Open Baton

The NFV Platform providing End-to-End Network Slicing Orchestration

Open Baton is an open source platform providing a reference implementation of the ETSI NFV MANO specification. In this demonstration Open Baton is employed as NFV Orchestrator for managing multiple network slices providing certain network characteristics (low latency, ultra-reliability, etc). In particular it will be employed Virtual Network Functions (VNFs) part of the 5G Playground (Open5GCore, OpenIMSCore, OpenSDNCore) in order to demonstrate the feasibility of deploying heterogeneous end-to-end network services on the same NFV Infrastructure. In addition to this, the Network Slicing Engine (NSE), the Autoscaling System, and the Fault Management System will be employed for demonstrating the increased reliability achievable with this solution. Finally, it will be given an overview of the Open Baton Marketplace including VNFs ready to be deployed on your own private Open Baton environment.

Open5GCore Rel. 3

The Phoenix edition

Open5GCore Rel. 3 represents a new instantiation of the software network platform of Fraunhofer FOKUS, providing the connectivity service according to the 3GPP standards. Stemming from the initial release in 2009, the Open5GCore Rel. 3 features:
– Functional: A large number of procedures including a comprehensive state machine (idle mode, service activation, service deactivation, paging, tracking area updates, etc.)
– Performance: a new multi-thread based platform enabling a better processing on the control plane and data path
– Commodity: a comprehensive visualization that monitors the deployment across multiple data centers, distributed topologies, even base stations including time series and flame graphs enriching the insight on the behavior of the network
The demo includes the demonstration of connectivity of common phones through off-the-shelf LTE base stations as well as a large number of benchmarking and functional testing mechanisms, providing insight on the different functional features of the network.

Smooth embedding of satellite in 5G is easier than thought

This demo will showcase the deployment of a software-based operator network using satellite backhauling. Through engineering of the communication enablers at transport level (compression, performance enhancement, QoS) and through the appropriate parametrization and data traffic steering of the reference implementation of the Open5GCore, a smooth communication system was obtained enabling the cost effective coverage of fixed and mobile niche areas such as high speed train backhauling, planes and cruise ships, critical communication, remote locations (islands, rural, oil platforms) and overspill of urban locations. Most notably, no modification of the core network functionality was required, giving the option to deploy it with off-the-shelf available products. The demo shows the live performance of the system including a comprehensive emulation of the satellite backhaul, a transparent convergence layer, as well as a benchmarking tool enabling dynamic load generation and intuitive visualization.

The work presented in this demo was part of the ESA ARTES 5.1 study "Satcom integration with LTE-based core network emulator – SATINET" contract no. ESA 4000111941/15/NL/EM. The views expressed herein can in no way be taken to reflect the official opinion of the European Space Agency.

Mobile Edge Computing
Optimized Connectivity for Content Delivery Networks

This demo provides an insight on the best-practices for implementing connectivity to Mobile Edge Computing (MEC) nodes specifically for the Content Delivery Networks, a feature which should be included in all multimedia delivery slices. The demonstration features a set of end users, one being the producer of the video stream and 2 other consumers. The Media Server uses an instance of the Kurento Media Server deployed inside the Core Network and using local breakout from two software eNodeBs. As one of the consumers performs handover, the Open5GCore connectivity awareness module running on the Media Server machine adapts the machine's routing and data is delivered to the destination eNodeB and then to the consumer that was handed over.

OpenSDNCore
Managing Flexible Backhauls

With the evolution towards highly distributed network environments, OpenSDNCore took the direction of managing the backhaul between the different infrastructure nodes. This demo will showcase the new feature of OpenSDNCore in the direction of maintaining an as-reliable-as possible communication between different infrastructure nodes over best-effort, multi-tenant or mesh based backhaul networks. This is possible through a distributed controller infrastructure handling in a dynamic manner the routing as well as the classification of the data traffic to ensure the best possible QoS.

5G Ready Trial Platform

Within the scope of the 5G Testfield Berlin Initiative of the Berlin Government Senate Department for Economics, Technology and Research, the Fraunhofer Focus Institute is presenting the results of the project "5G Ready Trial Platform", funded by the state of Berlin with 250,000 euros, for the first time at the Berlin 5G Week.
The 5G Ready Trial Platform is showcasing how to evaluate the readiness of specific technologies with the goal of being deployed in live environments. The current live demo at the Berlin 5G Week includes the practical application of the network slicing concept to separate the benchmarks for virtual Packet Core Networks, IoT support, low delay and high capacity communication through virtual networks and edge computing connectivity. It aims later to integrate the dynamic spectrum access and management and low delay networks control, through this providing the technology assessment basis for any 5G live trial.

FRAUNHOFER FOKUS DEMOS @ FFF2016

OpenIoTFog
A new tool is born that makes your shop floor Industry 4.0 ready
OpenIoTFog toolkit is a software framework that enables vertical integration of OT and IT processes.
Using the Fog Computing paradigm, an OpenIoTFog node is placed right next to the device where data is emerging. This allows data aggregation and processing with very low delays. OpenIoTFog is highly programmable through lightweight micro services and supports plug'n'play capability for access technologies of various industrial protocols. Business processes e.g. ERP could easily access information of the shop floor through standardized vendor independent interfaces.

Condition Monitoring
Showcasing advanced monitoring capabilities for the industrial shop floor
Still standing machines are the worst case scenario in the shop floor. This could be prevented by analyzing rotating equipment and the detection of anomalies. We show how data could be analyzed locally and appropriate decisions are made autonomously without sending data to the cloud.