Norwegian Centre for Research-based Innovation

NORCICS — SFI Norwegian Centre for Cybersecurity in Critical Sectors

Cloud-Based Inter-Operator Network Infrastructure Sharing

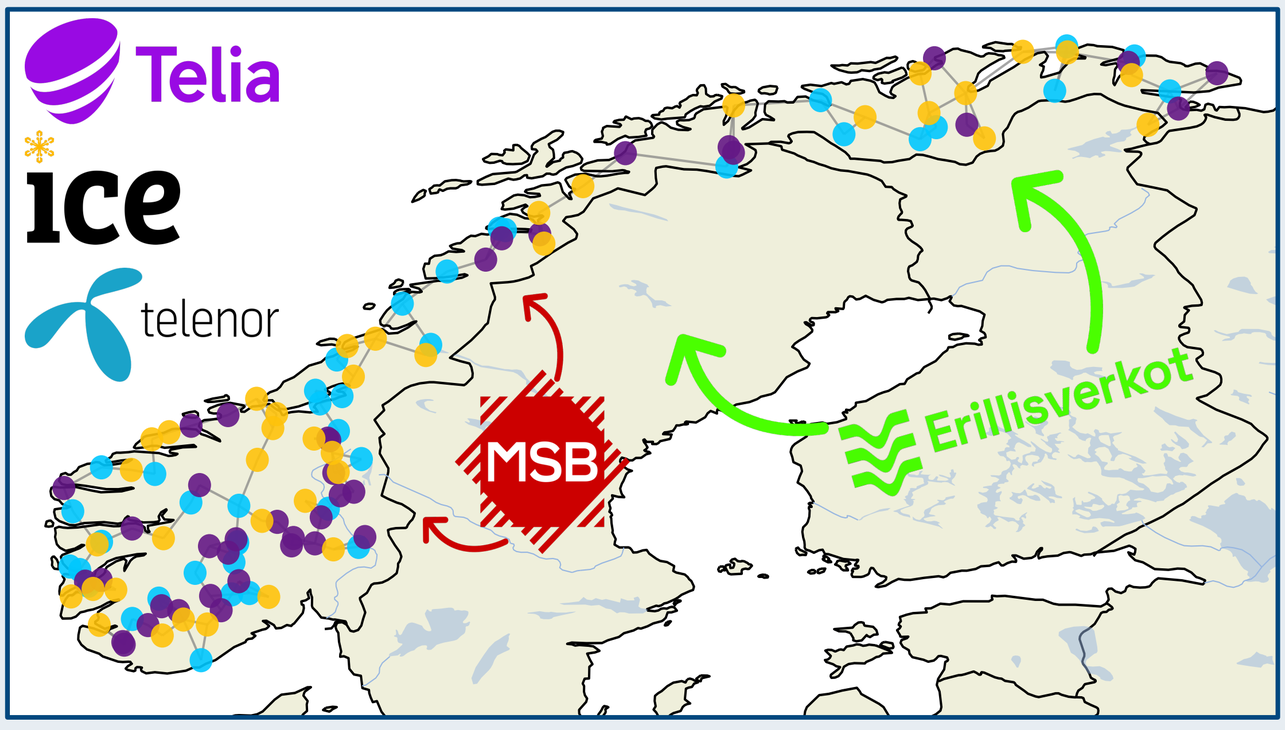
Exploring resource sharing trade-offs with cloud-based network elements

Nasjonal kommunikasjonsmyndighet

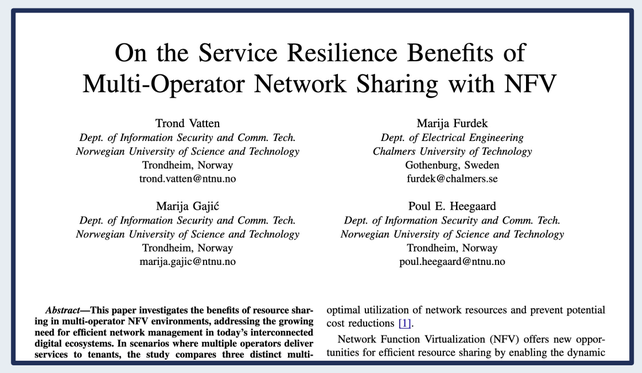
New emergency network

The government has decided to move responsibility for the new emergency network from the Ministry of Justice and Emergency Response to the Ministry of Digitization and Administration.

The new emergency network will build on the nationwide coverage of the commercial mobile networks (5G and later generations). At the same time, the state will own and manage its own service platform that allows mission-critical emergency network services to be provided with high priority. This means that these services will be able to take precedence, even in situations where mobile networks are overloaded.



1. Operators are developing increasingly **cloud-based** network infrastructures
2. The future “Nødnett” (emergency networks) will be built on **commercial telecom networks**
    1. *Coverage and core network* will be services provided by commercial telecom networks
    2. The state will own a *service platform for mission critical services*, running on top of the commercial infrastructure
3. This is also a trend in **other countries worldwide**
4. **How should the operators cooperate?**



On the Service Resilience Benefits of Multi-Operator Network Sharing with NFV

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***Abstract*—This paper investigates the benefits of resource sharing in multi-operator NFV environments, addressing the growing need for efficient network management in today's interconnected digital ecosystems. In scenarios where multiple operators deliver services to tenants, the study compares three distinct multi-**

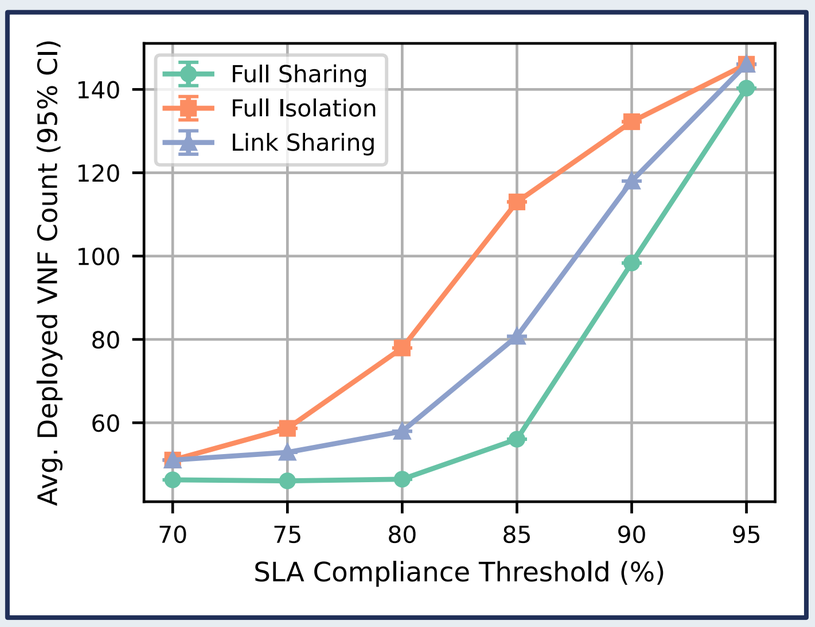
optimal utilization of network resources and prevent potential cost reductions [1].

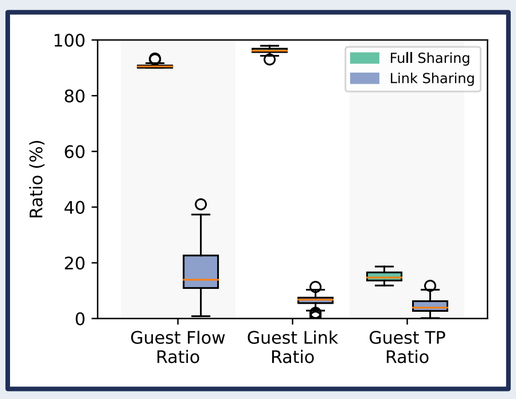
Network Function Virtualization (NFV) offers new opportunities for efficient resource sharing by enabling the dynamic

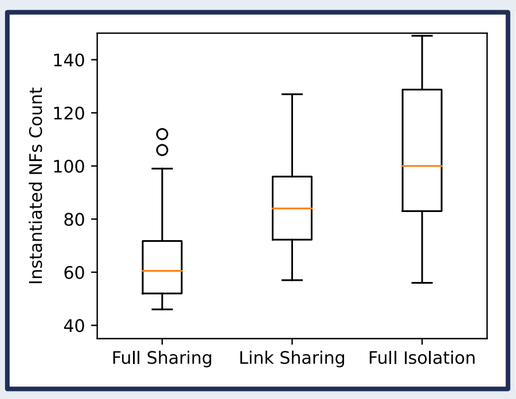
To what extent should network infrastructure and network elements be shared across operators?

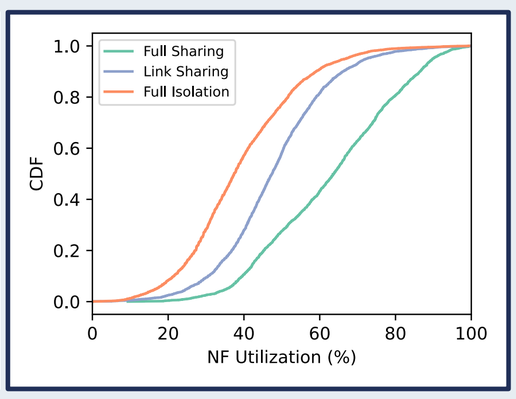
The degree of infrastructure sharing across operators will affect **performance, efficiency, availability, and security and more**

➢ In an initial study, we implement and compare three sharing schemes in a cloud-based multi-operator network









Resource usage: Full Sharing < Link Sharing < Isolation

Sharing: Full Sharing: high guest flow ratio, low guest TP. Many shortcuts?

Hybrid sharing a practical trade-off with lower security and privacy risks?

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