

One Tax API

IETF 114

23-24 July 2022

Philadelphia, Pennsylvania

Hackathon Plan

- What drafts/RFC's were involved?
 - [Hare issues](#)
 - HKDF [RFC 5869](#)
 - AES-GCM [RFC 8452](#)?
 - EdDSA [RFC 7748](#) and [RFC 8032](#)
- Specific Problems
 - Implement encryption protocols in [Hare](#)

What got done

- Ideas:
 - Implement Ristretto in Hare, [currently in last call](#)
 - Implement AES-GCM-SIV, [RFC-8452](#) in Hare
- New code:
 - Start adding Ed25519 [conformance tests](#) to Hare

Conformance Test Results

Library	0	1	2	3	4	5	6	7	8	9	10	11
ed25519-hare	X	V	V	V	X	X	V	V	X	X	X	V
BoringSSL	V	V	V	V	X	X	X	X	X	X	X	V
BouncyCastle	V	V	V	V	X	X	X	X	X	X	X	X
CryptoKit	V	V	V	V	X	X	X	X	X	X	X	V
Dalek	V	V	V	V	X	X	X	X	X	X	X	V
Dalek strict	X	X	X	V	X	X	X	X	X	X	X	X
ed25519-donna	V	V	V	V	X	X	V	X	X	X	X	V
ed25519-java	V	V	V	V	X	X	V	V	X	X	V	X
Go	V	V	V	V	X	X	X	X	X	X	X	V
libra-crypto	X	X	X	V	X	X	X	X	X	X	X	X
LibSodium	X	X	X	V	X	X	X	X	X	X	X	X
npm	V	V	V	V	X	X	X	X	X	X	X	V
OpenSSL-3.0	V	V	V	V	X	X	X	X	X	X	X	V
PyCA	V	V	V	V	X	X	X	X	X	X	X	V
python-ed25519	V	V	V	V	X	X	V	V	X	X	X	V
ref10	V	V	V	V	X	X	V	X	X	X	X	V
TweetNaCl-js	V	V	V	V	X	X	V	V	X	X	X	V
Zebra	V	V	V	V	V	V	X	X	X	V	V	V

What we learned

- Implemented in Hare
 - [HKDF](#)
 - [Ed25519](#)
 - [Curve 25519](#)
- Several AES-GCM ciphers
 - [AES-GCM](#) implemented
 - AES-GCM-SIV not yet implemented in Hare, example implementations
 - [Rust](#)
 - [C](#)
 - [Soatak](#) summarizes that AES-GCM is faster than AES-GCM-SIV but less secure
- Issues with existing drafts/RFCs
 - [Chalkias, Garillot and Nikolaenko](#) suggest improvements to RFC 8032 to enable use in contract signing, electronic voting and transactions
 - [Henry De Valence](#) suggests standardizing signature [validity rules](#) for Ed25519
 - Chalkias, Garillo and Nikolaenko's test vectors should be added to those specified in RFC 8032

Wrap up

Team members:

- Benson Muite

Other links:

- [noble-ed25519](#)

First timers @ IETF/Hackathon:

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Notes and contacts:

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