IMT Atlantique
Bretagne-Pays de la Loire
École Mines-Télécom

CHAIRE CYBER CNI
Sécurité des infrastructures critiques

Software-defined Security for Network Function Virtualization

Author

Manel Smine

Phd Student
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Advisors

Marc-Oliver Pahl
David Espes

School

IMT Atlantique
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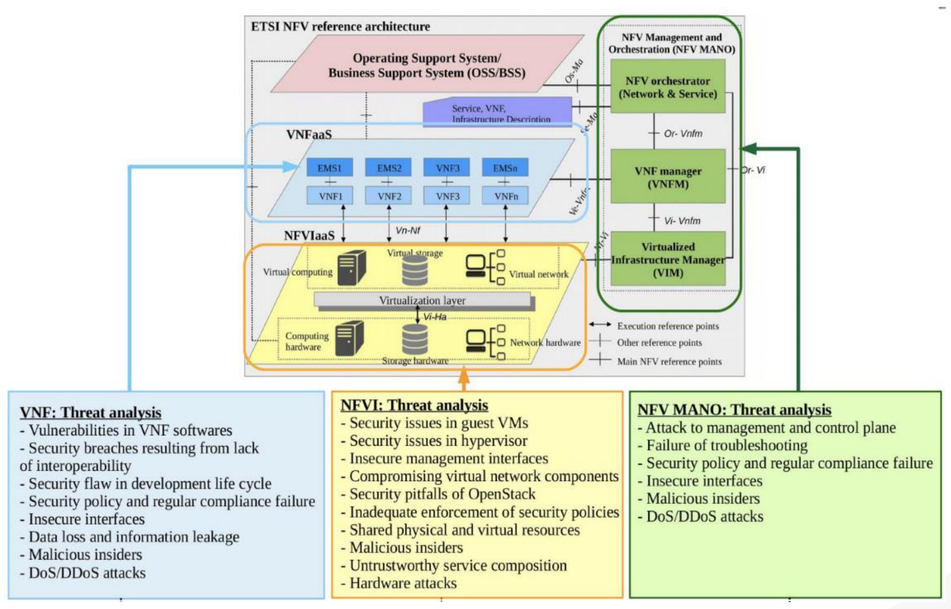
Context: NFV Security



Motivation:

Enhancing the security of NFV services by defining an optimal deployment of access control policies

Research Questions:

How to deploy access control policies on NFV services?

- How to specify high-level access control requirements to be enforced over network services?
- How to transform the high level access control policy into a concrete deployable policy?
- How to efficiently manage conflicts and exceptions that may exist between different access control policies?
- How to optimally deploy of access control model on NFV services?

Contributions:

1. Network Functions Virtualization Access Control as a Service:

- **Formal high-level specification** of access control requirements to be enforced
- **Generic:** can deploy most types of access control policy such as RBAC, ABAC,…
- **Provably correct** method for transforming the high-level access control requirement towards a domain type enforcement (DTE) specification.
- **Efficient** enforcement method.

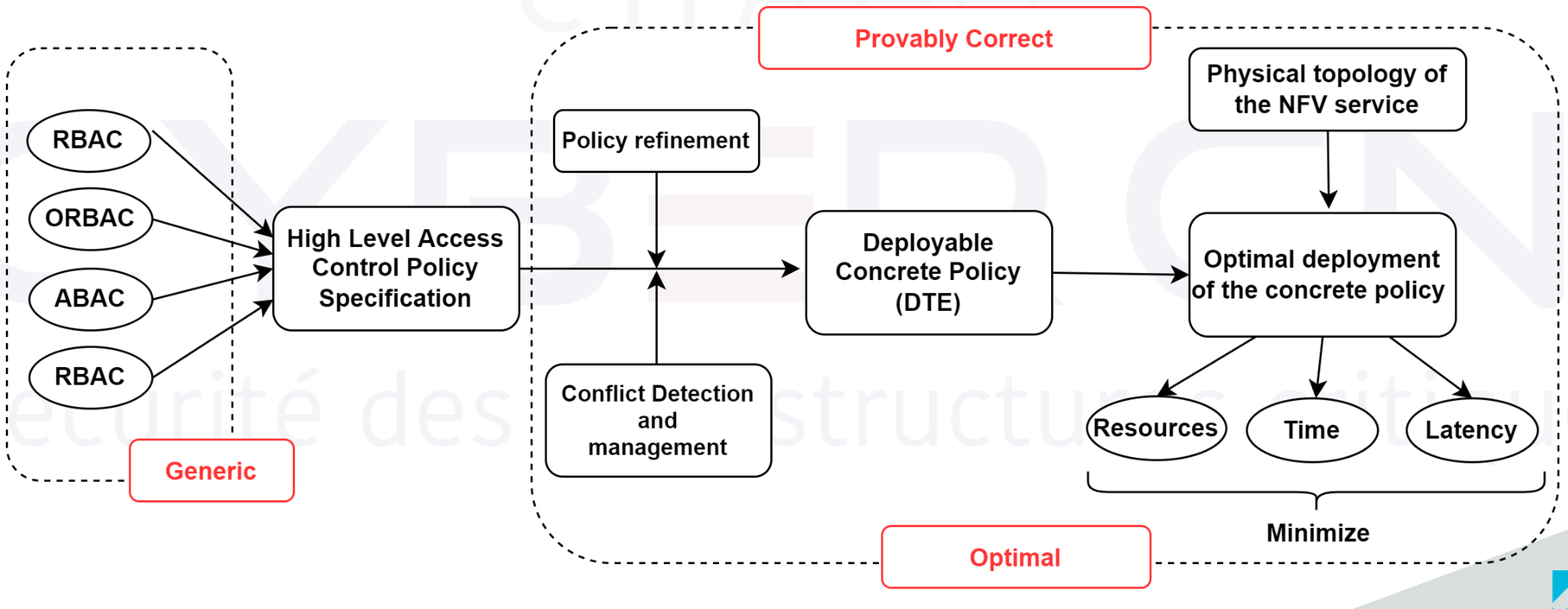
2. Exception Management:

- **Efficiently** enforce **complex access control** policies containing **exceptions** and / or **conflicting rules** on NFV services
- Propose a **provably correct** priority-based DTE access control model

3. Optimal Access Control Deployment in Network Function Virtualization:

- **Formal modeling** that allows to **model, quantify and optimize** the **resources** consumed and the impact in terms of **latency**
- **Correct** and **optimal deployment** of access control policies on NFV services

Current Work: dynamic deployment of access control policies on NFV services



Contact: **manel.smine@imt-atlantique.fr**

This poster was made at the chaire Cybersecurity for Critical Networked Infrastructures (Cyber CNI) | https://cyber-cni.fr/ | Our monthly cybersecurity speaker series https://talk.cybercni.fr/