When SRv6 Meets 5G Core: Implementation and Deployment of a Network Service Chaining Function in SmartNICs

Speaker: Guilherme Matos, UFSCar

Leandro Almeida, UFSCar

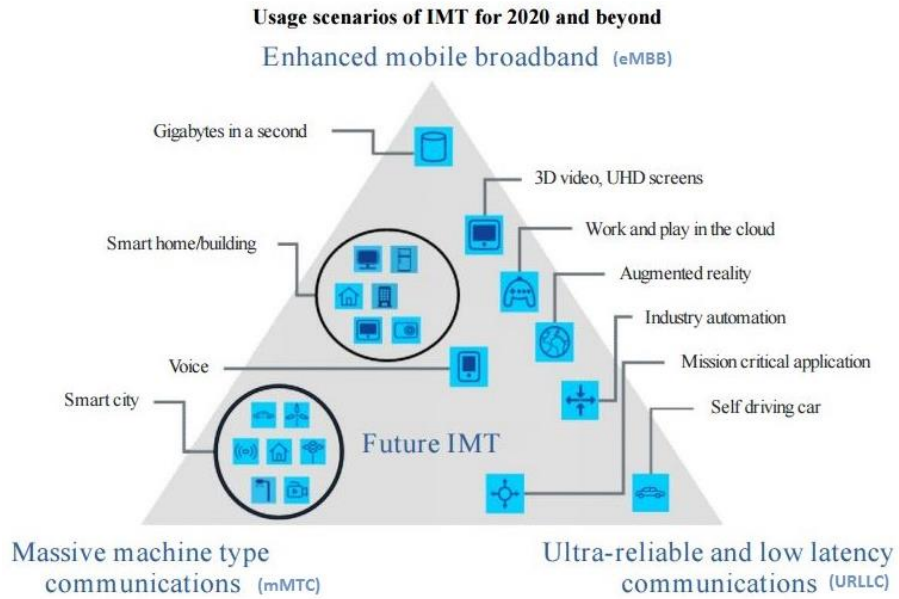
Fábio Verdi, UFSCar

Luis Contreras, Telefonica

Agenda

- Introduction
- Problem
- INCA
- Working flow
- Proof of Concept
- Demo
- Key contributions
- Future work
- Q&A

Introduction



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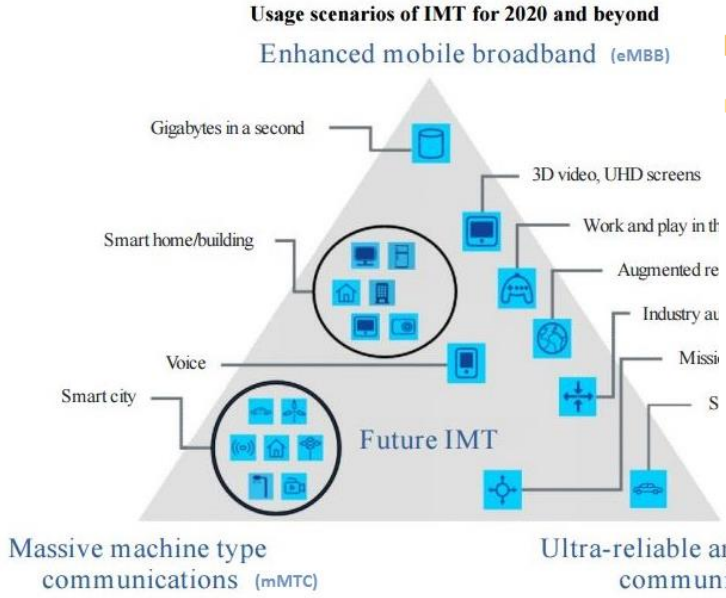
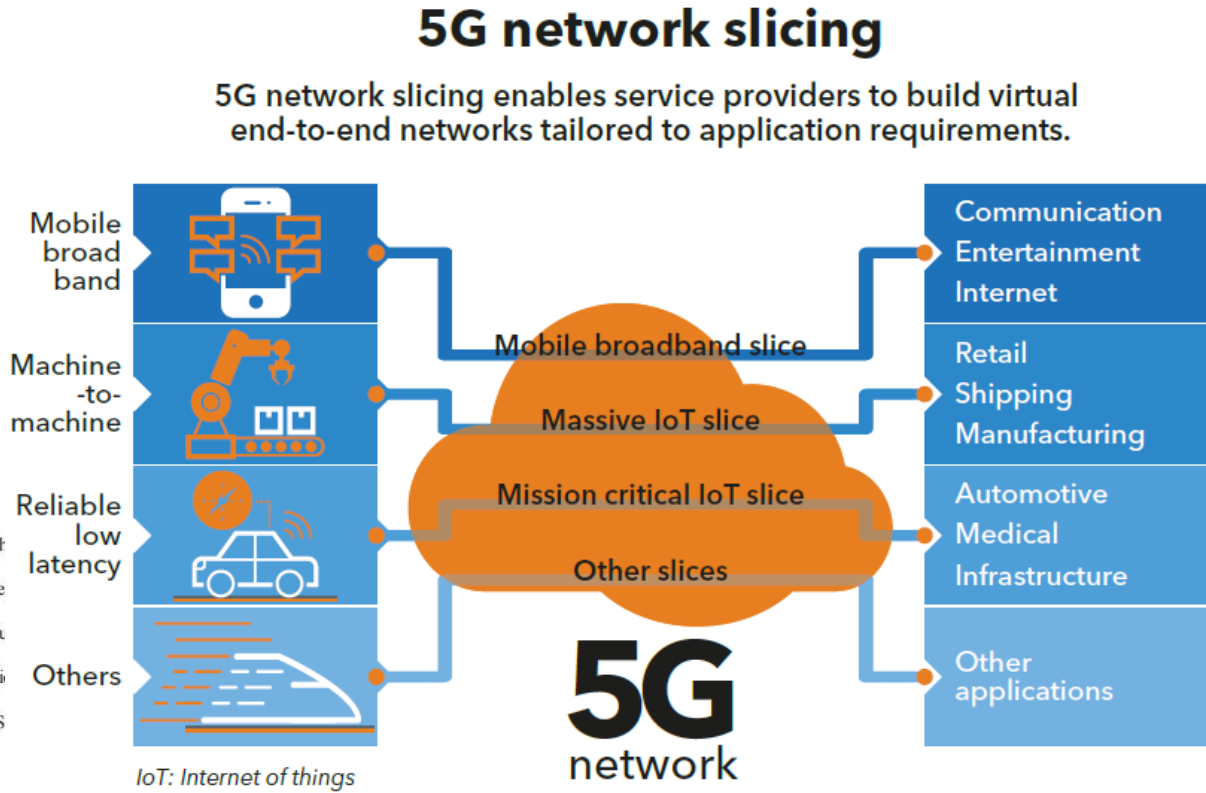
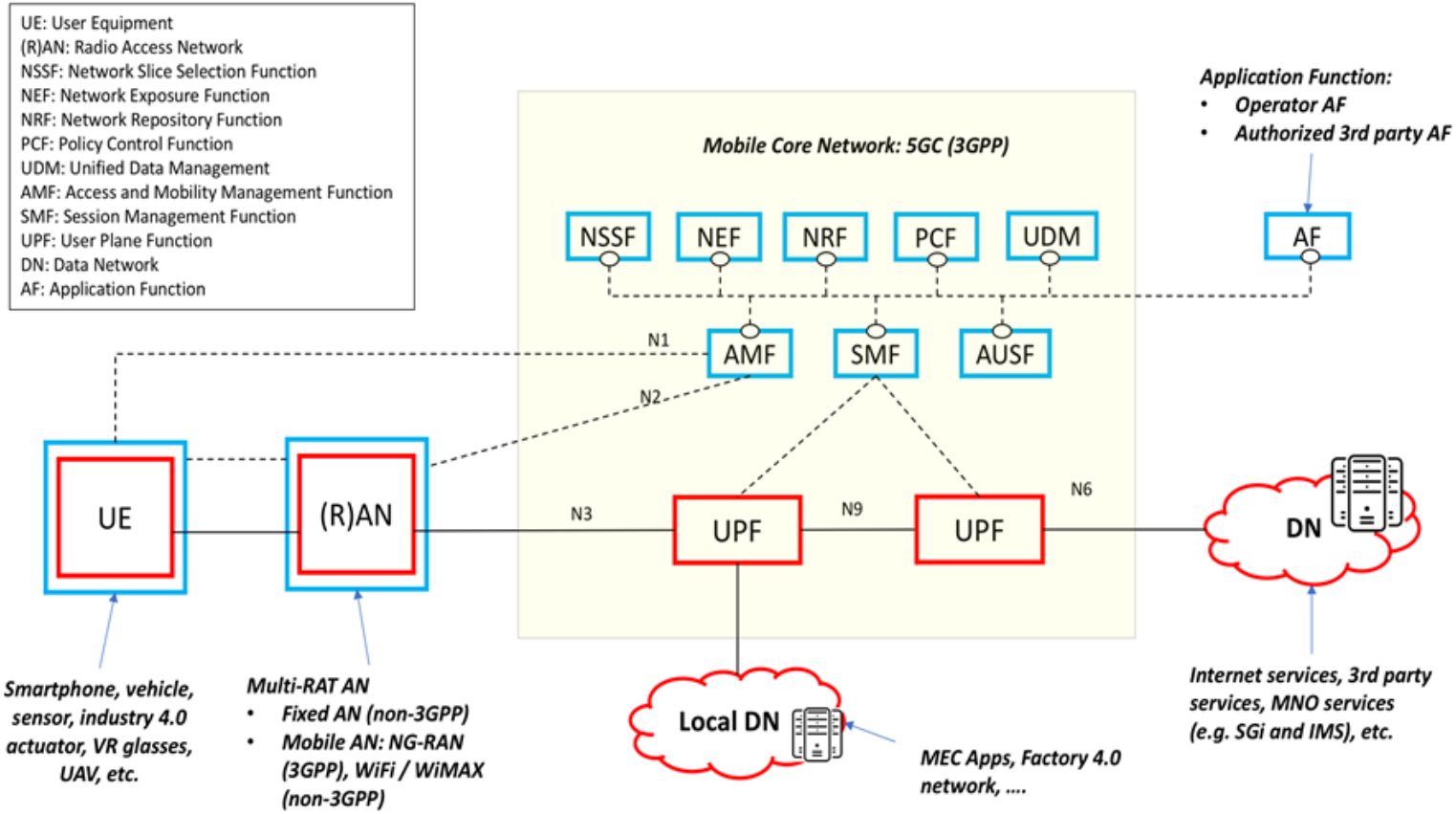




Problem


UE: User Equipment
(R)AN: Radio Access Network
NSSF: Network Slice Selection Function
NEF: Network Exposure Function
NRF: Network Repository Function
PCF: Policy Control Function
UDM: Unified Data Management
AMF: Access and Mobility Management Function
SMF: Session Management Function
UPF: User Plane Function
DN: Data Network
AF: Application Function
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NRF
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Application Function:
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Authorized 3rd party AF
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SMF
AUSF
N2
UE
(R)AN
N3
UPF
N9
UPF
N6
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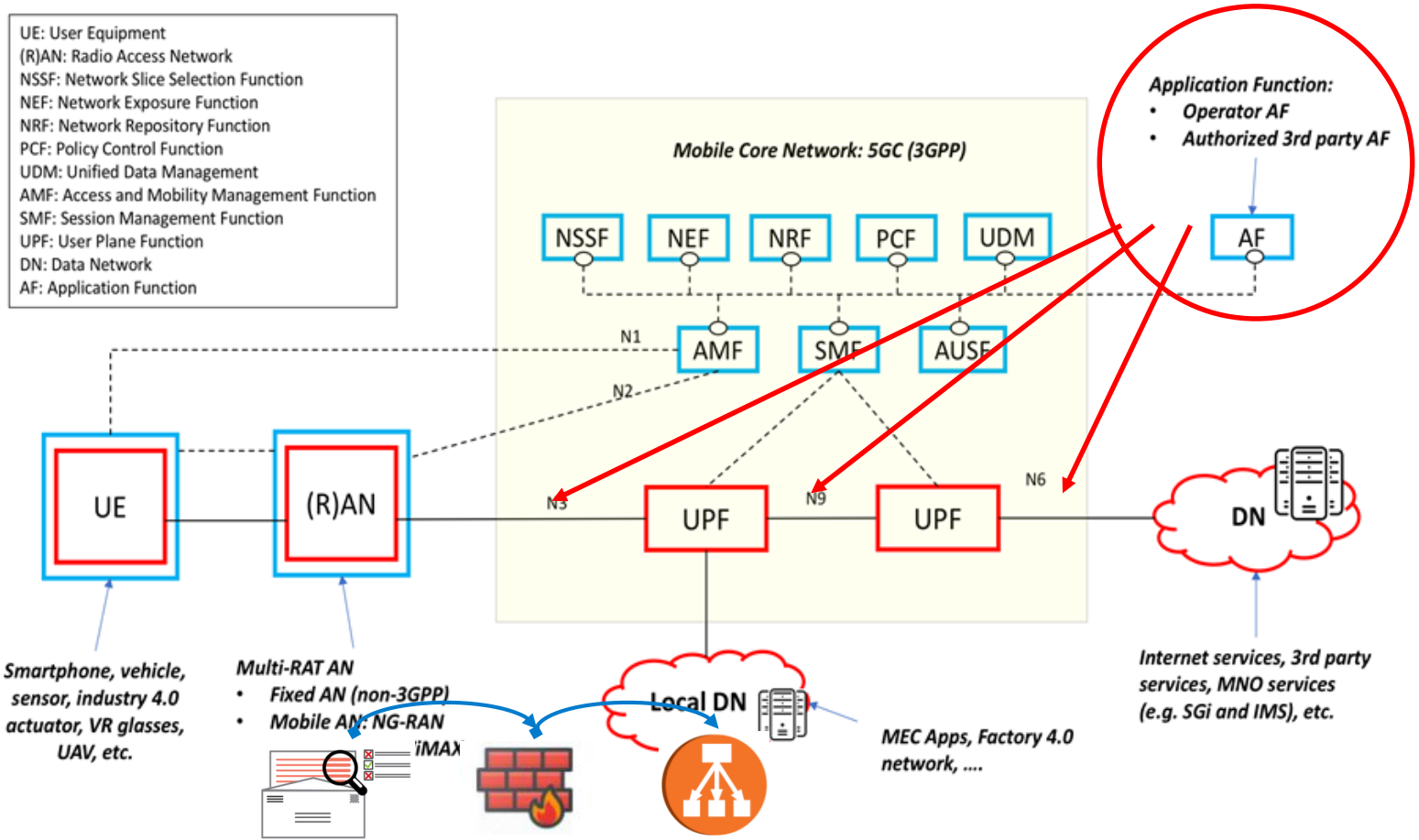
Local DN
Smartphone, vehicle, sensor, industry 4.0 actuator, VR glasses, UAV, etc.
Multi-RAT AN
Fixed AN (non-3GPP)
Mobile AN: NG-RAN (3GPP), WiFi / WiMAX (non-3GPP)
MEC Apps, Factory 4.0 network, ...
Internet services, 3rd party services, MNO services (e.g. SGi and IMS), etc.

Problem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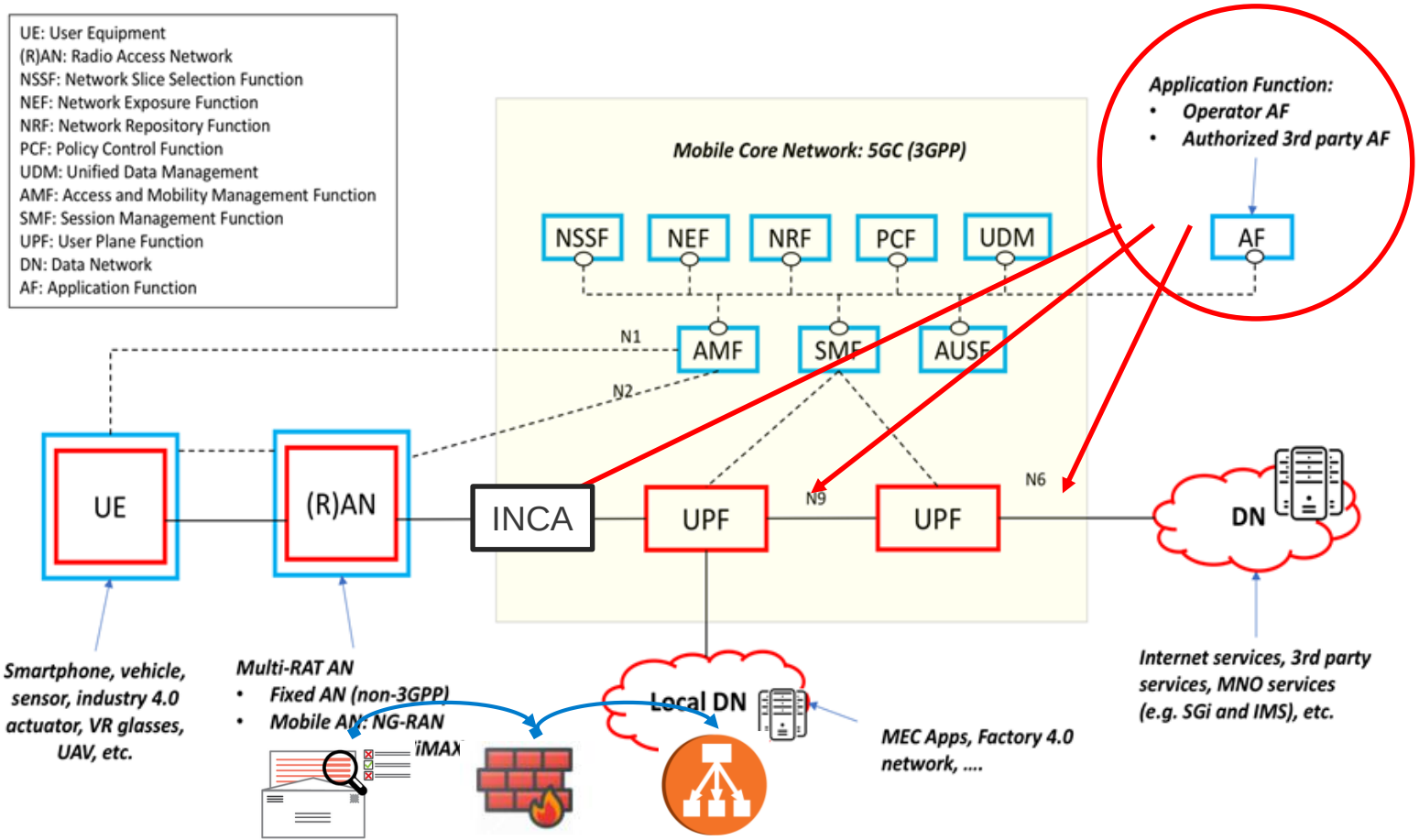
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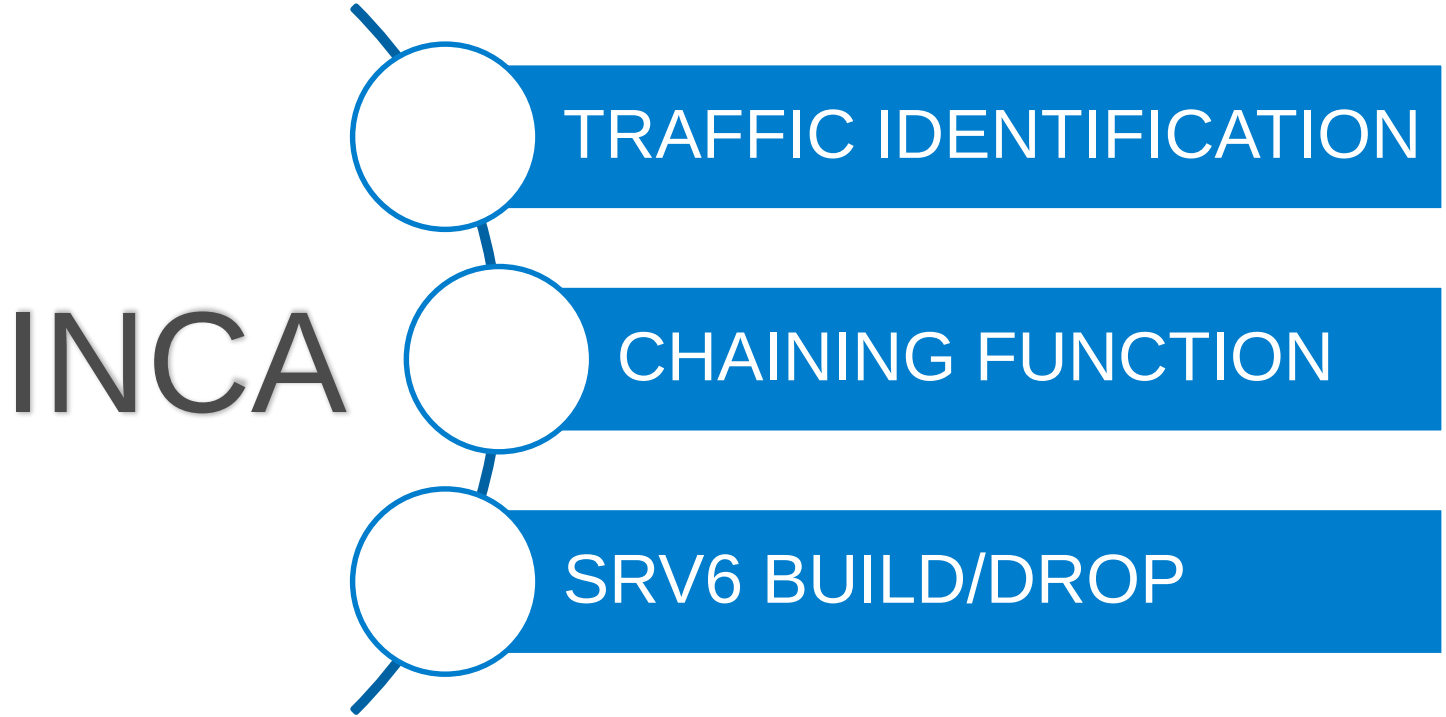
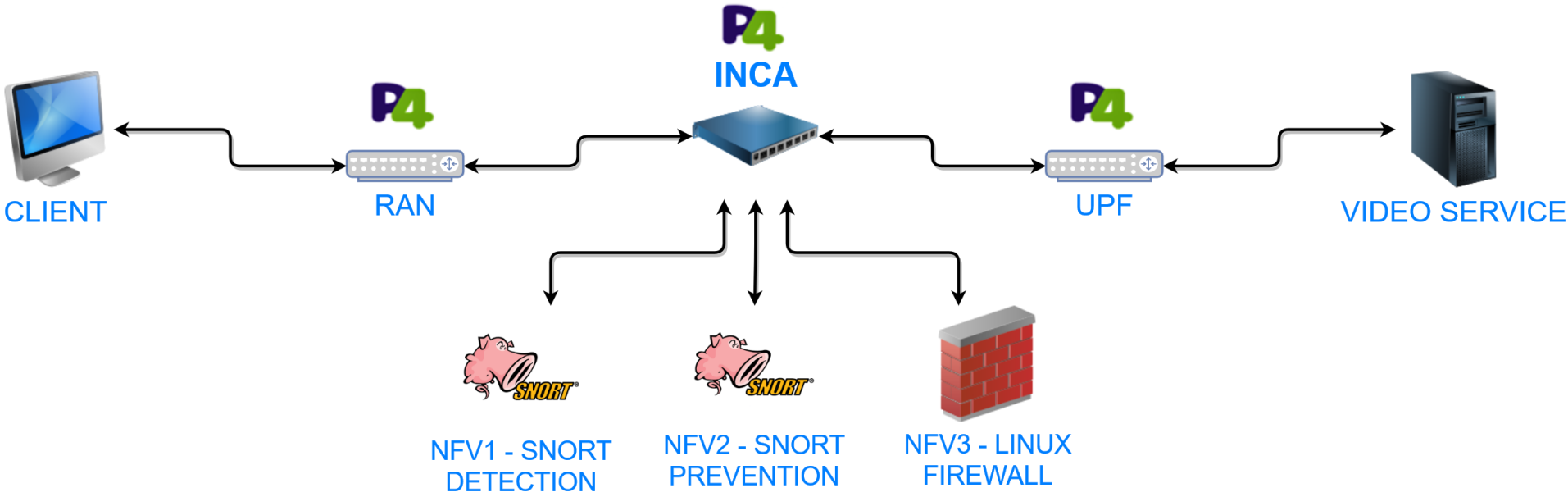
In-Network IdentifiCation and ChAining - INCA



Working flow



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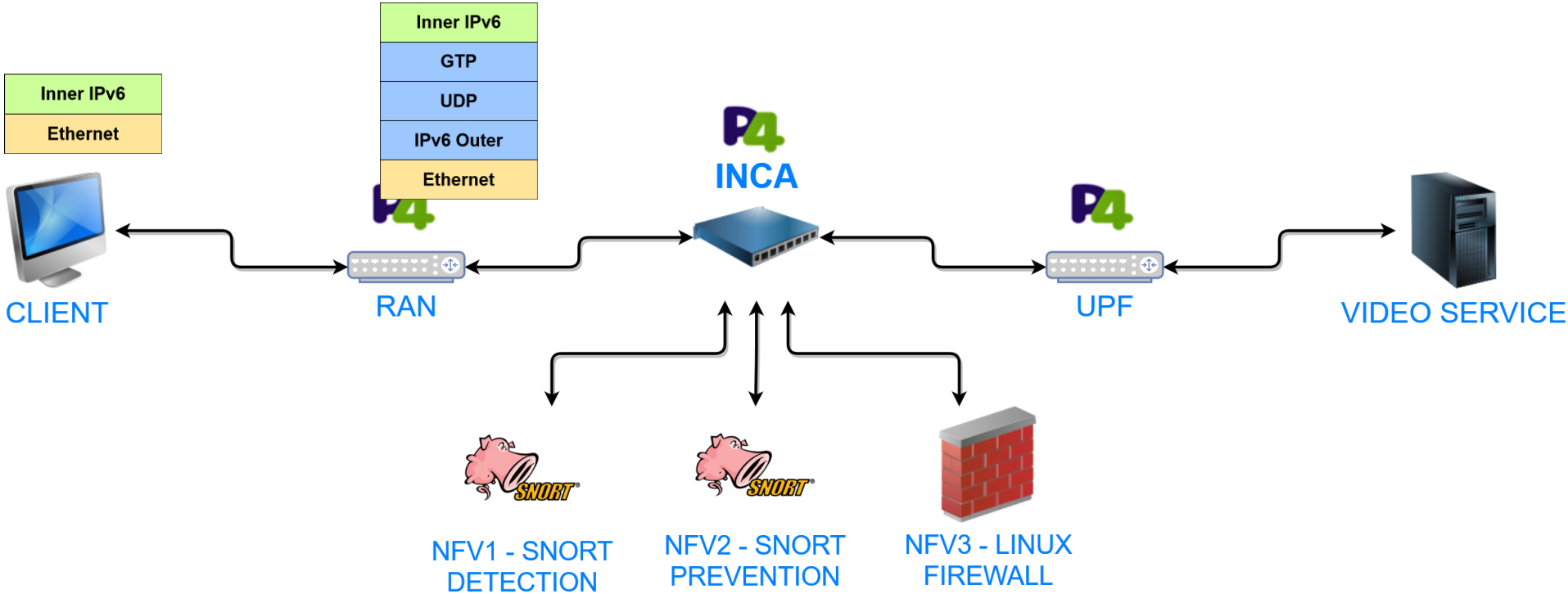
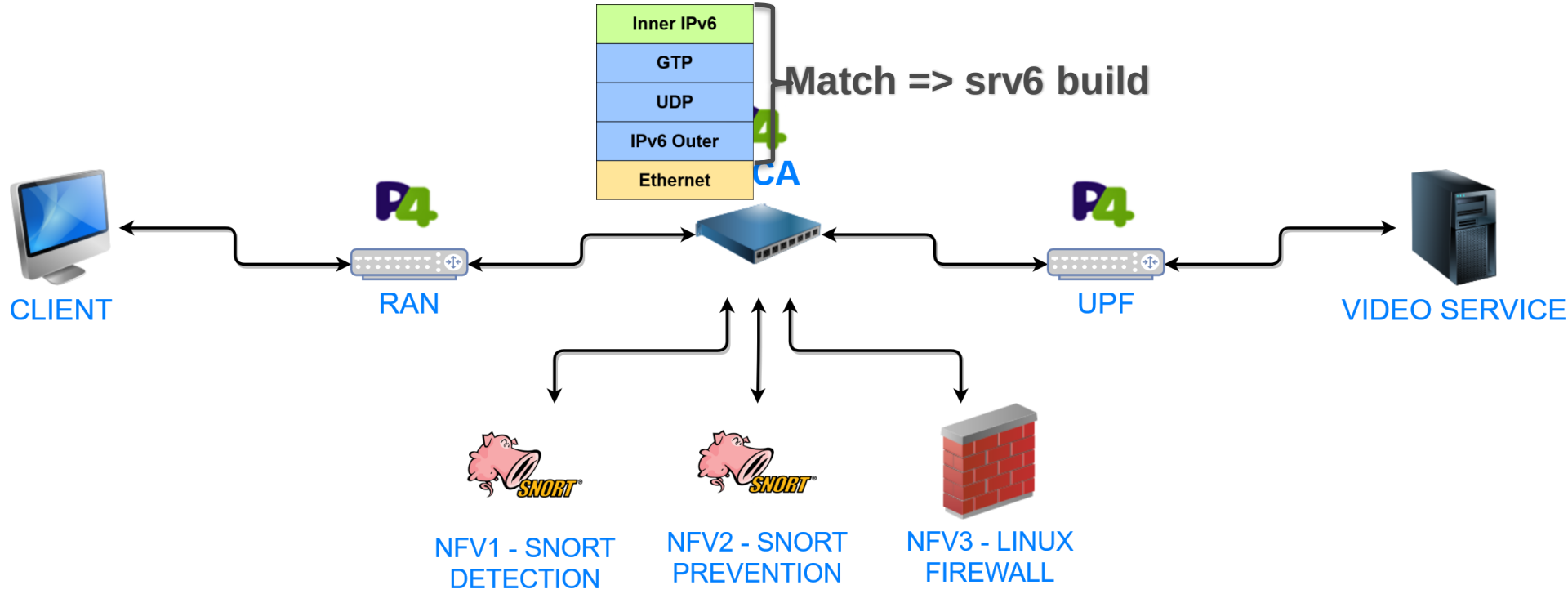


Working flow



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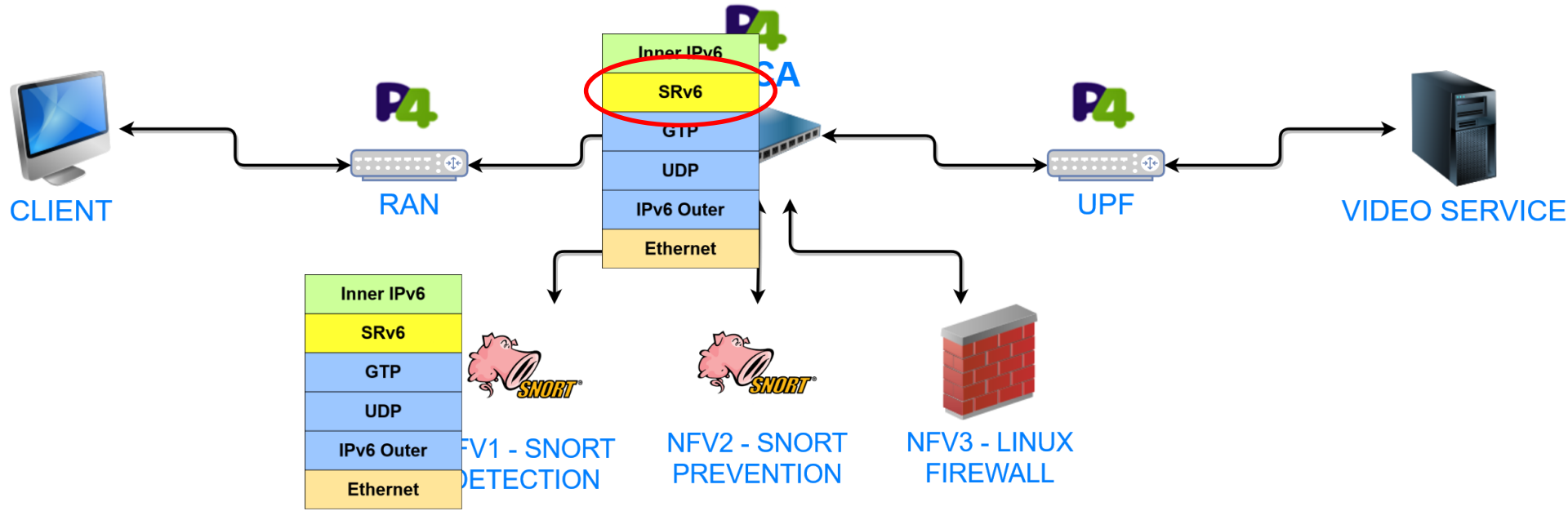

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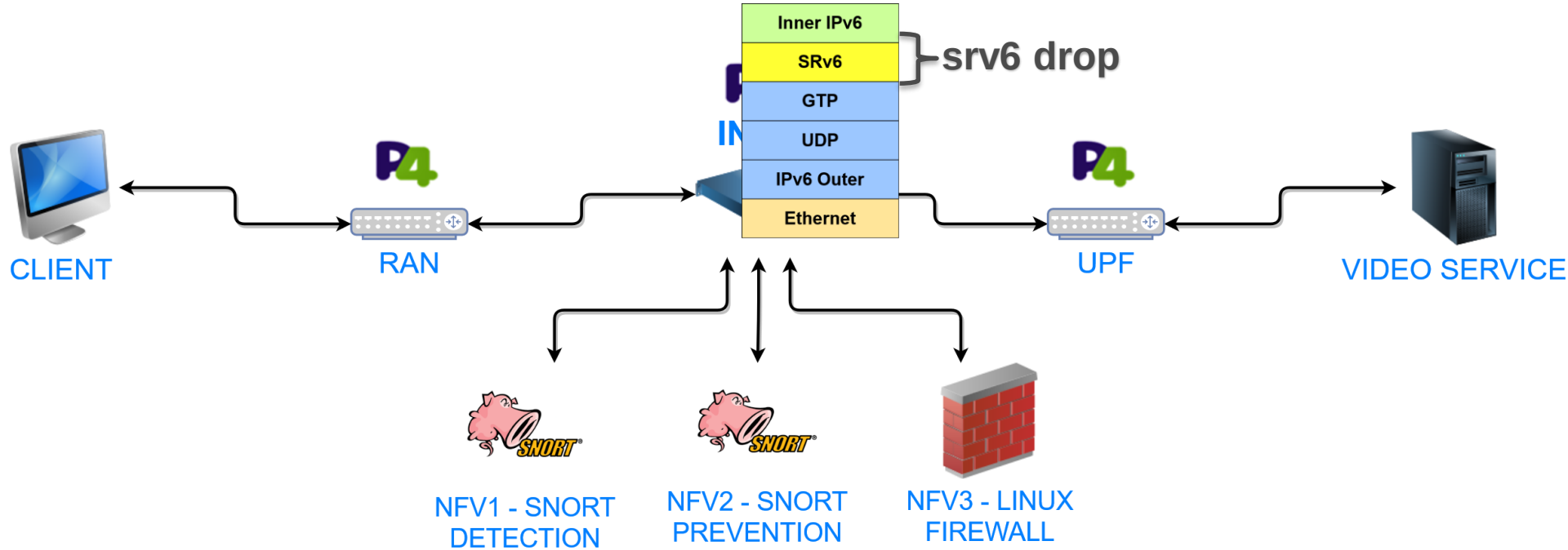

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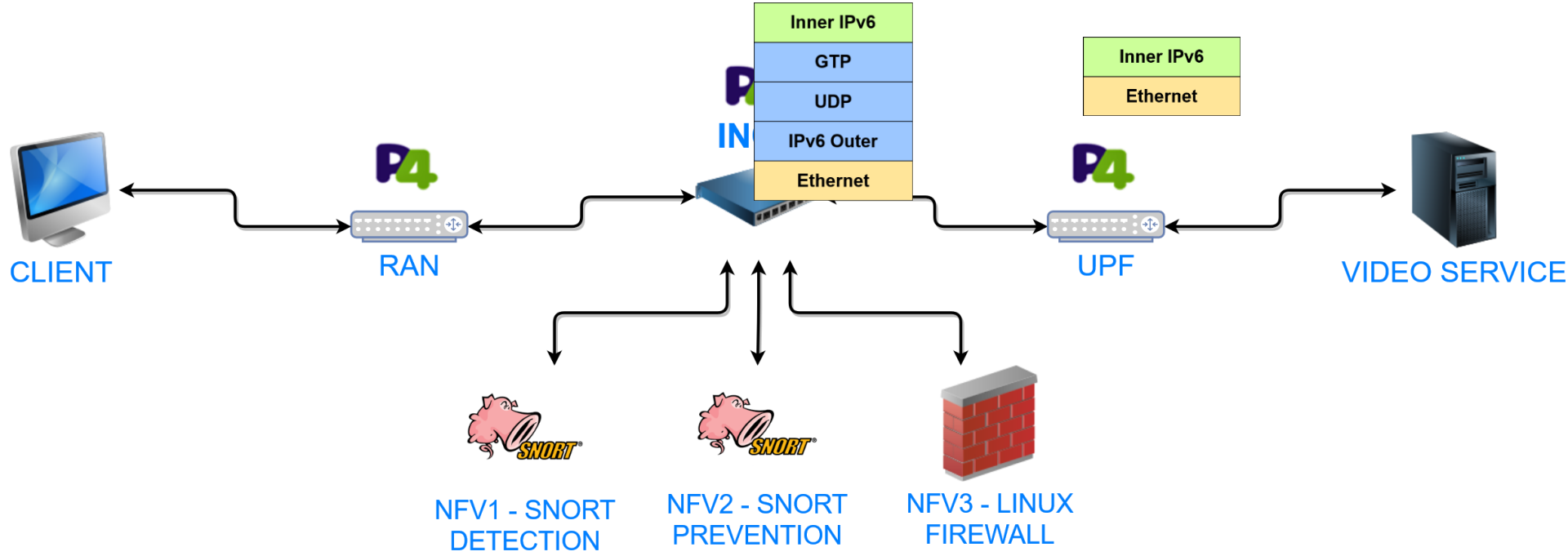
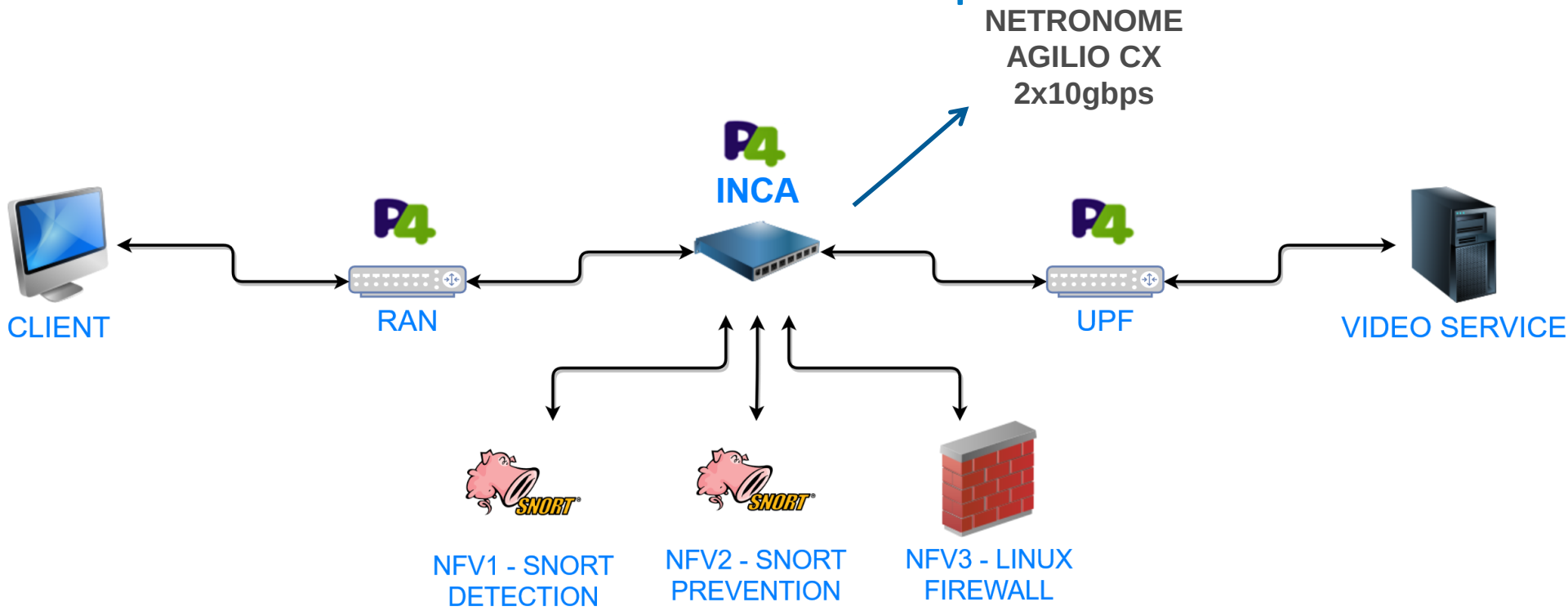


Proof of Concept



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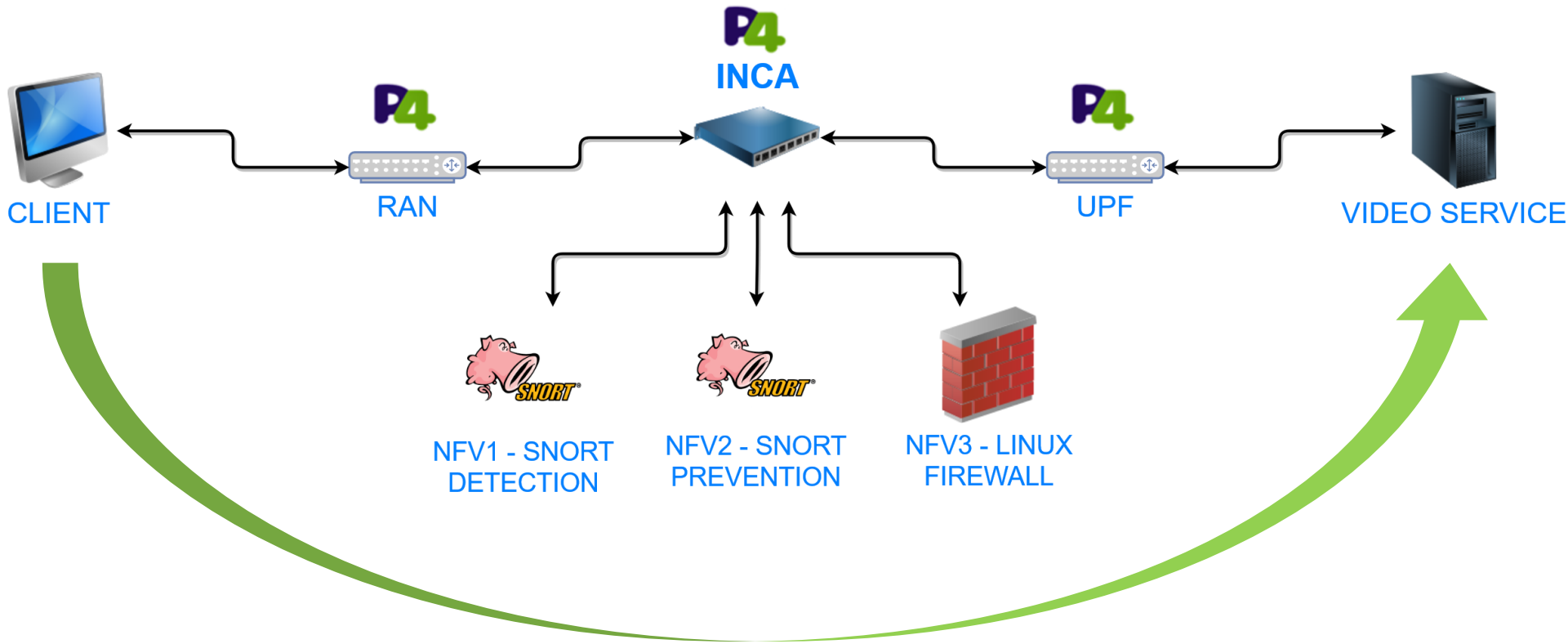

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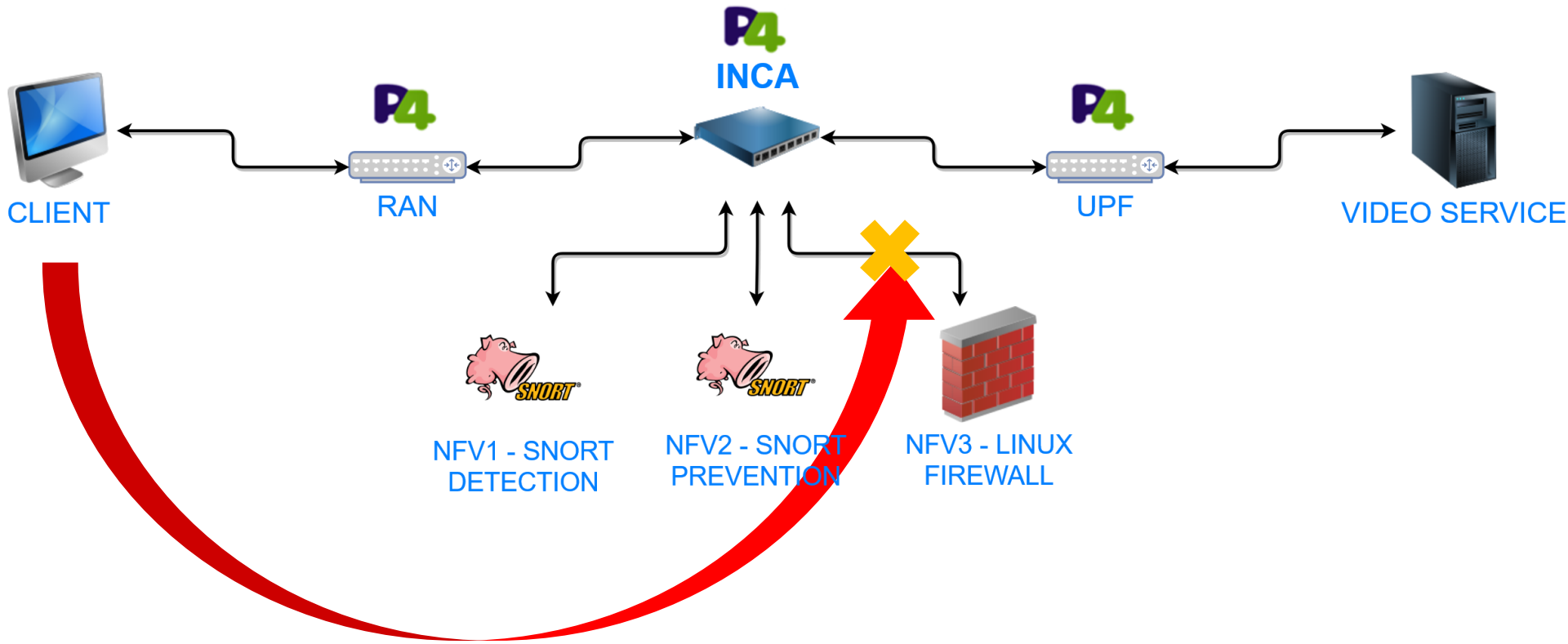

Demo

Key contributions

- 5G traffic identification
- 5G UL/DL PDU Session protocol implementation
- SRv6+ build/drop

Future work

- Scalability evaluation
- Performance

Q&A

Thank You

Guilherme Matos
guimvmatos@gmail.com

https://github.com/guimvmatos/srv6Project_Netronome