

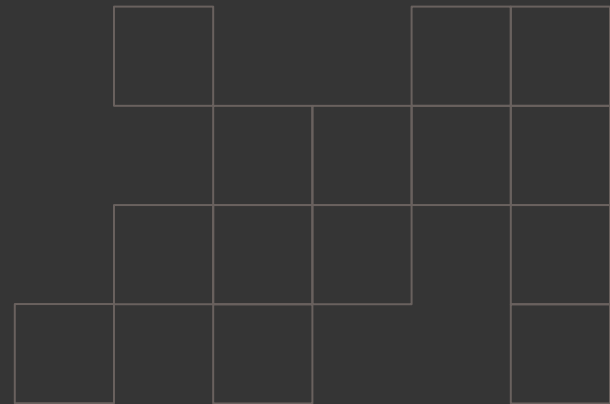
IETF 125- Shenzhen  
14/3/2026

# CBOR Encoding for HTTPS-based Transport for YANG Notifications

## Adding CBOR support to libyang

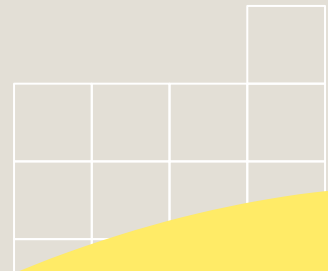
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Hayyan Arshad, Mohit P Tahiliani**  
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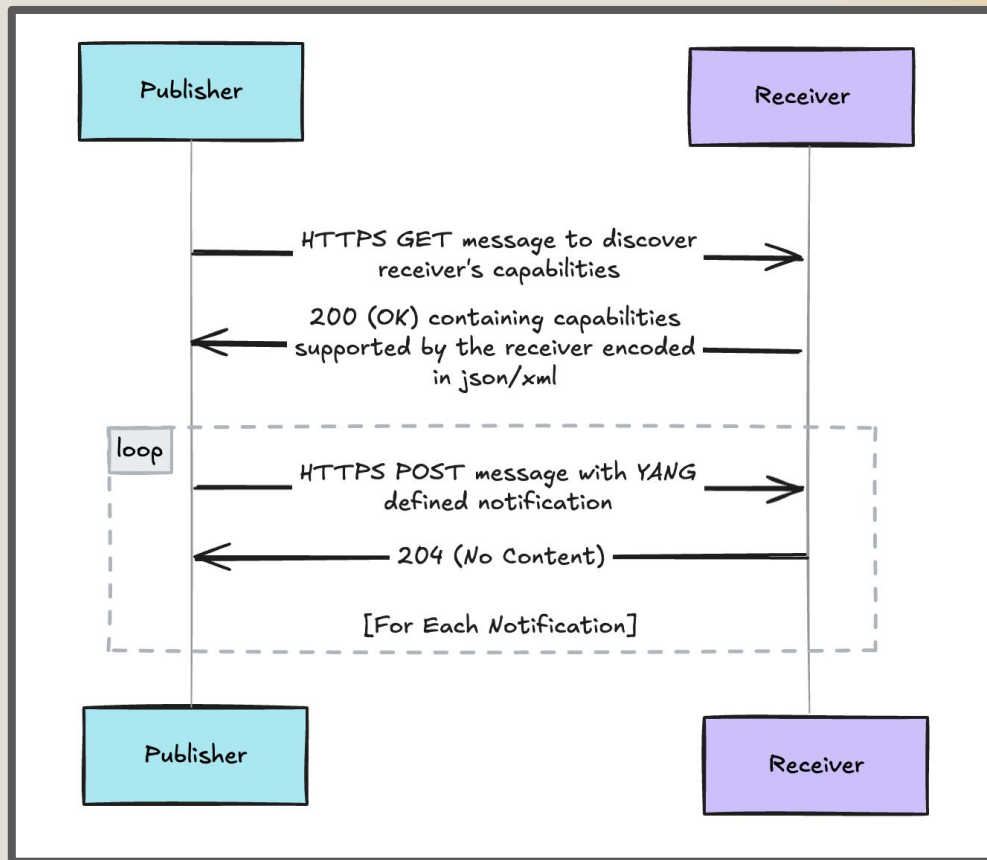


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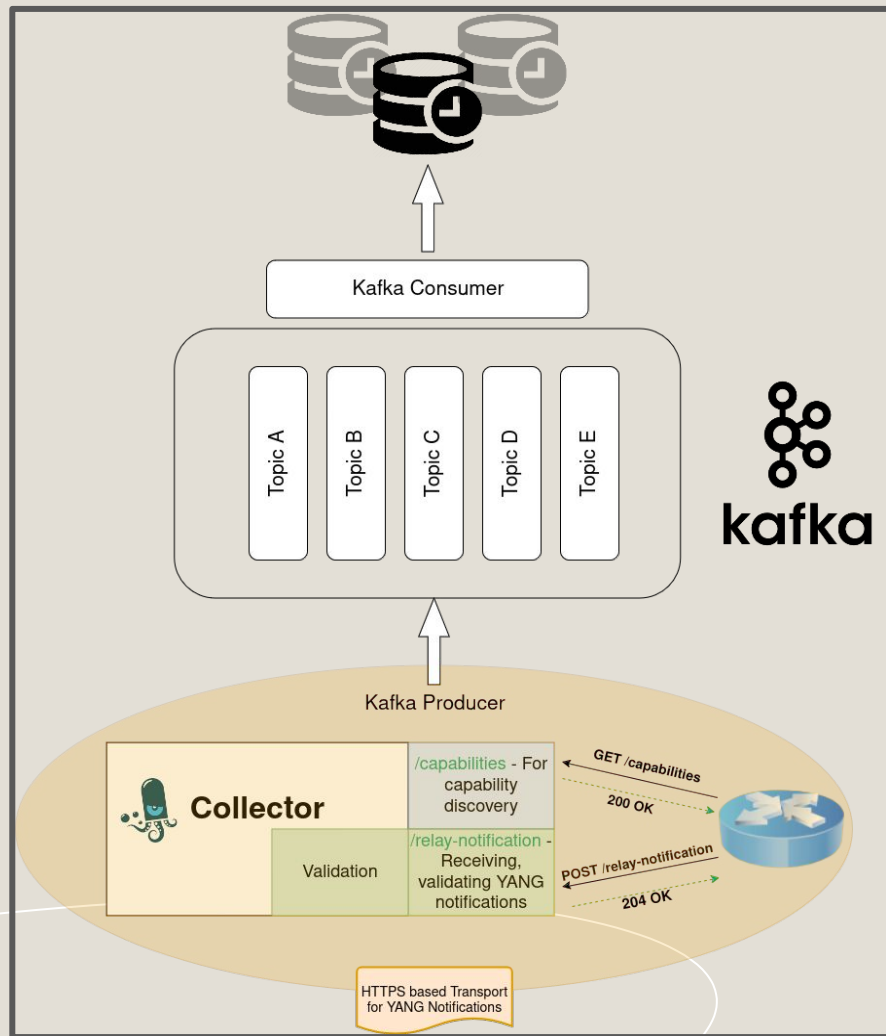


# Overview of the https-notif draft



# Implementation Architecture

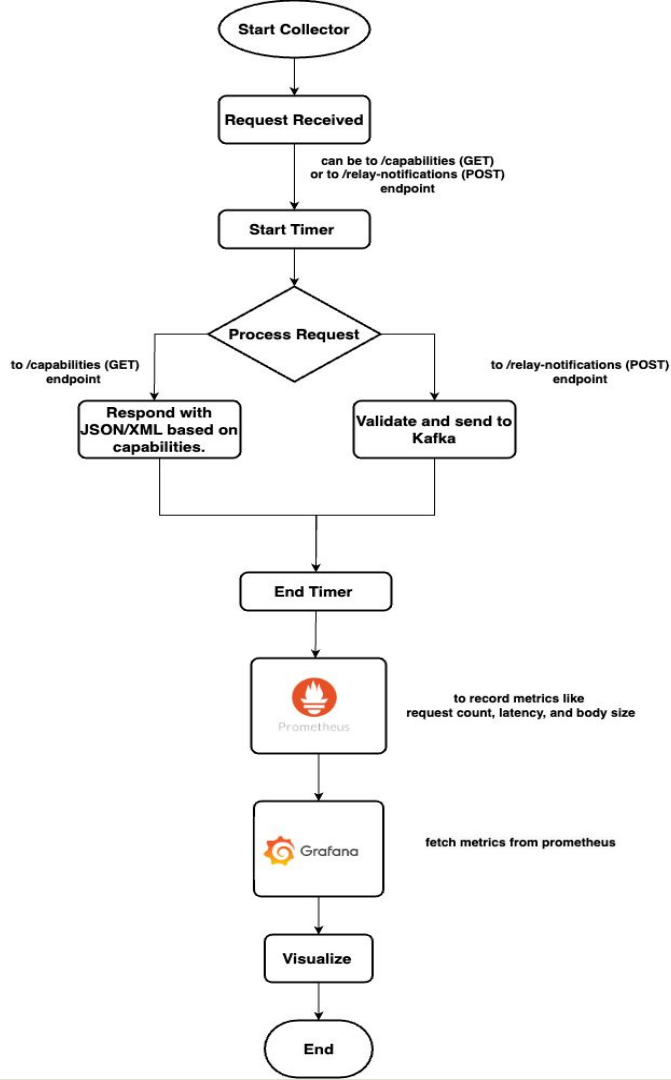
- Collector (receiver) supports /capabilities and /relay-notifications
- Collector receives the relay notification and **publishes the notification data to a designated Kafka topic.**
- A parallel Kafka **consumer** continuously reads messages from **this topic and inserts the data into a Time Series Database** (InfluxDB in our implementation)
- **The entire code is containerized!**



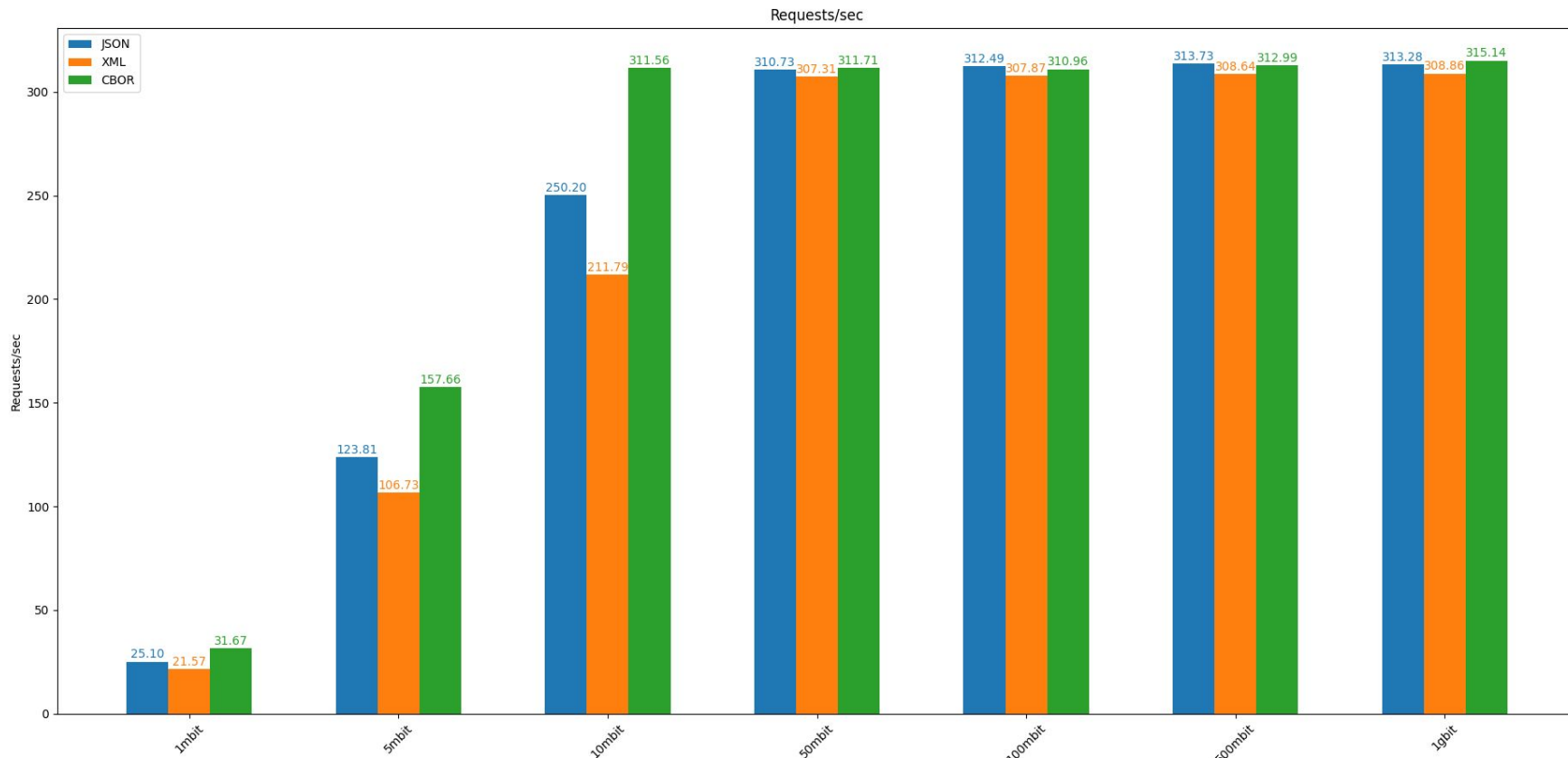
# Monitoring metrics with Prometheus and Grafana

- The application uses Prometheus client libraries to define **metrics such as HTTPS request counts, request latencies and POST request body sizes**.
- Prometheus collects the metrics exposed by the application. Grafana is used to visualize these metrics.

Implementation Link: <https://github.com/MeherRushi/https-notif-draft-impl>



# Performance Analysis of Encoding Formats Under Varying Bandwidth



Req/sec, average measurement of the above experiment

# Updates since Montreal (IETF 124)

- **Fixed IANA references** as pointed out by the IANA team
- Draft status updated to a working group document
- Asked for reviews and presented our question in the mailing list
- **Changes made to the implementation:** if multiple encodings is supported by the subscriber the publisher sends the messages encoded based on a preference order that can vary with implementation (in our implementation defined as cbor>json>xml)
- *Work in Progress* : Adding CBOR support to libyang.
- Thanks to Mahesh, Thomas, Per and Rob for comments and feedback!

# To Be Discussed

- We have observed that, in RFC 9254, the media type `application/yang-data+cbor` supports an optional parameter named `id`, which enables finer-grained identification between CBOR encodings that use SIDs versus those that use namespace-qualified names.
- Accordingly, we would like to discuss about updating the Content-Type header for HTTPS-based YANG notifications from `application/cbor` to `application/yang-data+cbor`, thereby aligning with RFC 9254 and enabling explicit use of `id=name` or `id=sid` or to stick with `application/cbor` to maintain consistency with the `https-notif-draft` (and or if this should be considered within in the scope of this document or not.)

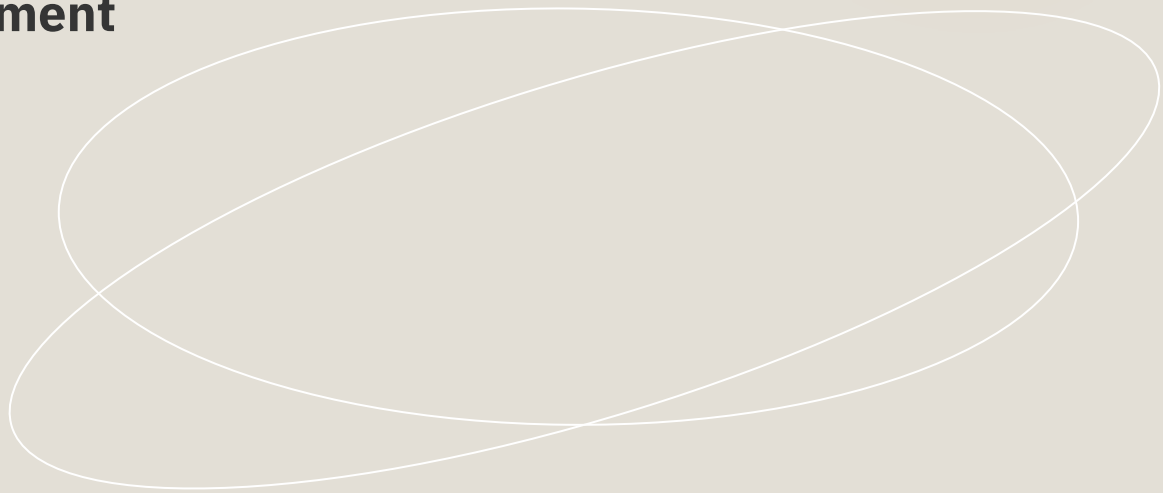
In summary, this document defines three content-types, which are intended for use by different classes of applications:

- `application/yang-data+cbor; id=sid` -- for use by applications that need to be frugal with encoding space and text string processing (e.g., applications running on constrained nodes [RFC7228] or applications with particular performance requirements);
- `application/yang-data+cbor; id=name` -- for use by applications that do not want to engage in SID management and that have ample resources to manage text-string-based item identifiers (e.g., applications that directly want to substitute `application/yang.data+json` with a more efficient representation without any other changes); and
- `application/yang-data+cbor` -- for use by more complex applications that can benefit from the increased efficiency of SID identifiers but also need to integrate databases of YANG modules before SID mappings are defined for them.

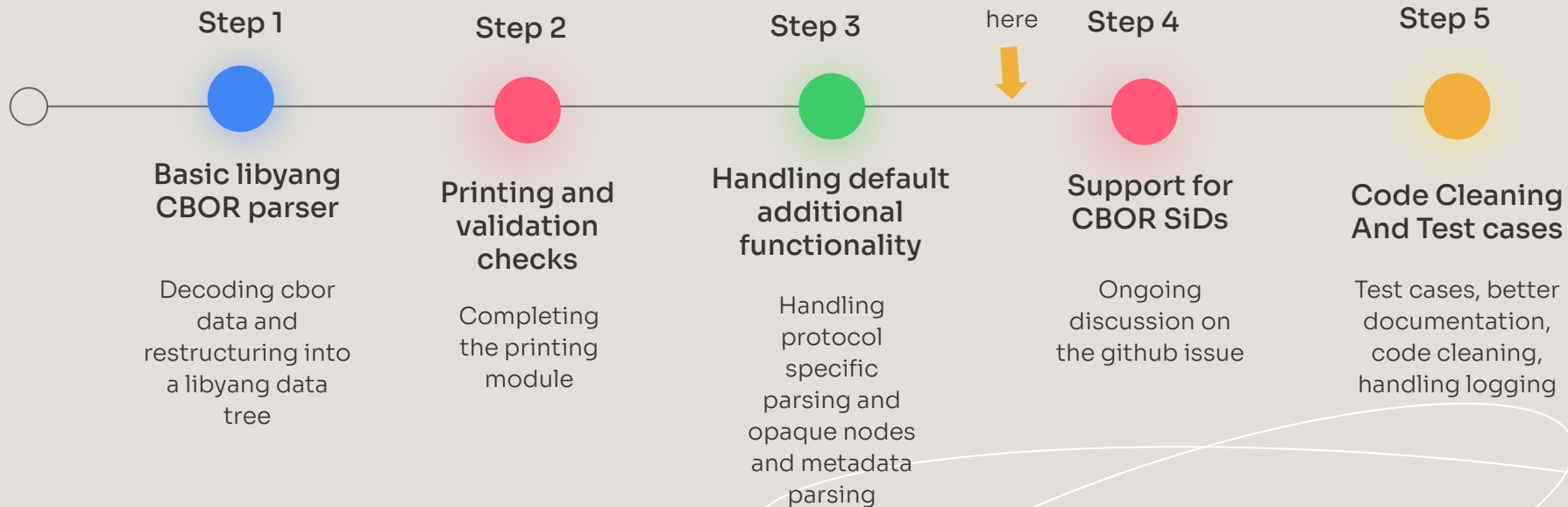
RFC 9254 defines different content types for cbor sid and name

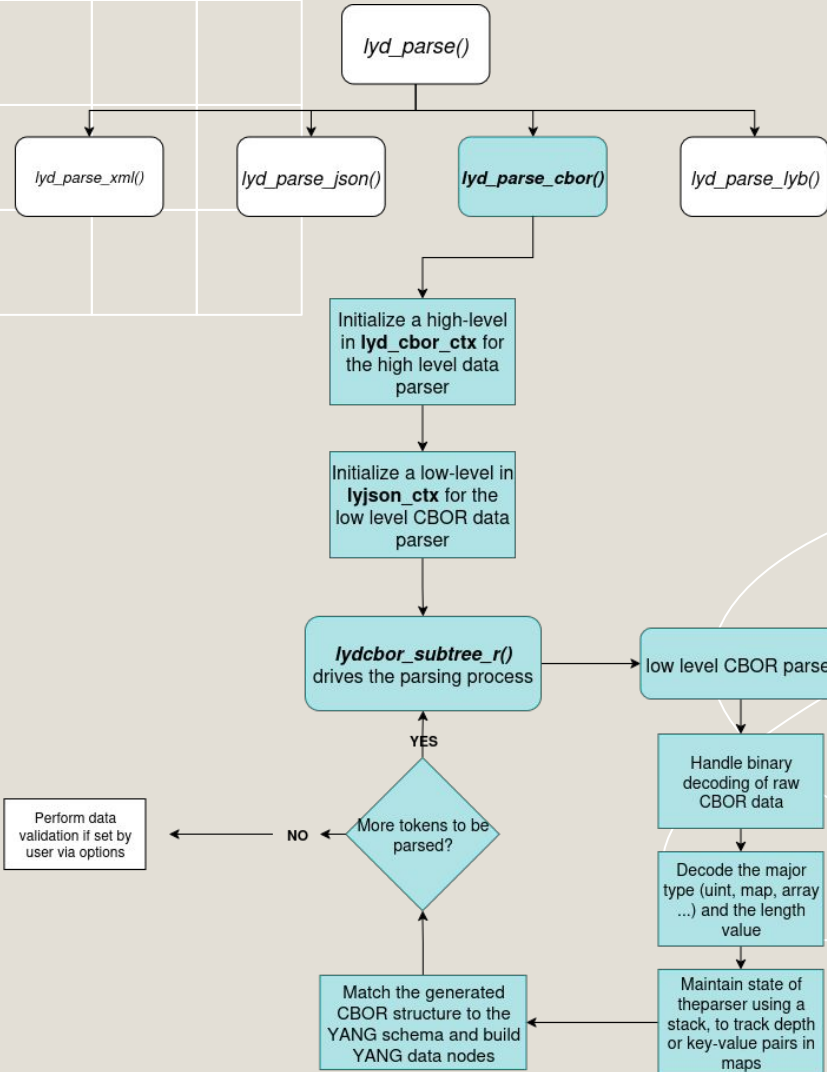
# Next steps

- 1. Review draft - make modification**
- 2. Make the implementation improvement**



# Adding CBOR support to libyang



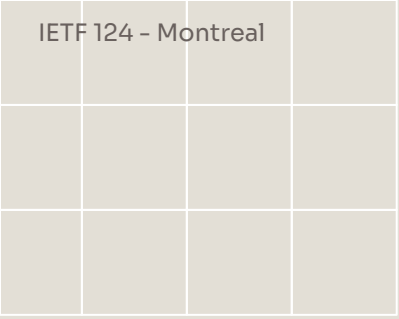


# Adding CBOR support to libyang

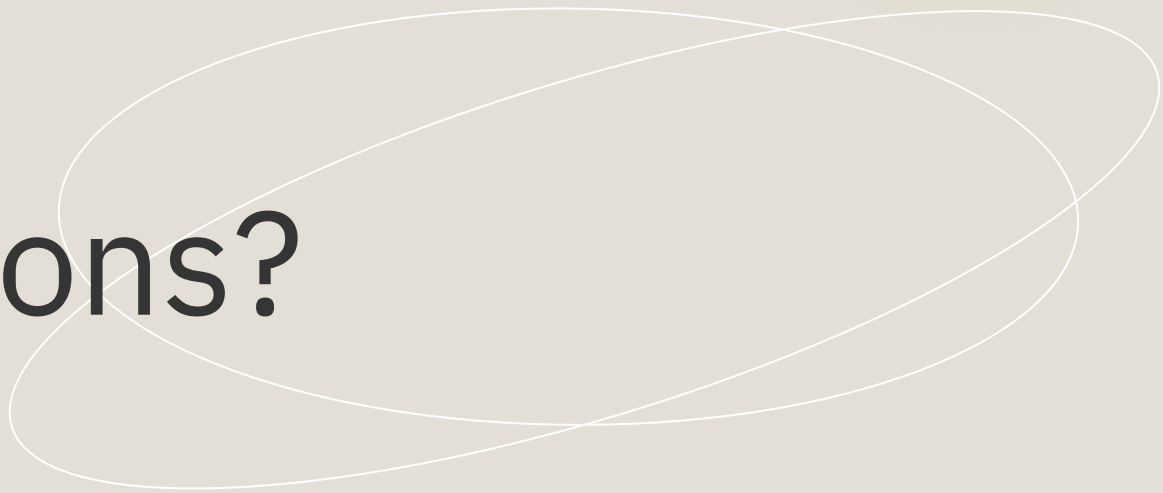
Implementation Link :

<https://github.com/MeherRushi/libyang/tree/cbor>

[https://github.com/MeherRushi/libyang/tree/sid\\_cbor](https://github.com/MeherRushi/libyang/tree/sid_cbor)



Any questions?



# Links

## https-notif draft & https-notif-cbor

Link to https-notif draft:

<https://datatracker.ietf.org/doc/draft-ietf-netconf-https-notif/>

Link to https-notif-cbor draft:

<https://datatracker.ietf.org/doc/draft-chittapragada-netconf-https-notif-cbor/>

Implementation Link:

<https://github.com/MeherRushi/https-notif-draft-imp>

## Adding CBOR support to libyang

Github Issue :

<https://github.com/CESNET/libyang/issues/2130>

Draft PR:

<https://github.com/CESNET/libyang/pull/2449>

Current Implementation:

<https://github.com/MeherRushi/libyang/tree/cbor>

[https://github.com/MeherRushi/libyang/tree/sid\\_cbor](https://github.com/MeherRushi/libyang/tree/sid_cbor)



# Thank you

Special Thanks to Mohit P Tahiliani,  
Mahesh & Kent (<https-notif> draft authors) and  
Thomas Graf, Alex Huang & team for their constant  
guidance and support throughout.