

OPEN POSSIBILITIES.

SAI For DPU



OCP
GLOBAL
SUMMIT

NOVEMBER 9-10, 2021

SAI For DPU

Marian Pritsak, Software Architect, Nvidia

OPEN POSSIBILITIES.



OPEN
PLATINUM™



Contents

- DPU Architecture and Use Cases
- New Overlay Pipeline
- Stateful Tables

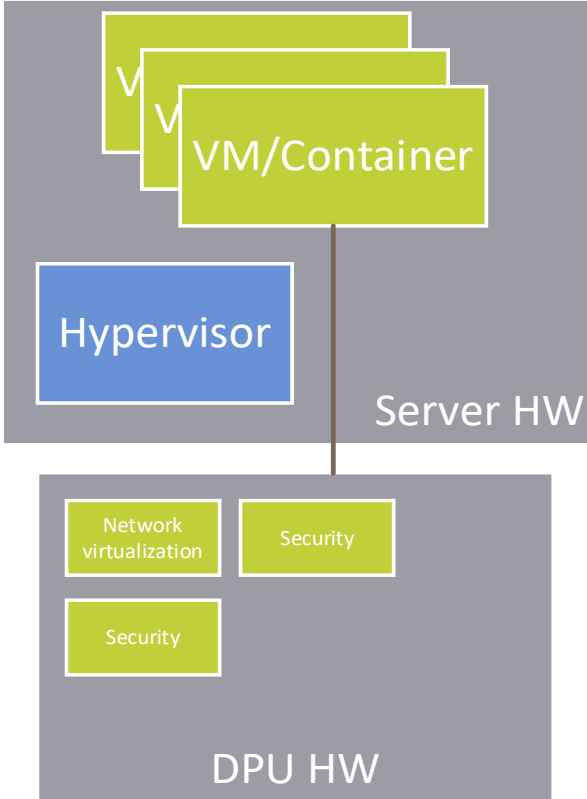


NETWORKING

OPEN POSSIBILITIES.



DPU Architecture



- Host-agnostic network solution
- Integrated Control & Data planes
- Encrypt/Decrypt, RegEx, Compress/Decompress
- Distributed networking resources
- Functional Isolation
- Storage Disaggregation & Data Acceleration
- Scalability & Programmability



NETWORKING

OPEN POSSIBILITIES.



Use Cases

- ❖ Security offload:
 - Inline encryption
 - Key management
- ❖ Network offload:
 - Custom pipeline
 - Connection tracking
- ❖ Storage offload:
 - NVMe emulation and acceleration
 - Compression



NETWORKING

OPEN POSSIBILITIES.

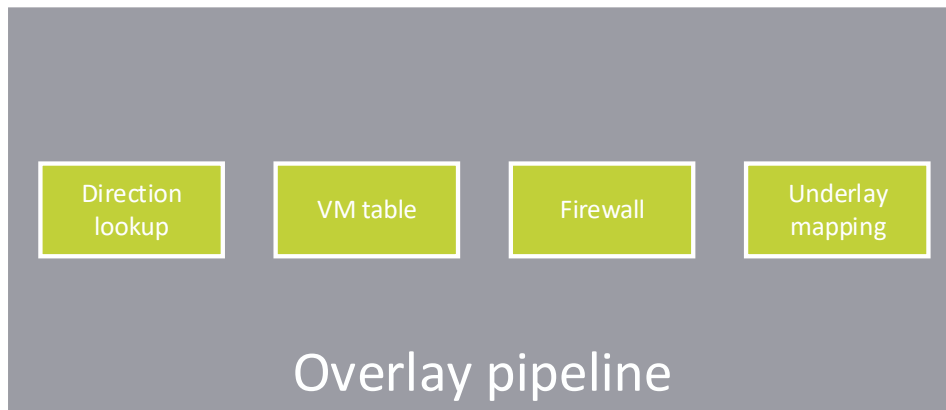


New Overlay Pipeline



NETWORKING

Standard SAI
(underlay)



Standard SAI
(underlay)

- Standard SAI may be used for common underlay functionality
- Custom packet processing can be defined for the overlay pipeline

OPEN POSSIBILITIES.



New Overlay Pipeline - Integration



NETWORKING

Every overlay table defined as SAI extension

Many pipelines possible per use case

Connections between tables to be loaded into SAI in the future

OPEN POSSIBILITIES.



Stateful Tables – Use Cases

- Stateful Firewall
- Dynamic NAT
- Flow Burstiness
- Flow Caching
- Stateful Load Balancing
- Etc.



NETWORKING

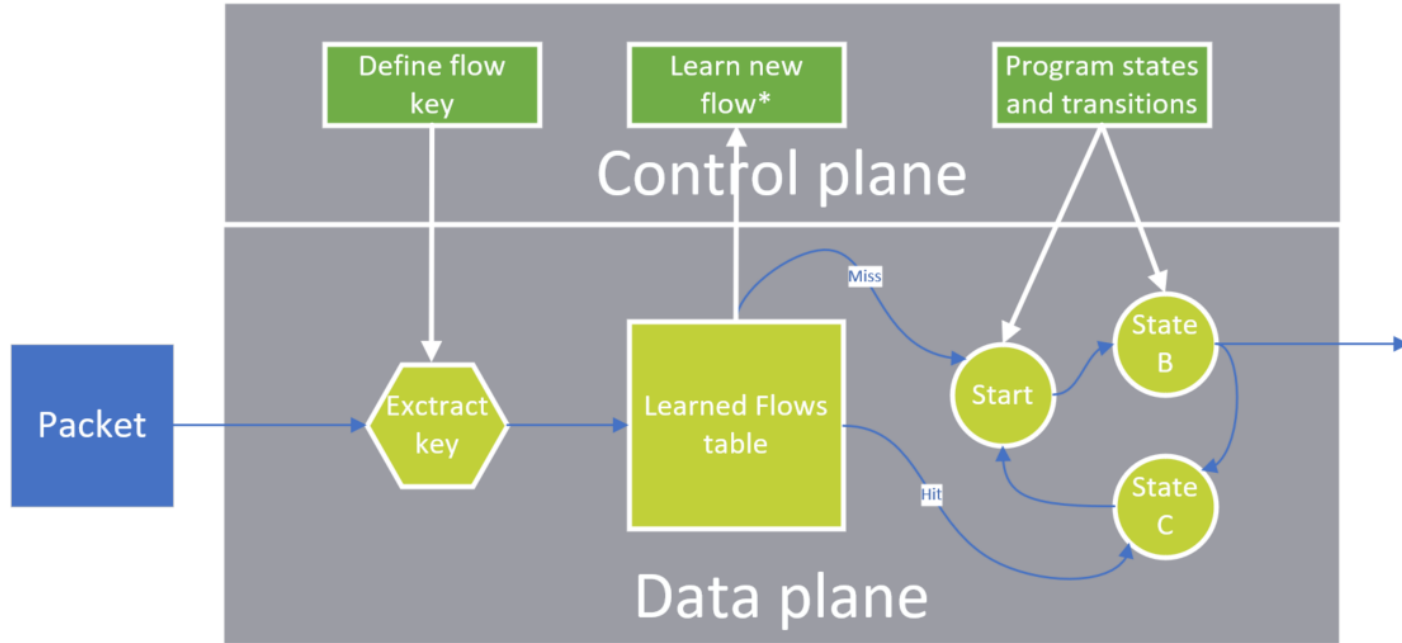
OPEN POSSIBILITIES.



Stateful Tables – Elements



NETWORKING



OPEN POSSIBILITIES.



Stateful Tables – Elements cont.

- Match Key
- State Graph
- Eviction Policy
- Size
- Context
- Timer



NETWORKING

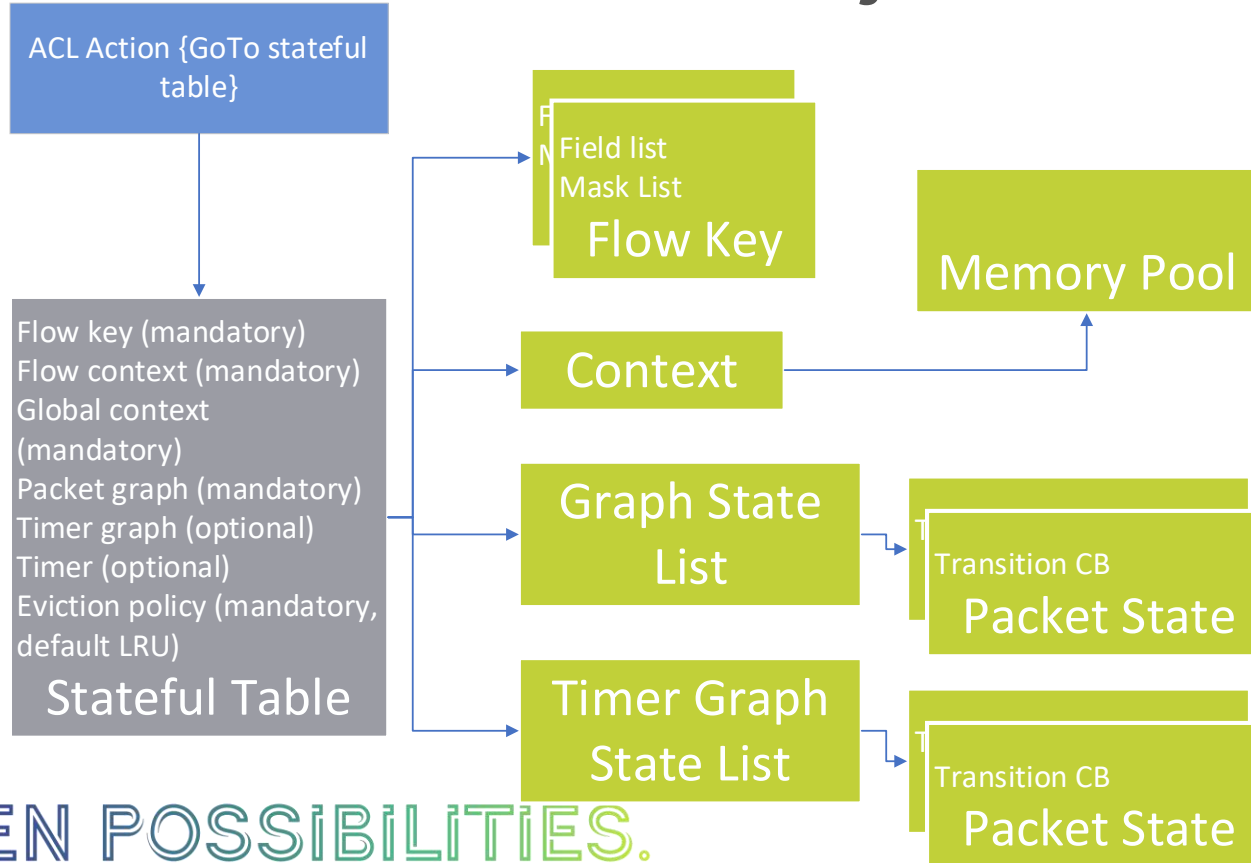
OPEN POSSIBILITIES.



Stateful Tables – SAI Object Model



NETWORKING



OPEN POSSIBILITIES.



Call to Action

- Stateful SAI API proposal - <https://github.com/opencomputeproject/SAI/pull/1326>

OPEN POSSIBILITIES.



Thank you!



OCP
GLOBAL
SUMMIT

NOVEMBER 9-10, 2021