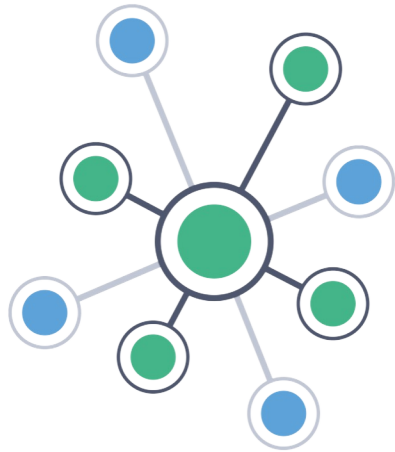


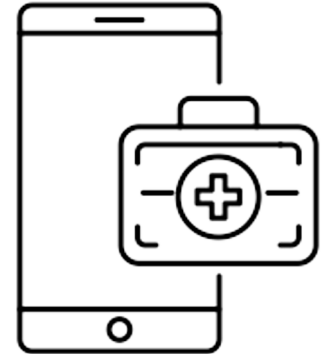


# The EPI Framework:

A dynamic infrastructure to support healthcare use cases



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MNS, UvA  
07 - April - 2022



# Background & Challenges

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- Data-sharing is key to enable EPI use-cases
- Challenges on many levels:
  - ⇒ Policies and agreements **Policy level**
  - ⇒ FAIR data **Data level**
  - ⇒ Heterogeneous computing capabilities **Application level**
  - ⇒ Heterogeneous security and networking **Network level**
- We focus on the last challenge
  - ⇒ Network function virtualisation
  - ⇒ Containers are efficient → bridging function chain
  - ⇒ Dynamicity and programmability
- Setting security requirements to address this heterogeneity

# Progress Report

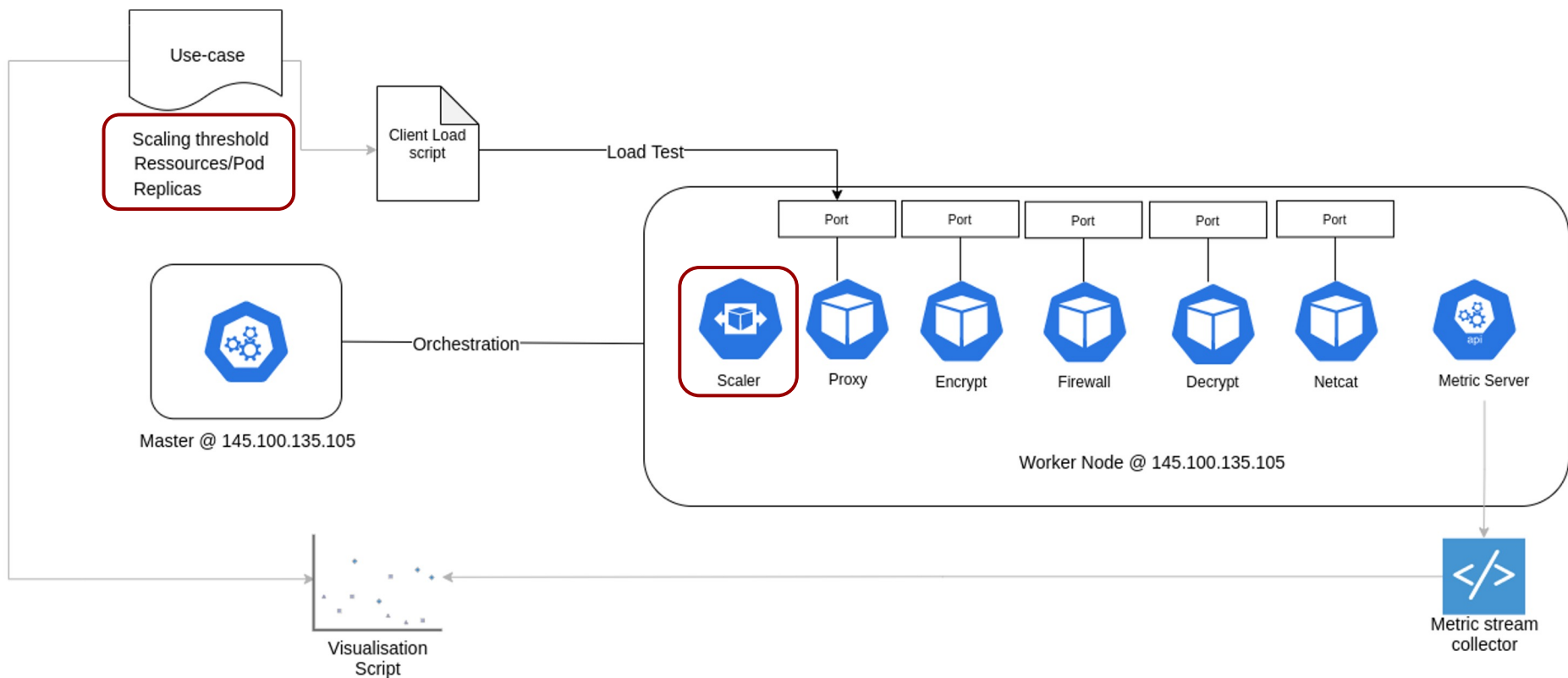
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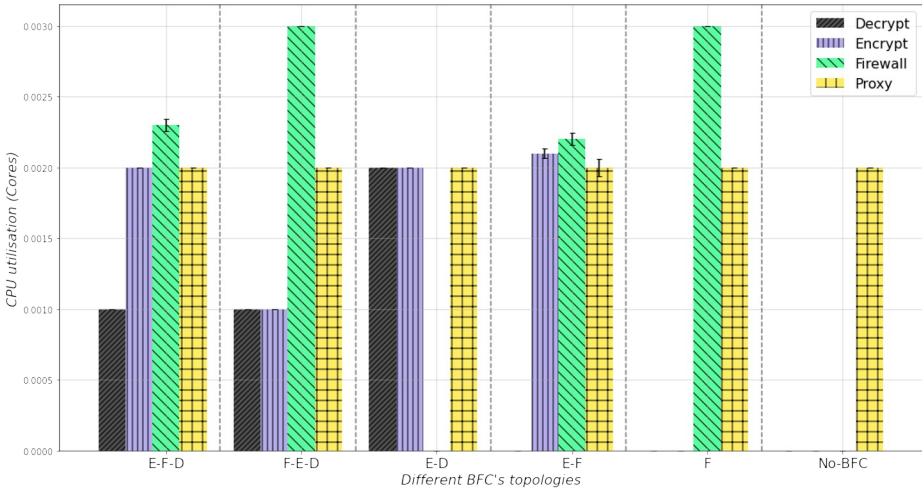
- PoC deployed at UvA machines
- Implementation progress
  - ⇒ Chaining of functions
  - ⇒ Interface to change BFC's (command line)
- Experiments and evaluation
  - ⇒ EPIF & BFC's resilience and adaptiveness
  - ⇒ Stress test & scalability
- Policy integration efforts
- Other discussions

# Progress Report

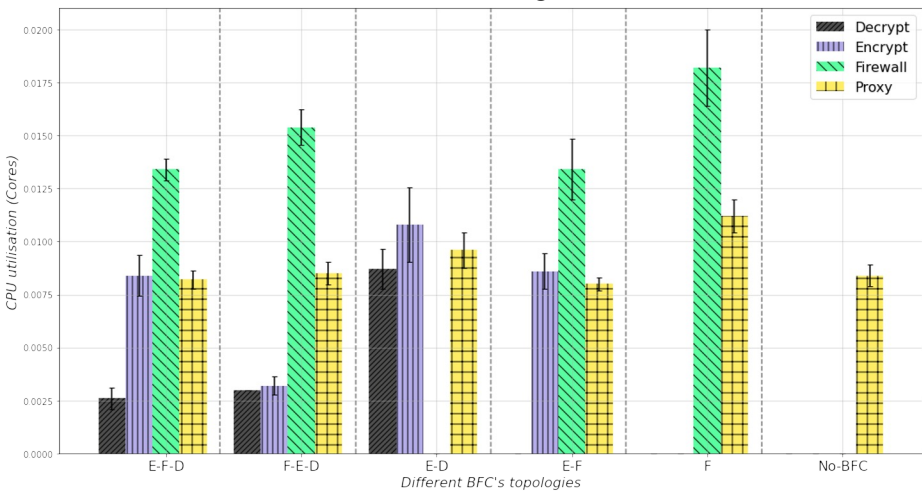
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- PoC deployed at UvA machines
- Implementation progress
  - ⇒ Chaining of functions
  - ⇒ Interface to change BFC's (command line)
- Experiments and evaluation
  - ⇒ **Building heuristic, first**
  - ⇒ **Paper submitted: IEEE cloud**
  - ⇒ EPIF & BFC's resilience and adaptiveness
  - ⇒ Stress test & scalability
- Policy integration efforts
- Other discussions

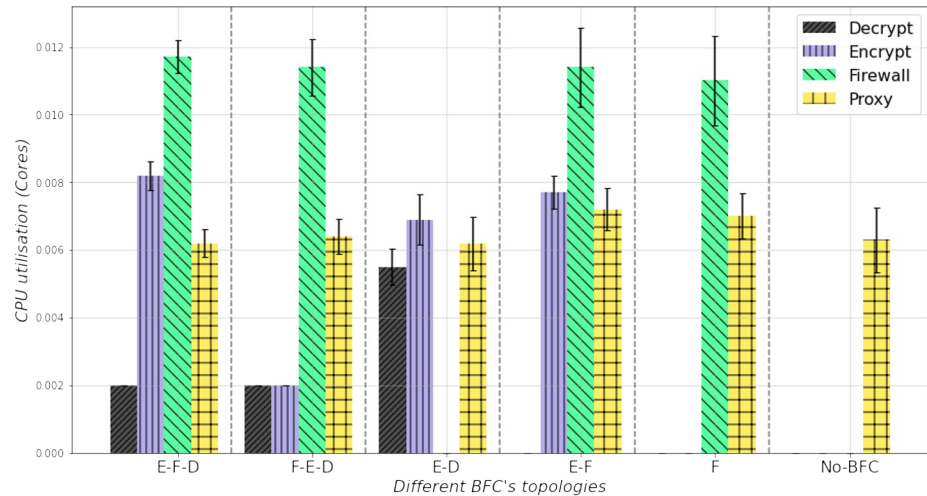




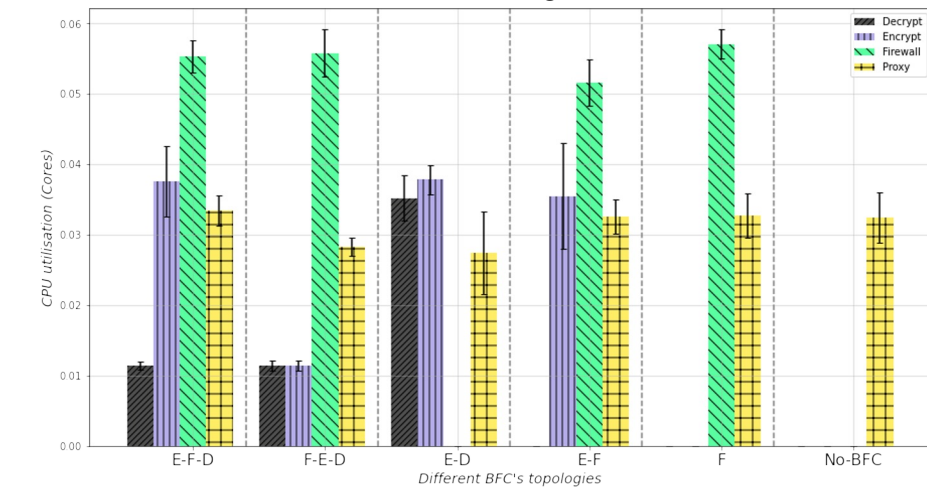
1 client sending 10KB/s



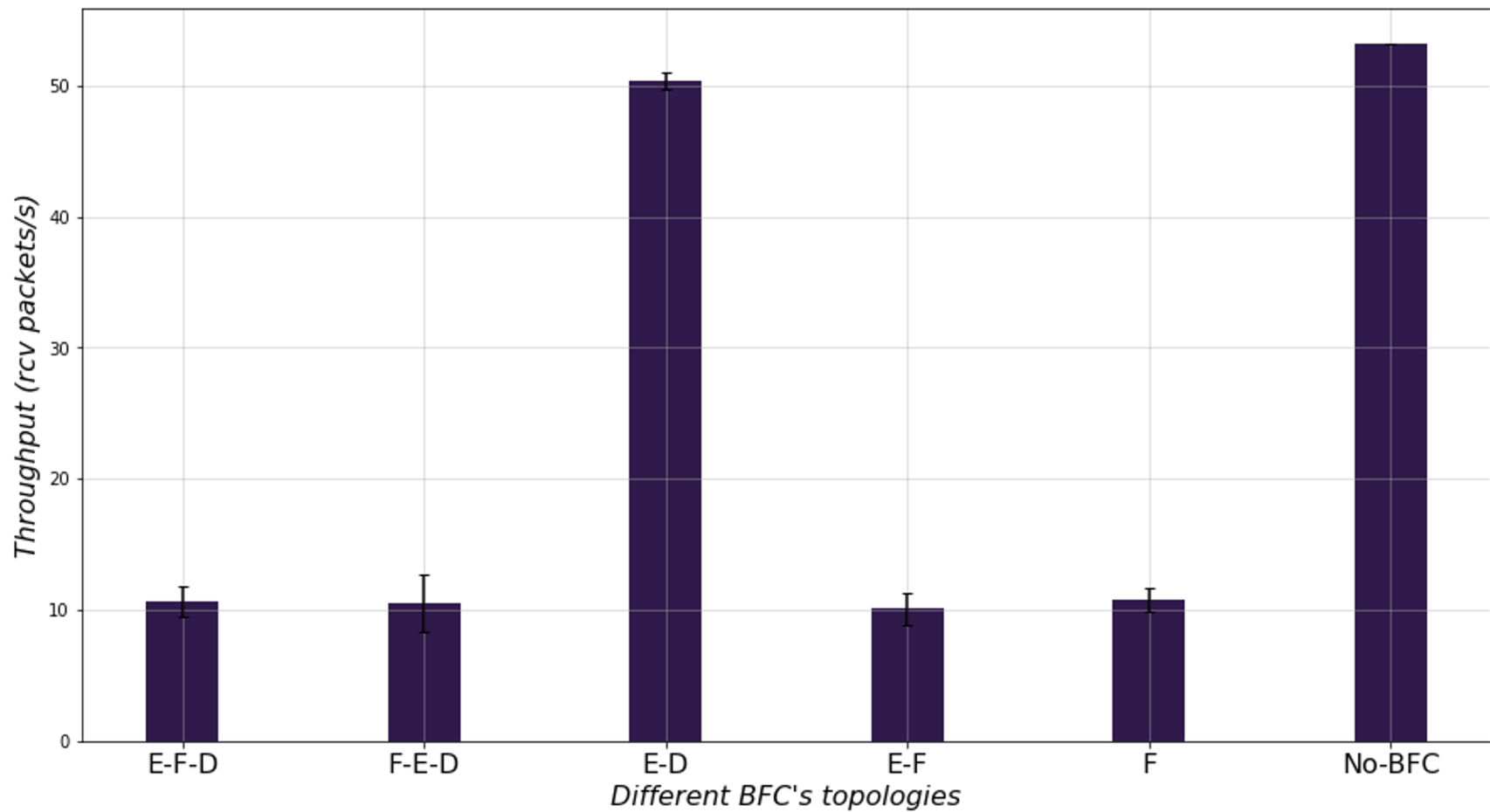
10 client sending 10KB/s



1 client sending 50KB/s



10 client sending 50KB/s



# Ongoing & Future Work

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## Research & Experimentation:

- Deploy different scalers
  - Horizontal
  - Vertical
  - Reinforcement
- Define strategy: QoS of chains
- Scaling cost:
  - Reaction time
  - Wasted resources
  - Performance requirement
  - Violation time

## Research and open questions:

- Security performance and experiments
- Policy – EPIF communication
- ***How do we deploy this within the hospital infrastructure?***
  - ***Acceptability?***
  - ***Hospital IT***
- Deploy & apply use-cases
  - SURF