



Orchestration Framework for SDN/VNF Service Chaining in Low-Latency 5G Telco Clouds

Profile – Expertise:

Our department in the Institute of Computer and Communication Systems (ICCS) of NTUA has profound expertise in the following domains:

- 5G Networks and Communications – SDR/SDN
- Pervasive Computing – Ambient Intelligence
- Smart & Green Mobility, incl. electro-mobility
- Data Analytics – Machine Learning

✚ in addition to *excellent* proposal writing, coordination and management skills

Presented by:

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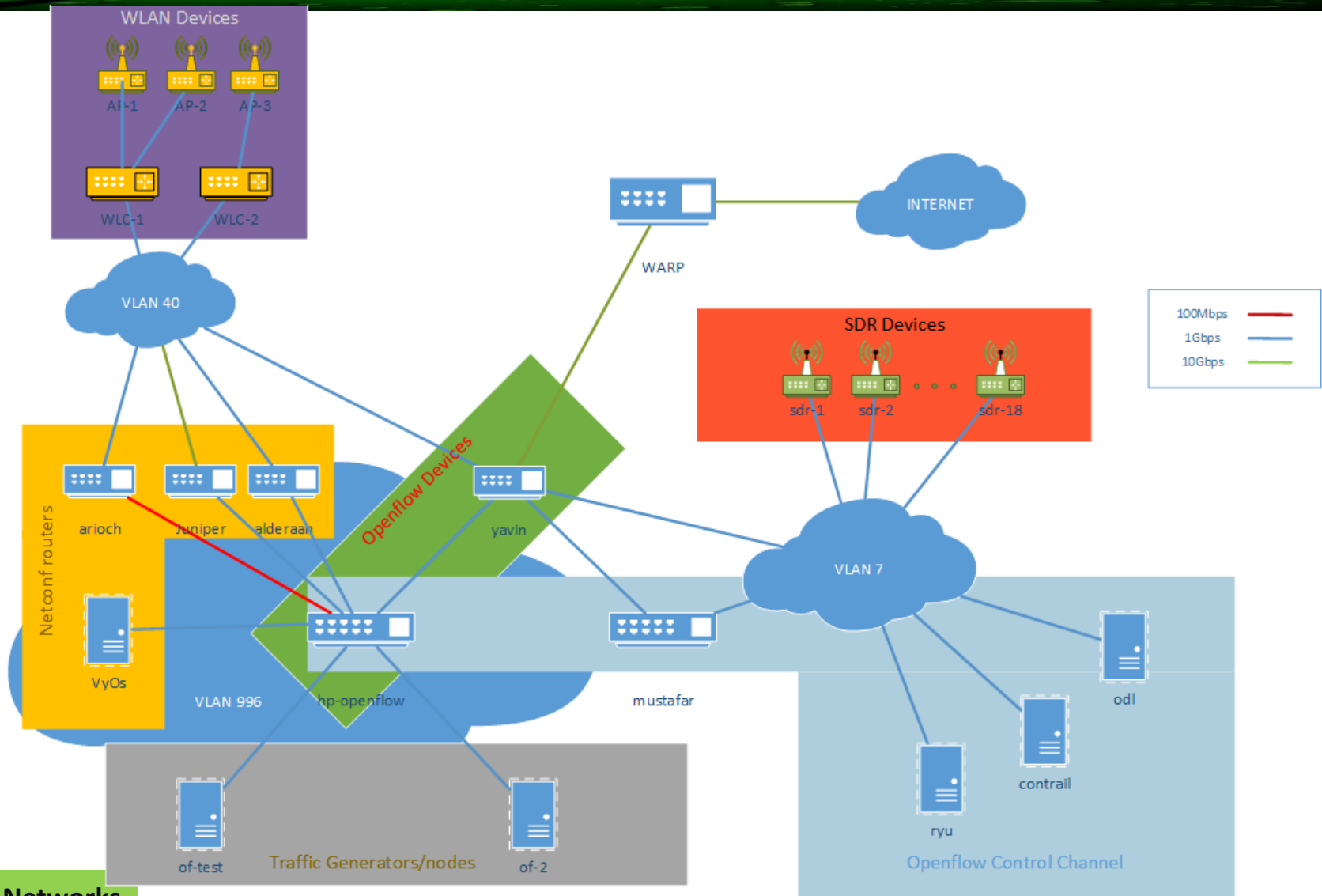
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Our Testbed Topology



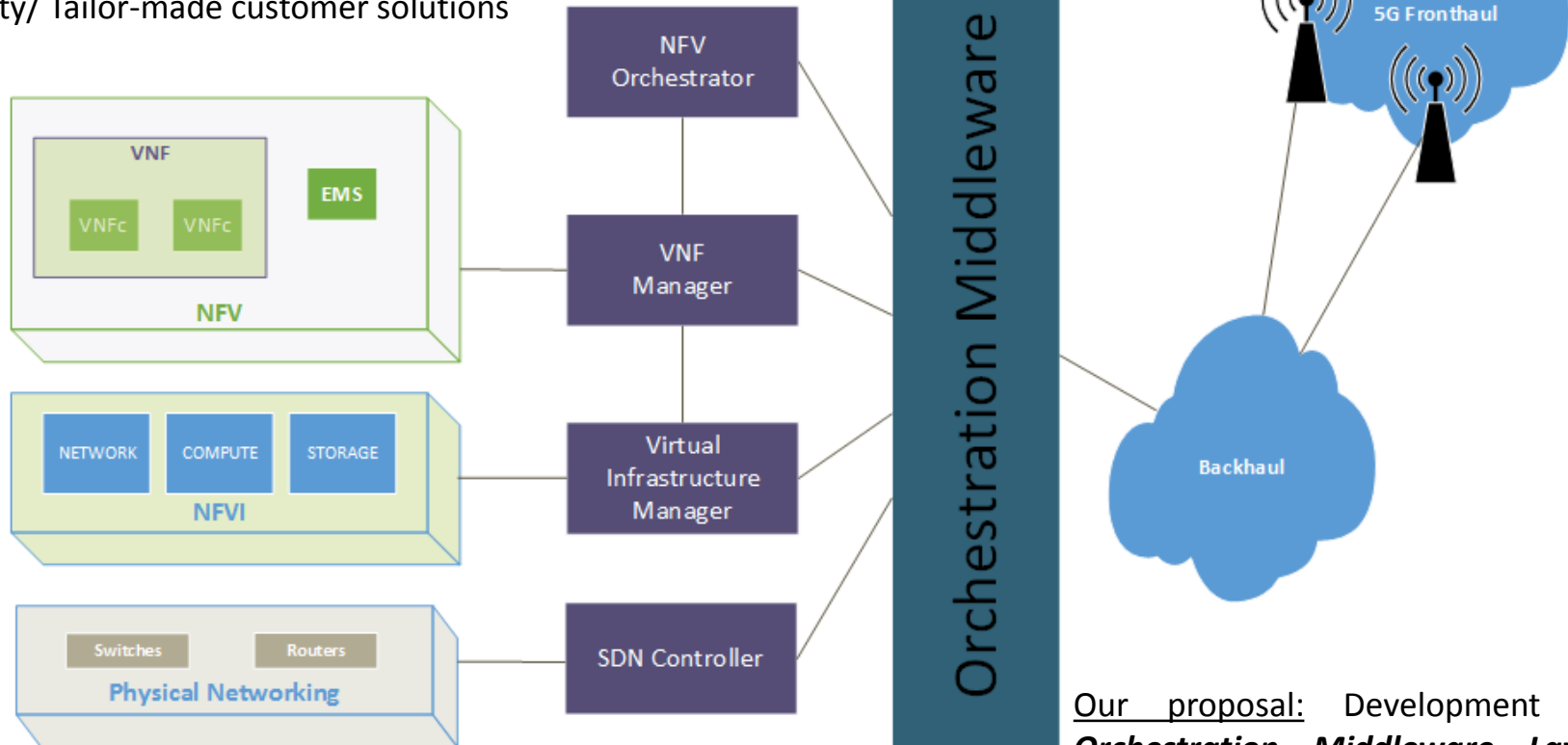


- “Zero latency” concept is a main driver of 5G architecture
- Migration to the Cloud
 - Key network building blocks and functionalities will be
 - decoupled from sophisticated hardware
 - residing in a cloud execution environment
 - “5G” Telco Cloud *vs.* Traditional cloud approach:
 - highly **distributed** cloud environment
 - **many** small-scale data centers positioned as **close** to the edge as possible
- **Challenges:**
 - *Interconnecting* all-IP mobile networks at such scale and complexity is not feasible through legacy approaches!
 - *Harvesting* the high programmable capabilities of SDN is crucial for 5G
 - *Managing* this vast infrastructure will require a high level of *automation*
 - *Simplifying* the wireless part of the network puts *extra* complexity on the backend controller
 - *Reusing* infrastructure building blocks (Datacenters, Radio Resources, Backhauling Links) is important

Our Proposal Addresses Challenges in Management & Orchestration (MANO)



Network Slicing is the proposed 5G architectural approach for: Optimal resource utilization/ Larger flexibility/ Increased security/ Tailor-made customer solutions



Network Slicing implementation requires (i) end-to-end orchestration between Telco Cloud and Backhaul/Fronthaul, (ii) co-ordination between the SDN Controller inside the Datacenter Infrastructure and the Backhaul

Our proposal: Development of an **Orchestration Middleware Layer** for cross-layer optimization between: Backhaul network/ Telco Cloud (VNF affinity and anti-affinity rules)/ SDN and Overlay networks