Zero-Touch Provisioning of Distributed Video Analytics in a Software-Defined Metro-Haul Network with P4 Processing

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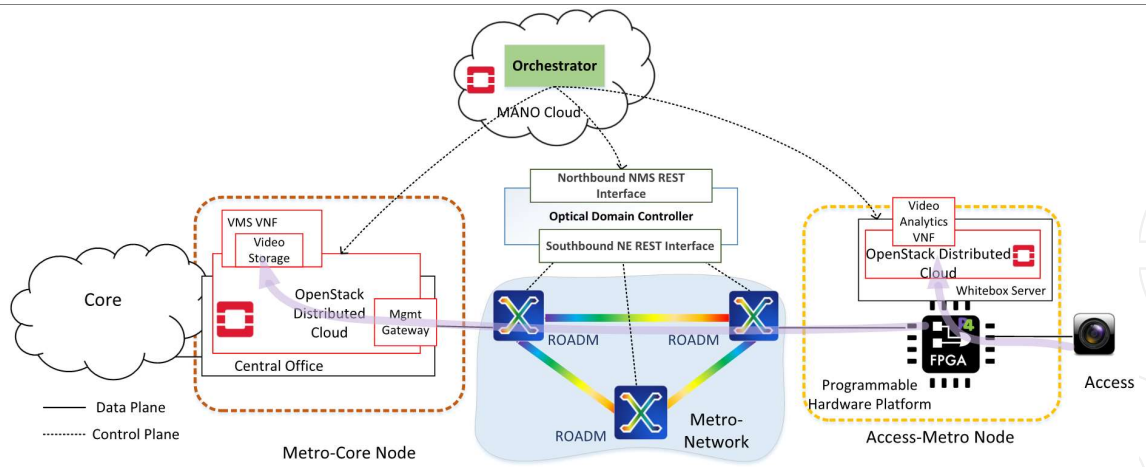
Key Message

We demonstrate automated network service provisioning and virtual network function orchestration with P4-based FPGA VNF hardware acceleration. Zero-touch provisioning of distributed computing resources at the edge and central office is validated with a video analytics use case.

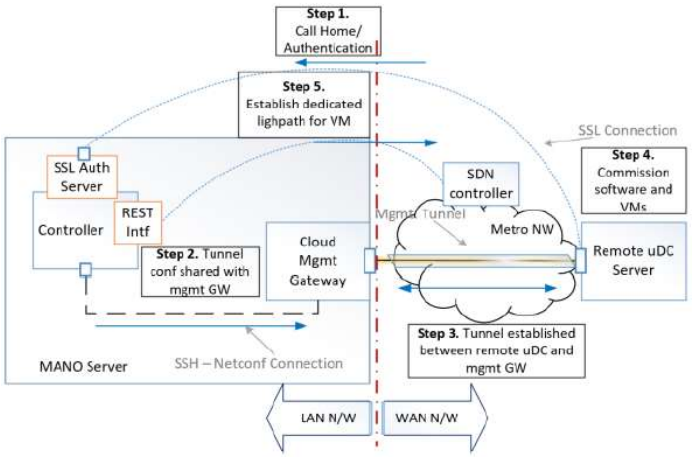
Motivation

- Zero Touch Provisioning to address scalability and deployment constraints when adopting a novel architecture
- Offloading Virtual Network Function processing into P4-based FPGA programable hardware

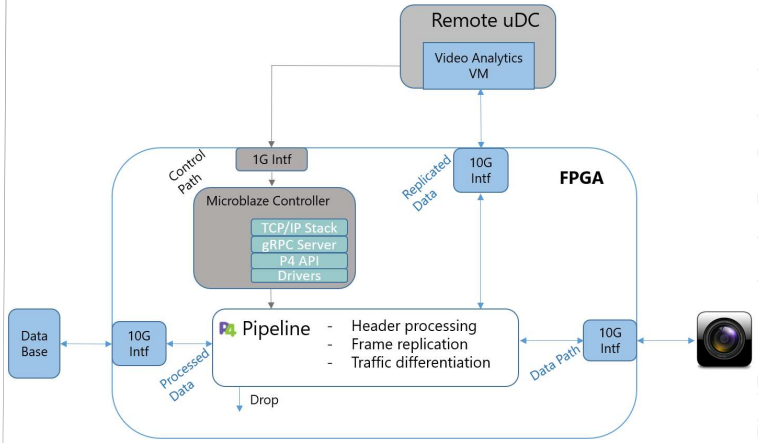
System overview



Zero-Touch Provisioning



P4-based FPGA Design



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Conclusion

The proposed demonstration combines software-defined control with VNF management and orchestration in a realistic use case of low-latency video analytics. With increasing complexity of the software architectures, it is important to validate the potential benefit of automation and zero-touch-provisioning of network services in a complex system architecture. This demo is relevant to OFC audience as it features a live proof-of-concept demonstration of a proposed high capacity optical Metro-Haul network architecture capable of P4-based VNF offloading to an FPGA.