Towards Serverless NFV for 5G Media Applications

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ABSTRACT

The advent of virtualization and IaaS have revolutionized the telecom industry via SDN/NFV. A new wave of cloud-native PaaS promises to further improve SDN/NFV performance, portability, and cost-efficiency. In this poster, we highlight a work in progress being done in the 5G-MEDIA project [2], which pioneers the application of the serverless paradigm to NFV in the context of media intensive applications in 5G networks. **Motivational use cases** include tele-immersive gaming, mobile journalism and UHD content distribution. For example, consider a next-gen e-sport, in which bouts between gamers last only a few minutes. FaaS offers a clear cost-efficiency benefit for hosting such applications. **An architecture** is shown in Fig. 1. It includes i) an *Application/Service Development Kit* (SDK) to enable access to media applications development tools; ii) a *Service Virtualization Platform* (SVP) to run the ETSI MANO framework, the Media Service *MAPE* optimization component and the *VIM* and *WIM* plugins to enable NFVIs integration; iii) different *NFVIs* to execute media-specific VNFs. FaaS VIM is implemented for integration of FaaS with the rest of the MANO stack. It allows mixing FaaS and "regular" VNFs within the same media forwarding graph. For reference implementation,
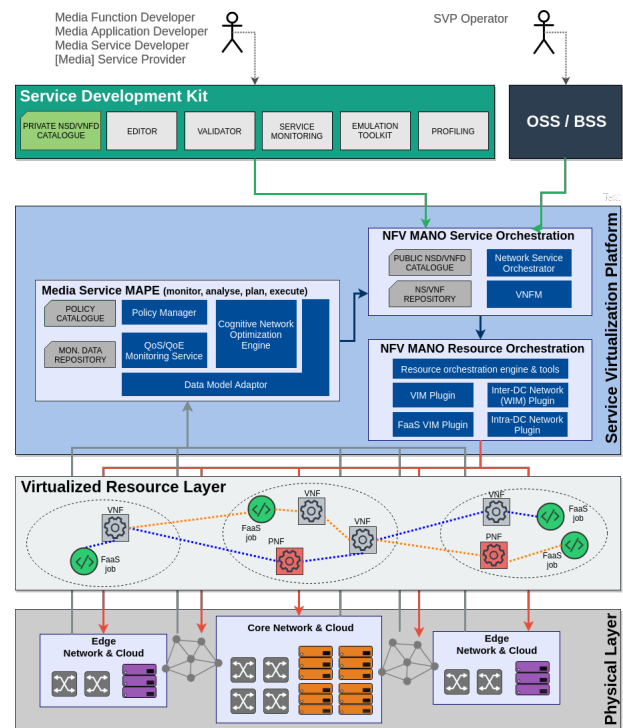
Figure 1: 5G-MEDIA Architecture

Apache OpenWhisk [1] and Kubernetes are used. **The main challenge** is extending the programming model to support groups of actions communicating over a network, while retaining the simplicity of FaaS. The project is supported by EU H2020 R&I program (Grant Agreement No 761699).

REFERENCES

[1] 2018. Apache OpenWhisk. https://openwhisk.apache.org/. (2018).
[2] Stamatia Rizou et.al. 2018. A service platform architecture enabling programmable edge-to-cloud virtualization for the 5G Media industry.