IETF Hackathon
Ultra Low-Latency Crypto, Areion

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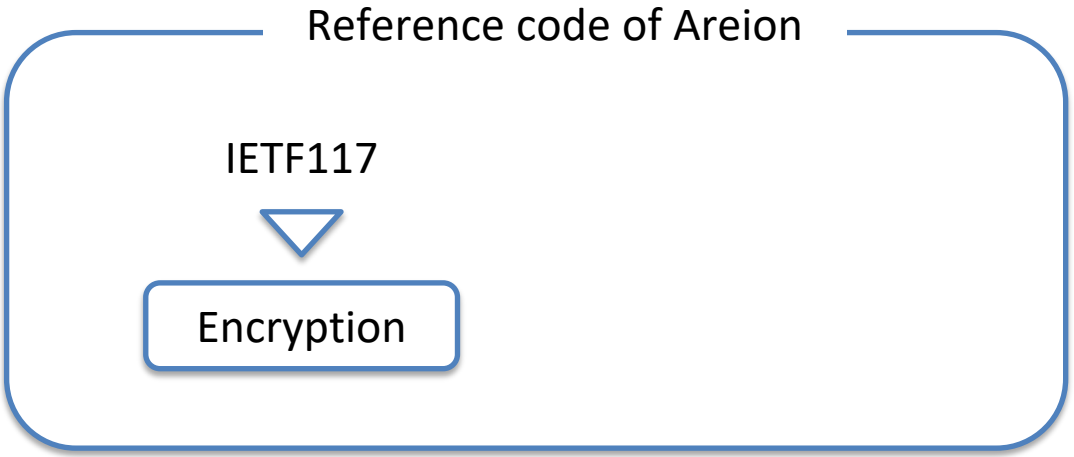
What is Areion

- Low-latency crypto, Areion
  - Areion is a secure and low-latency cryptographic permutation
    - cryptographic permutation based AES instructions
    - Areion can be applied to encryption and hashing
  - For more details, please refer the IETF117 hackathon slides and I-D

- Use case of Areion
  - Use case that requires real-time secure communication
    - ex) e-Sports, remote surgery, satellite communication…

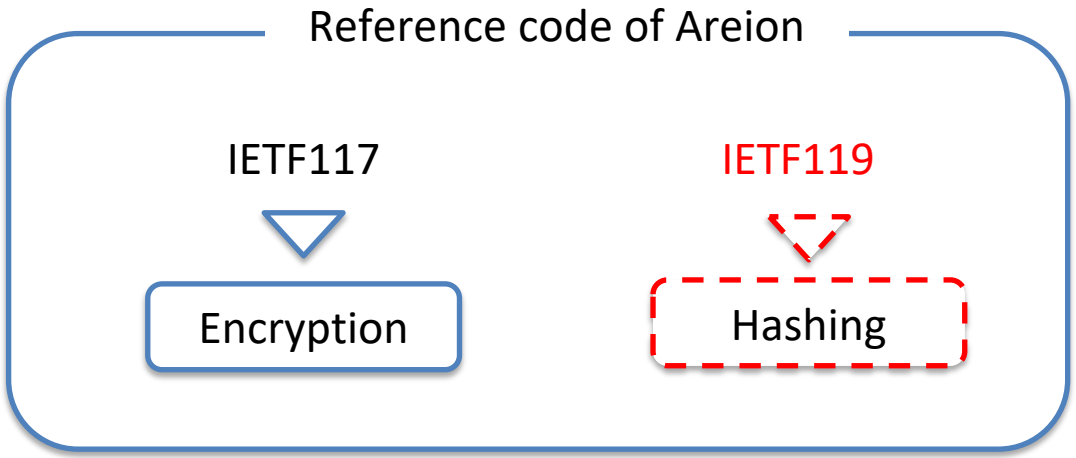
Hackathon Plan

- Current Status on cryptographic primitives
  - Only authenticated encryption function is implemented in reference codes.



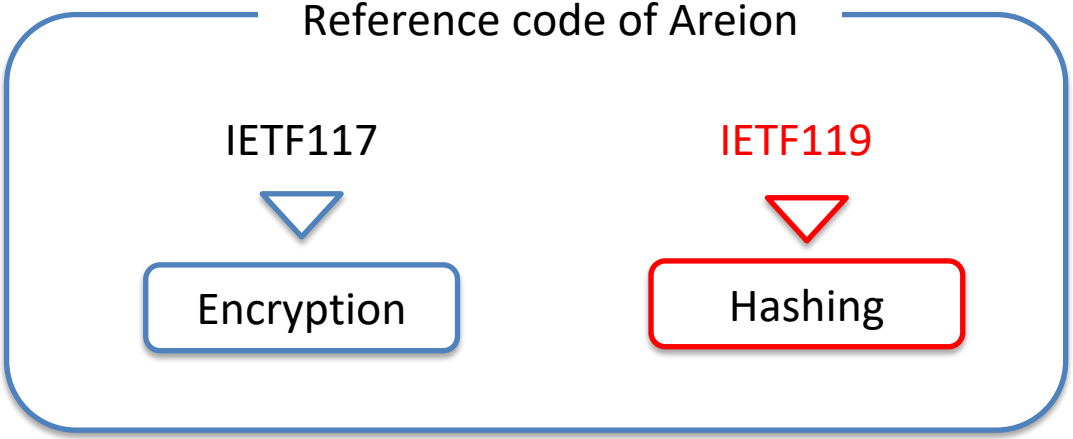
Hackathon Plan

- Goal
  - To add hash function on Areion algorithm to the reference codes of Areion



Hackathon Result

- Result
  - We successfully added Areion hash to the reference code



Next Step

- Implementation
  - WebRTC with Areion
    - Already implemented after IETF118
  - Hash functions
    - add into OpenSSL
  - Encryption modes
    - OTR mode
  - Independent implementations
    - Call for volunteers!
      - If you are interested in our activities, please contact us!
- Performance
  - Compare and evaluate the performance of AES256-GCM and AREION256-OPP
- Application
  - Discussion with experts

Wrap Up

Champions:

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For more details

・Open Source

- Reference code
  https://github.com/gmo-ierae/low-latency-crypto-areion
- For OpenSSL
  https://github.com/gmo-ierae/areion-openssl

・Internet Draft

- https://datatracker.ietf.org/doc/draft-sakemi-areion/