RARE - FREERTR
NVIDIA DOCA VIRTUAL EUROPEAN HACKATHON
MARCH 22ND, 2022
RARE TEAM
During the Hackathon

- EUROPEAN country
  - Hungary
  - France

- Members of the team
  - Csaba MATE / KIFU
  - Frederic LOUI / RENATER

- Team expertise
  - Network architect / freeRtr maintainer
  - Network architect / Technical leader
THE CHALLENGE
Add NVIDIA DPU RARE/freeRtr support

- Several possibilities:
  - P4
  - DOCA
  - DPDK

- How is it being addressed today?
  - DPDK dataplane is working flawlessly
  - Depending on DOCA library maturity and availability this can extend RARE/freeRtr possible usage

- What is the innovation?
  - RARE/freeRtr is a swiss army knife that is meant to be used as primarily a router but it can also be used as a specific appliance.
  - DOCA libraries can be linked in order to provide additional functionality (regexp, macsec encryption, DPI engine) at line-rate
  - Thus unlocking some new use case
THE SOLUTION

- What is your offering?
  - A common routing/network platform boasting various dataplane
  - Vice-versa dataplane can be automated by your own control plane
  - Fully programmable
  - Disaggregated

- What’s unique about it?
  - One control plane to rule all dataplanes
    - P4 BMv2 / TOFINO
    - DPDK
    - DPDK/CODA extention (⇒ future work)
    - SWITCHDEV Spectrum v2/v3 ASIC (?)

- Why is the solution better than other solutions?
  - Industry standard
    - Fully interoperable with existing vendor
    - Used by NREN since 2010
    - Dataplane appeared in 2019 with the RARE project
    - Simple

- What is your setup?
  - freeRtr control plane ☝️ interface ☝️ Candidate(in the Hackathon, NVIDIA / DPU) dataplane

- What is the business benefit? Performance improvement
  - Possibility to innovate and become disruptive
  - Leverage powerful hardware design such as DPU
  - Lower TCO and reduce lead time development
CONCLUSION → NEW HARDWARE DATAPLANE!

FreeTr

Common message API

P4Runtime message API

Code / Algorithm validation
(Learning reference)

BfRuntime message API

Code port
Hardware validation
(Core backbone use cases)

p4dpdk message API

DPDK Code port validation
(Access layer)