

# **Session 2: Dependable Cloud Computing**

Resilient Multi-Cloud Virtual Networks  
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# Summary (1)

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- H2020 SuperCloud Project
- Sirius: Dependable and secure multi-cloud virtual networks
  - multi-cloud (Public, Private)
  - Substrate network, automatically setup
  - Traditional network services + tradeoffs of dependability, security and performance needs
- SDN-like Architecture
  - Orchestrator + network hypervisor
  - Gateway to connect container tunnels
  - Optimisation algorithms to setup optimal secure and dependable network embedding
    - Capacity/availability planning
    - Cloud trust level: pre-established profiles of more or less secure configurations

# Summary (1)

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- Evaluation
  - Simulated virtual networks + Real test beds (Amazon, Google, FCUL)
  - Comparative analysis of different security configurations, using alternative optimisation approaches
- Sirius highlights
  - improves scalability
  - increases acceptance ratio of user demands and improves provider profits
  - Enhances application performance

# Discussion

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- In the current solution, once the virtual network is specified and embedded it does not change and it is seen as a black box
- Need more agile approaches
  - Adapt to the evolution of the security level of the resources, application changes, need for a larger network, etc.
  - Ongoing work on dynamic embedding solutions
    - Dummy containers, dynamic reallocation triggered by the user
- Pre-established profiles of more or less secure configurations
  - Open question : How to decide that a cloud is more secure than another ?
    - Current solution based on user specified ordinal ranking of security