Rocca-S

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Rocca-S

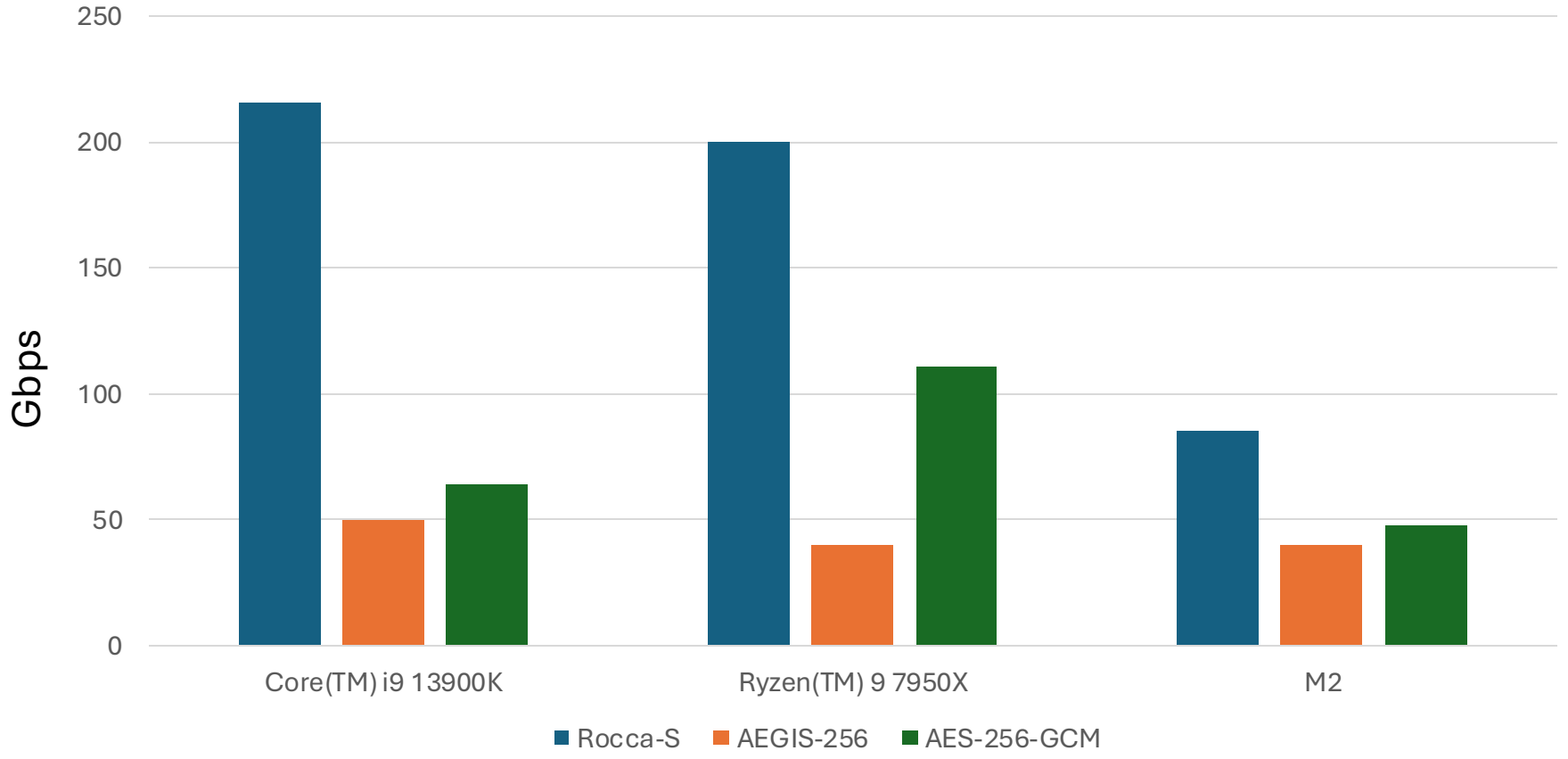
- Design
  - Sponge-based construction
  - 256-bit key and 256-bit tag
  - Three modes: AEAD, encryption only and keystream generation
- Security (in nonce respecting setting)
  - Classical setting: 256-bit security against key-recovery and 192-bit security against forgery
  - Quantum setting: 128-bit security against key-recovery and forgery
- Internet draft: https://datatracker.ietf.org/doc/draft-nakano-rocca-s/
- The paper is presented at ESORICS 2023

Opensource

- Several implementations are available including
  - openssl
  - quictls+msquic (achievement in IETF #118 hackathon)
  - libsodium
  - reference implementation
- Link to github is https://github.com/yt-nakano

Performance evaluation update

- Performance evaluation with “openssl speed -aead”



Potential use cases requiring high throughput

- High Performance Wide Area Network (hp-wan)
  - Massive data transmission between data centres with data integrity
- 6G discussion in 3GPP
  - 3GPP SA1 is now discussing new use cases and their requirements for 6G
    - System and Operational Aspects
    - Integrated Sensing and Communication
    - Ubiquitous Connectivity
    - **Immersive Communication** (which requires high throughput)
    - Massive Communication
    - Further Use Cases on Industry and Verticals
- 6G white papers from various organisations
  - Holography, digital twin, big data analytics
- Other use cases
  - Massive IoT/drone platform
  - Inter-GPU communication for AI (GPU cluster)
  - High-quality real-time medical data transmission

Discussion

- Would you support the adoption of Rocca-S as a CFRG item?

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