wiki

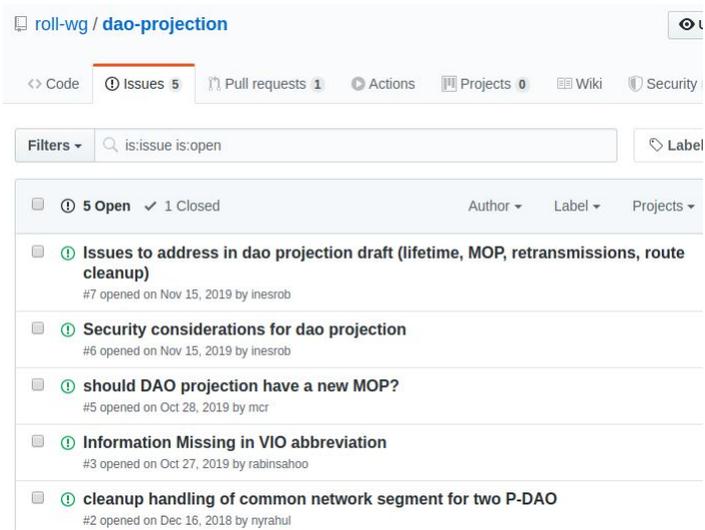
Filters

6 Open 1 Closed Author Label

- 🔔 New Options and backward compatibility problem
#11 opened 9 days ago by nyrahul
- 🔔 Capabilities for turnon-8138, P-DAO **needs draft-update**
#6 opened on Nov 22, 2019 by nyrahul
- 🔔 Global and Local CAPs **needs draft-update**
#5 opened on Nov 21, 2019 by nyrahul
- 🔔 difference in Configuration Option, MOP, Capability **needs draft-update**
#4 opened on Aug 30, 2019 by nyrahul
- 🔔 Add scenario for capabilities exchange **needs draft-update**
#3 opened on Aug 25, 2019 by nyrahul
- 🔔 Is Caps optional to be supported by nodes? **needs draft-update**
#1 opened on Aug 25, 2019 by nyrahul

Open tickets

<https://github.com/roll-wg/dao-projection/issues>



The screenshot shows the GitHub interface for the repository 'roll-wg / dao-projection'. At the top, there are navigation tabs for Code, Issues (5), Pull requests (1), Actions, Projects (0), Wiki, and Security. Below the tabs is a search bar with the filter 'is:issue is:open' and a 'Label' button. The main content area displays a list of 5 open issues, each with a title, a status icon (green circle with '1'), and the number of comments. The issues are:

- Issues to address in dao projection draft (lifetime, MOP, retransmissions, route cleanup)** (#7 opened on Nov 15, 2019 by inesrob)
- Security considerations for dao projection** (#6 opened on Nov 15, 2019 by inesrob)
- should DAO projection have a new MOP?** (#5 opened on Oct 28, 2019 by mcr)
- Information Missing in VIO abbreviation** (#3 opened on Oct 27, 2019 by rabinsahoo)
- cleanup handling of common network segment for two P-DAO** (#2 opened on Dec 16, 2018 by nyrahul)

Open tickets

Ticket	Summary	Component
#179	Security considerations for dao projection	dao-projection
#180	13 issues to address in dao projection draft (lifetime, MOP, retransmissions, route cleanup)	dao-projection
#187	New version of RFC6550 - Topics to include	rpl
#188	Should 6LBR be included into the DODAG root?	rpl
#199	Issues in version 08	aodv-rpl
#200	Issues in version 08 - Part II	aodv-rpl

<https://trac.ietf.org/trac/roll/report/2>

Root initiated routing state in RPL

draft-ietf-roll-dao-projection

P. Thubert, Ed.; R.A. Jadhav, M. Gillmore

Pascal Thubert

IETF 109

ROLL Virtual Meeting

Status to the draft

- Moved from 11 to 14 since last IETF
- Main DODAG must be non-storing Mode
 - To advertise the DODAG structure to the Root
 - Topology knowledge augmented with Sibling Info Option
 - VIA Option lists hops within one DODAG
- $1 \text{ P-DAO} == 1 \text{ Segment} == n * \text{RTO (target)} + 1 \text{ RPO (Via)}$
- $1 \text{ Track} == p * \text{segments}$
- RFC 8138 compression of the address list in RPOs



*See the VIA
Info Option as a
multihop Transit
Info Option*

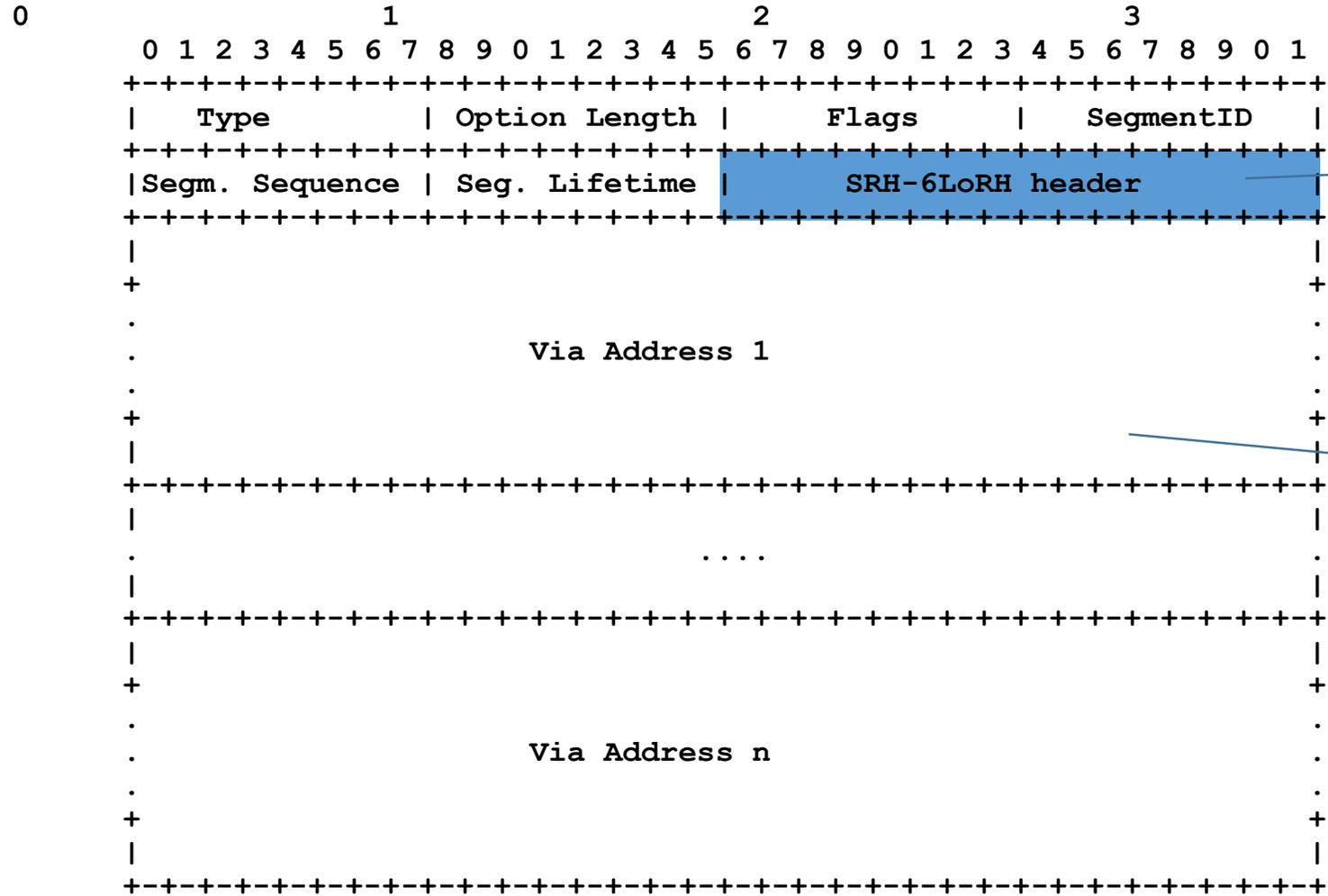
Topology awareness

- Initially out of scope
- Now we have non storing mode + Sibling info option
- Which sibling to advertise is still out of scope

P-DAO construction

- RPL Target Options can still be factorized
- But there is one and only one RPO (VIO or SR-VIO)
- So the Ack management is easier
- VIO sent to egress; SR-VIO sent to ingress
- Track ID is a RPL local instance ID (Segment ID too?)
- Taken from the Track Egress Name Space

P-DAO Format



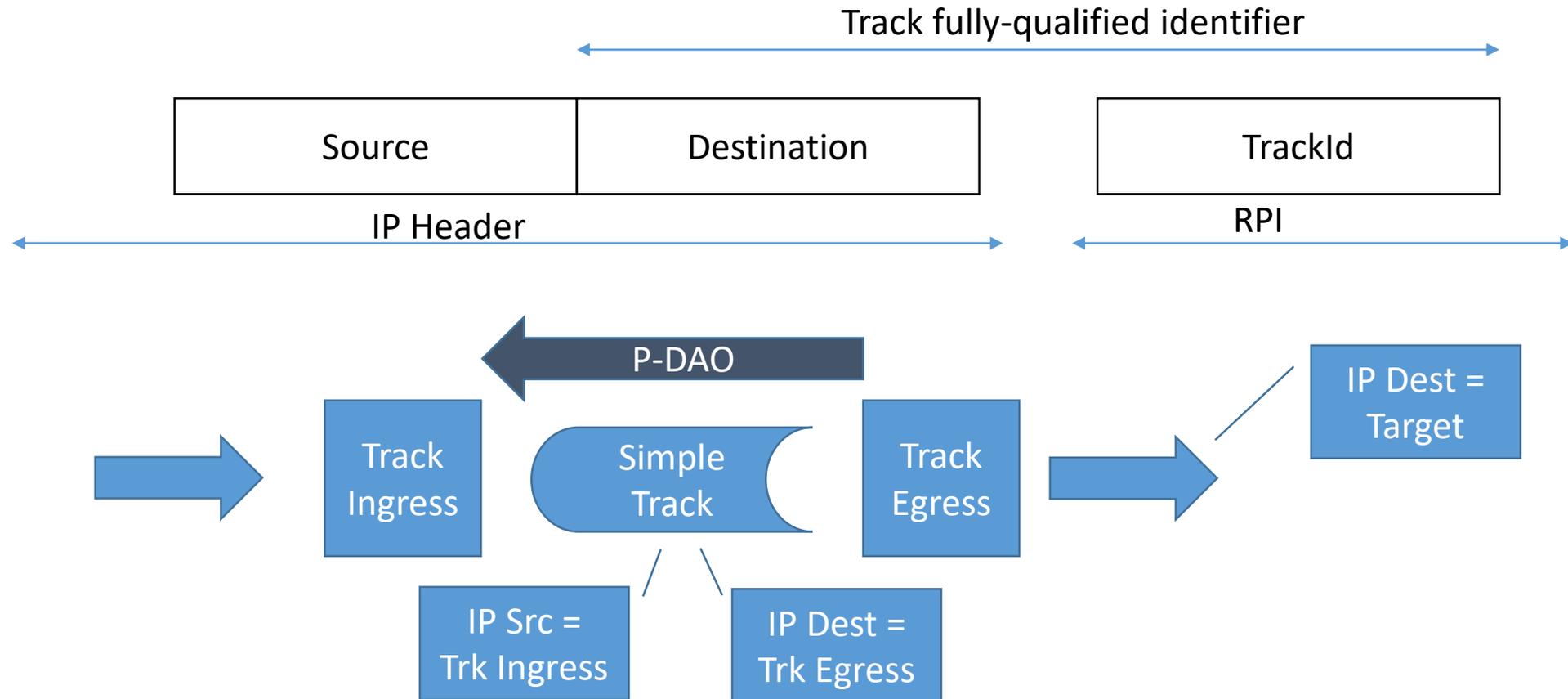
May be more than one in Non-storing Mode

Must be optimized in Non-storing Mode, to be used as is in packets

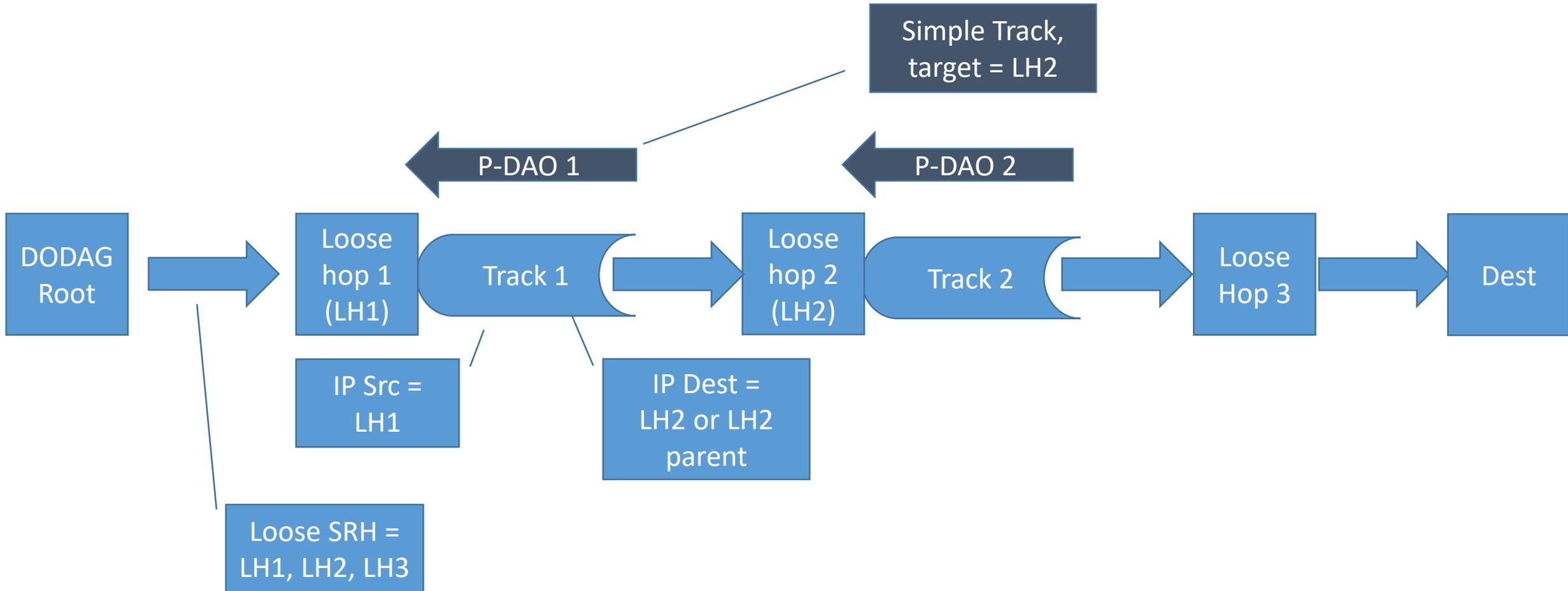
Encapsulation Rules

- Final destination of outer header MUST be Track Egress
- RPL Instance ID in RPI is TrackID
- Encapsulation needed if either
 - IP source != Track ingress or IP destination != Track egress
- Fine in Storing mode
 - but in non-storing how do we signal segments?
- As written RH is « inserted », 6LORH-SRH added in front
- Else we'll need to consider a segment as another encaps.

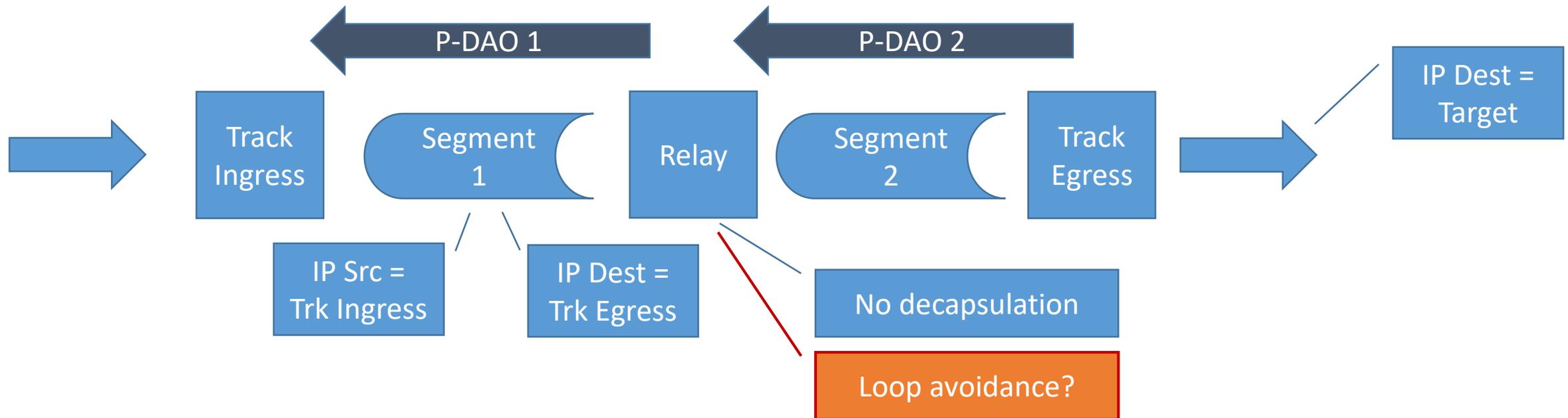
Encapsulation single segment, all MOPs



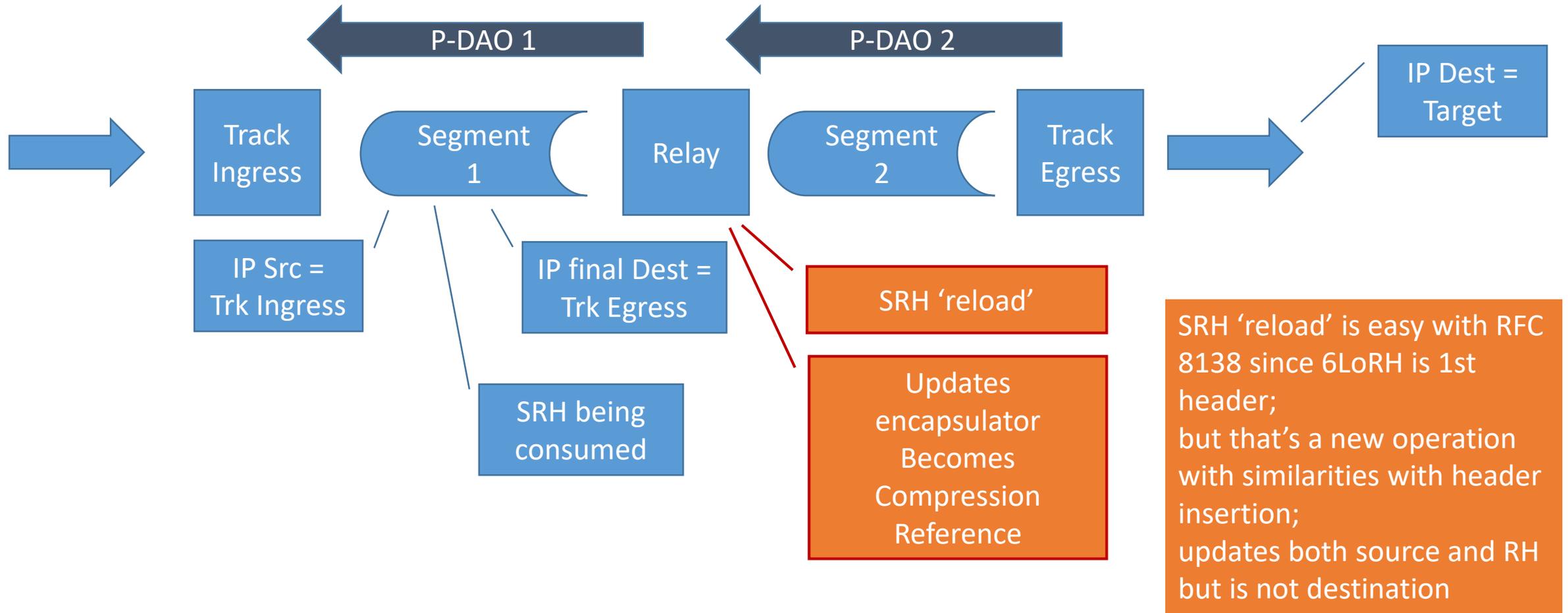
Loose non-storing mode



Encapsulation storing mode



Encapsulation non storing mode



Huimin's comments / suggestions

- Lifetime unit: ReqLifetime, Track lifetime, and Segment Lifetime are defined as 8 bits. And their lifetime Unit is obtained from the DODAG configuration option. It will lead to inflexibility as all tracks in the PAN use the same lifetime unit. We propose to define lifetime unit separately for each track (for example adding a 2-bit flag to indicate second, minute, hour, day). Details can be discussed later.
- Now the TrackID has the same meaning as Local RplInstanceId. How does a node judge whether the received message is a P-DAO message or Local RPL instance DAO message? Is it possible to define a flag in the P-DAO message?
- The P-DAO track/segment is single-directional. I suggest to add the possibility for creating bi-directional segments/tracks. We can add a flag in the PDR message to indicate the requested track is single-directional or bi-directional.
- I suggest to add a flow of message exchanges for “PDR, PDR-ACK, P-DAO, P-DAO ACK” in the draft.

Other to be done

- Loop avoidance
- Who sends PDR? If it was destination, then it could select the trackID from its name space
- ND (RFC 8505) to maintain sibling neighbor state
- Be very specific if Ingress and Egress are listed in RPOs
 - Ingress to indicate which source address to use
 - Egress to build the full SRH 6LoRH

RPL Unaware Leaves

draft-ietf-roll-unaware-leaves

Pascal Thubert

IETF 109

ROLL Virtual Meeting

Status to the draft

- Moved from 18 to 23 since last IETF
 - Mostly Alvaro's A-D review
- Updates + 6775 – NPDAO
 - Reformats the RPL status (but NPDAO defines status 1)
 - Add ROVR to the RPL Target Option
- Restructured / Reordered sections
 - RUL requirements
- Submitted to IEFT last call

Major changes

- Alignment with use of RPL Info
 - MOP 7 update inherited
 - Define “Root Proxies EDAR/EDAC” ‘P’ flag
 - Define default behavior of ‘P’ flag (on) for MOP 7
 - Encapsulation for external routes
 - RPI rewriting at the 6LR
 - Section 3 “RPL External Routes and Dataplane Artifacts”

Configuration option for RFC 8138

draft-ietf-roll-turnon-rfc8138

Pascal Thubert

IETF 109

ROLL Virtual Meeting

Status to the draft

- Moved from 08 to 17 since last IETF
- Through IESG cycle
- Aligning to use of RPL Info for new flag
- MOP 7 operation: flag raised on 6LoWPAN HC links
- Many editorials, no core functionality change

Root-ACK

- draft-jadhav-roll-storing-rootack-01

Motivation

- End to end path establishment indication
 - Node can initiate app traffic on this indication
 - Section 4 of RPL-Observations draft details the problem stmt
- For RUL-scenario to send NA in response to e2e path establishment

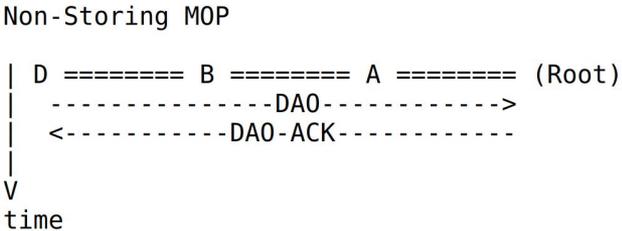


Figure 2: NS-MOP DAO/DAO-ACK handling

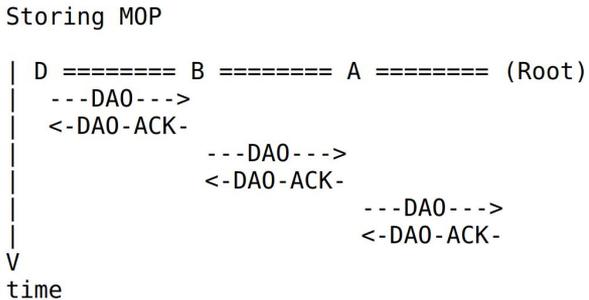


Figure 3: Storing MOP DAO/DAO-ACK handling

Basic Operation

- RootACK sent directly from the root to the Target
- K-flag in TIO to indicate root to send RootACK
- PathSeq is used to tally RootACK to DAO

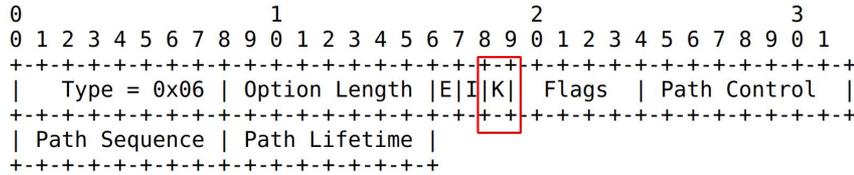
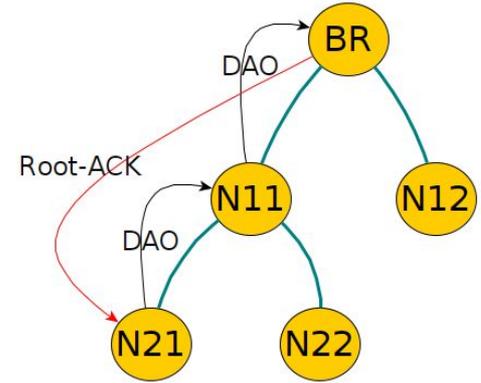
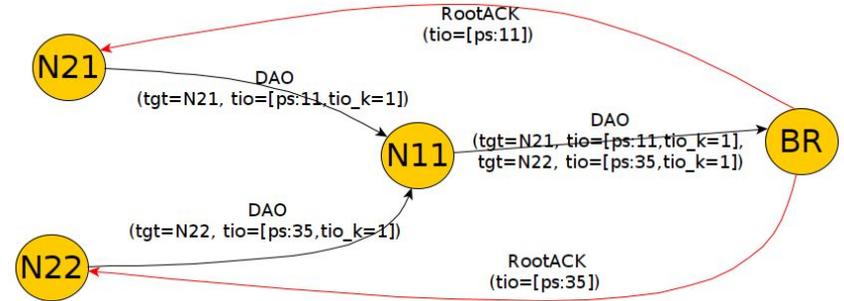


Figure 4: Updated Transit Information Option (New K flag added)

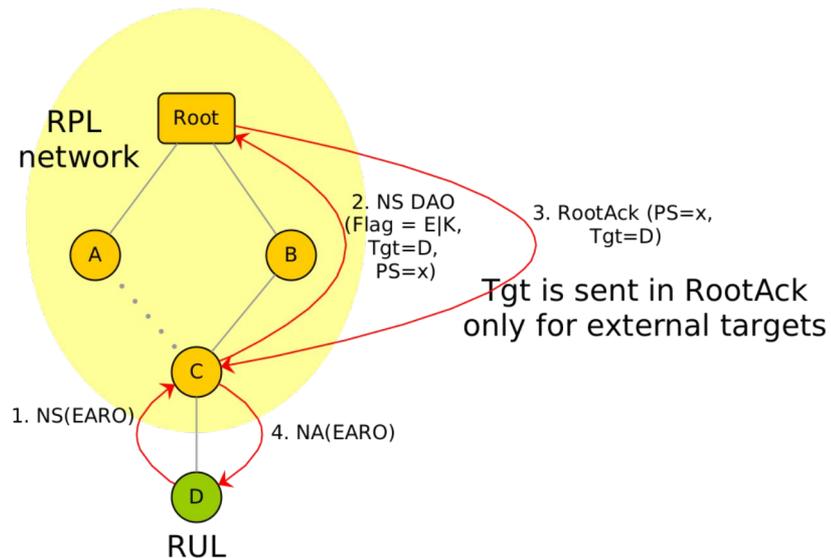


K flag in TIO

- K flag is set by the target in the TIO
 - Used by the root to send the RootACK
 - Target may set the K flag only once after startup
 - RootAck may be sent asynchronously by the root
 - Useful for CAP query
- Intermediate 6LRs K-flag handling
 - DAO is regenerated on 6LRs on behalf of target node
 - K flag has to be stored in context to the target. Similar to E-flag.
 - When the intermediate nodes see the K flag disabled from the target the K flag could be reset

RULs with RootACK

- Send NA to RUL only when e2e path is estd
 - Send NA in response to RootACK
- For RUL targets, the 6LR sends DAO directly to the root even in storing MOP
 - As specified in unaware-leaves



Updates in the last version

- Calling RootACK consistently in the document
- Implications of DelayDAO
- Explicit section for RULs

Next Steps:

- Reviews
- Adoption?

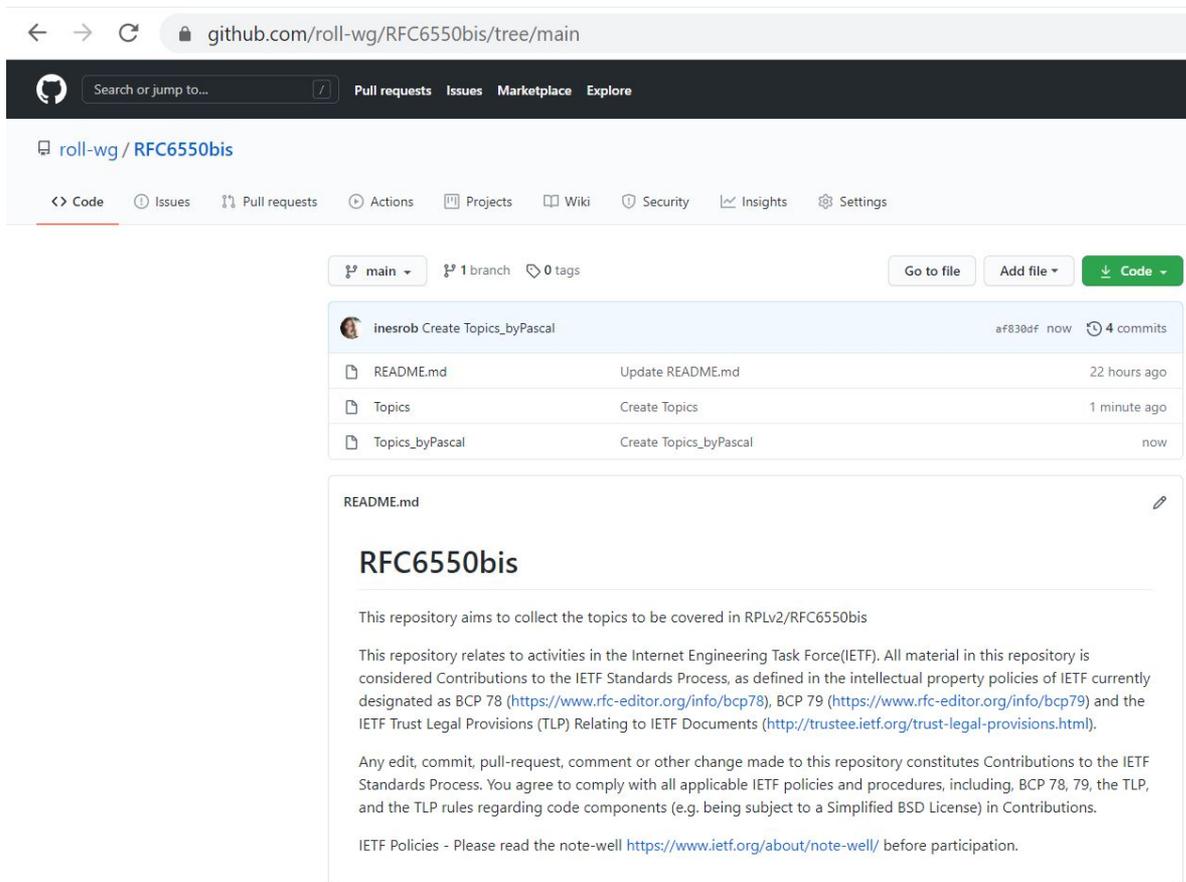


RFC 6550bis

IETF 109 Virtual



Github repository - Please feel free to add/modify as needed!!!



github.com/roll-wg/RFC6550bis/tree/main

Search or jump to... / Pull requests Issues Marketplace Explore

roll-wg / RFC6550bis

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file Code

Commit	Message	Time
af838df	af838df now	4 commits
af838df	Update README.md	22 hours ago
af838df	Create Topics	1 minute ago
af838df	Create Topics_byPascal	now

inesrob Create Topics_byPascal

README.md

RFC6550bis

This repository aims to collect the topics to be covered in RPLv2/RFC6550bis

This repository relates to activities in the Internet Engineering Task Force(IETF). All material in this repository is considered Contributions to the IETF Standards Process, as defined in the intellectual property policies of IETF currently designated as BCP 78 (<https://www.rfc-editor.org/info/bcp78>), BCP 79 (<https://www.rfc-editor.org/info/bcp79>) and the IETF Trust Legal Provisions (TLP) Relating to IETF Documents (<http://trustee.ietf.org/trust-legal-provisions.html>).

Any edit, commit, pull-request, comment or other change made to this repository constitutes Contributions to the IETF Standards Process. You agree to comply with all applicable IETF policies and procedures, including, BCP 78, 79, the TLP, and the TLP rules regarding code components (e.g. being subject to a Simplified BSD License) in Contributions.

IETF Policies - Please read the note-well <https://www.ietf.org/about/note-well/> before participation.

22 lines (11 sloc) | 627 Bytes

Raw

Blame



```
1 Topics to be addressed in RFC6550bis
2
3 Source: https://mailarchive.ietf.org/arch/msg/roll/hMUjtgxj05aA7fwaSXXhwqWT1IE/
4
5 https://mailarchive.ietf.org/arch/msg/roll/Sw3XbEaWe\_AssG6cGC1QaZz43gc/
6
7
8 1. Use of revised Option Type (0x23) in RPI ... (Obsolete use of 0x63 RPI Option Type value).
9
10 2. Mandating the use of 6LoRH (RFC 8138) , turn-on
11
12 3. MOPex
13
14 4. Support for Ext Control Options. (Allows Backward compatibility for new extns... part for same mopex draft)
15
16 5. Support for Capabilities. (Enables backward compatibility, allows incremental feature support)
17
18 6) P-DAO for SDN-RPL and
19
20 7) AODV-RPL.
21
22 RPL Observations issues
```

18 lines (10 sloc) | 1.35 KB

Raw

Blame



```
1 By Pascal:
2
3 # RPLv2
4
5 Todo List
6 -----
7
8 * Alvaro: Note that "SHOULD respond with a DAO-ACK" leaves the door open to not doing it. Unfortunately rfc6550 didn't explicitly mention what may be the reasons to not send a
9
10 * Benjamin: about draft-ietf-roll-turnon-rfc8138-17
11
12 I will say a bit more inline, but want to note upfront that my primary unease here is that we seem to be assigning some (partial) semantics to MOP value 7 here (even though we
13
14     For a MOP value of 7, [RFC8138] MUST be used on Links where 6LowPAN Header Compression [RFC6282] applies and MUST NOT be used otherwise.
15
16 yet there is no "trail of breadcrumbs" for someone to follow from "I want to implement MOP 7" and end up at the sentence I quoted above. A formal Update to 6550 would provide
17
18 "
```

Filters

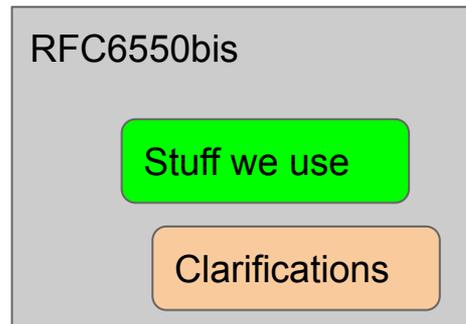
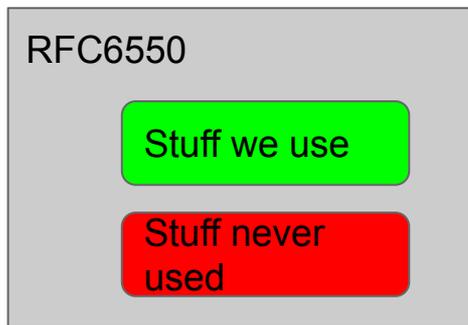
is:issue is:open

1 Open 0 Closed

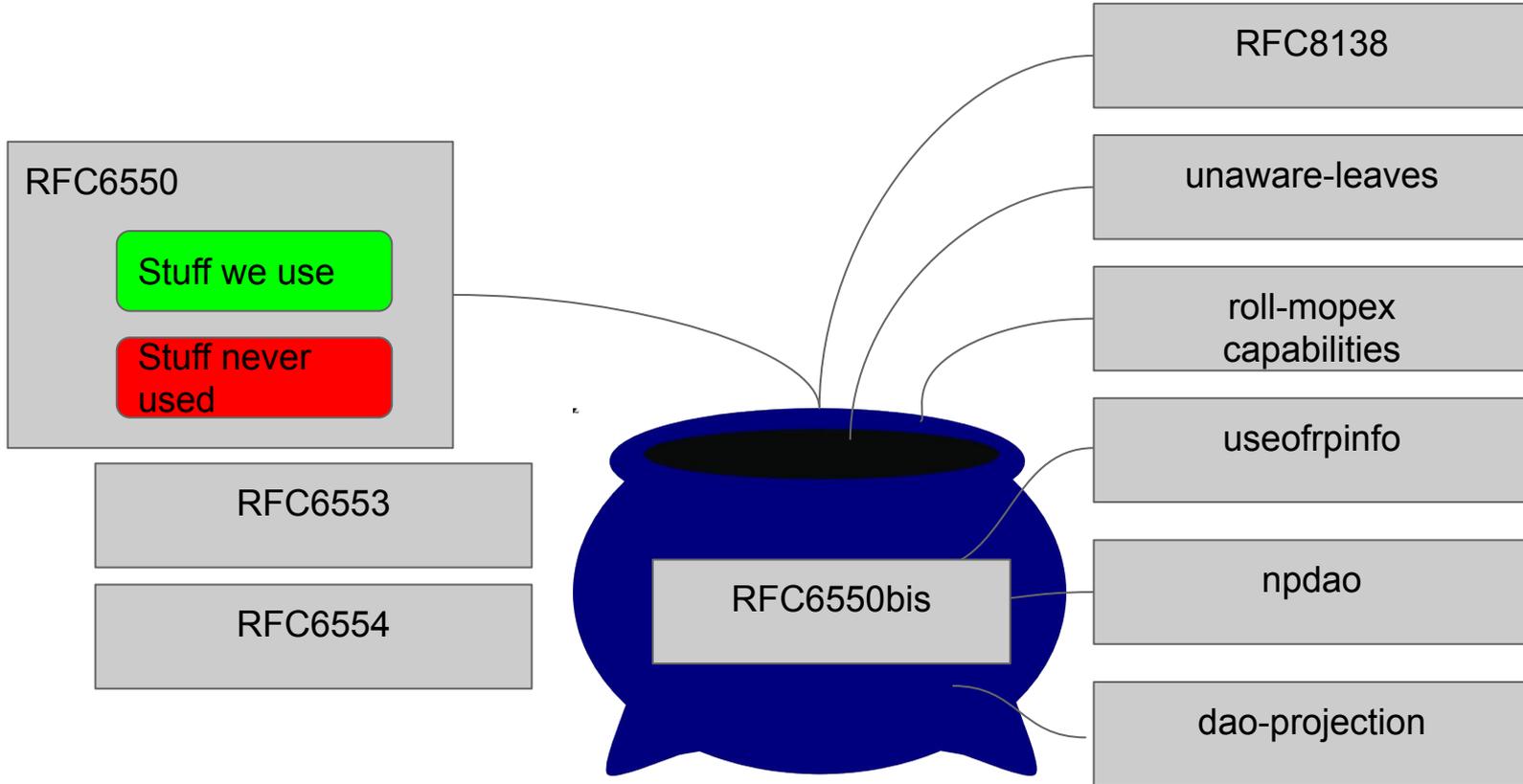
Review RFC 6550 checking the "future work features"

#1 opened now by inesrob

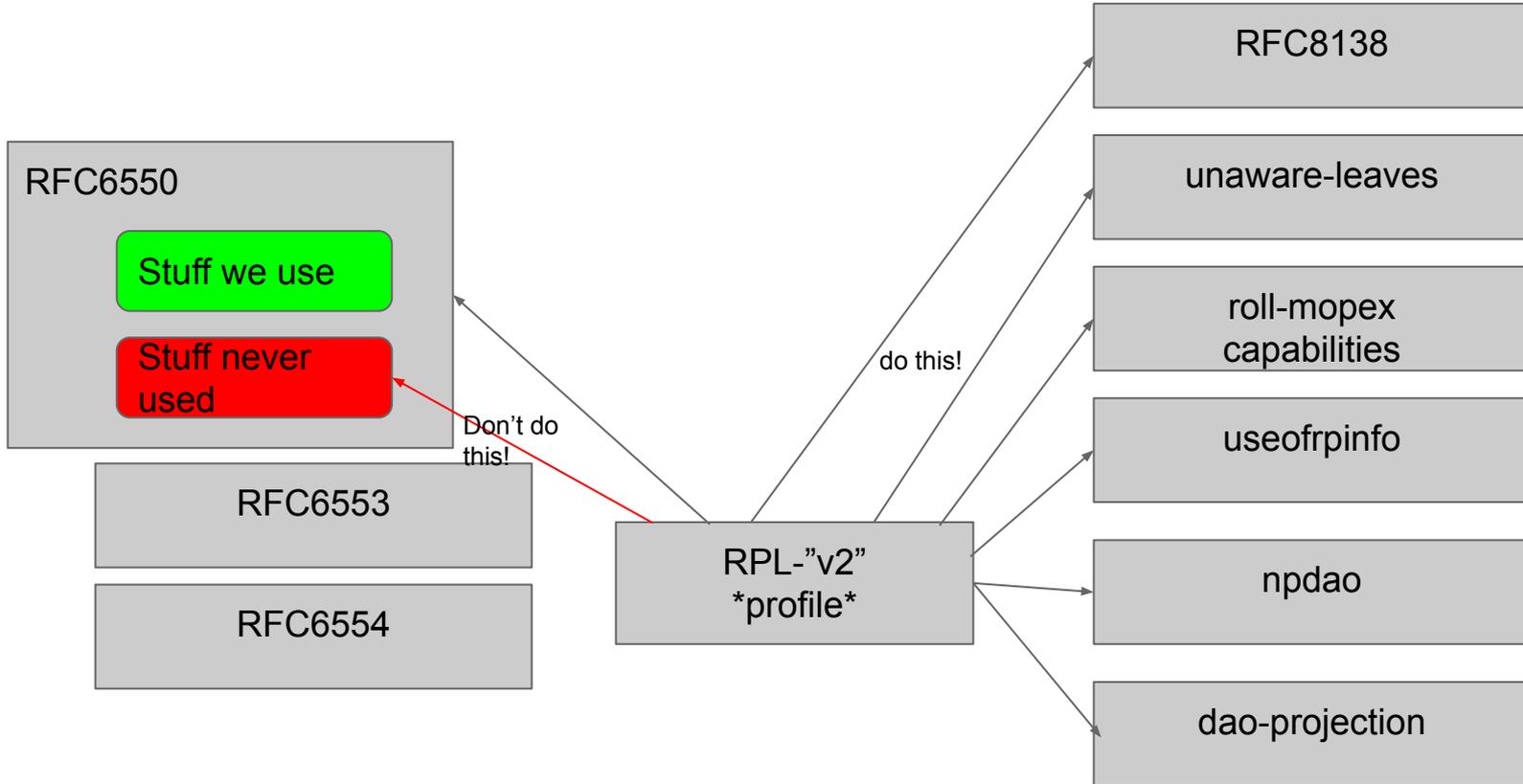
Some thoughts about process: Proposed Standard -> Internet Standard



RFC6550bis



RFC6550 + RPL-v2-profile



Action Points? - Open Discussion

Open Floor