The PhantomNet Mobile Networking Testbed

Kobus Van der Merwe, University of Utah

kobus@cs.utah.edu

Abstract:

In this talk I will describe the capabilities and features of the PhantomNet mobile networking testbed and will provide case studies of how the testbed has been used for research and teaching.

PhantomNet allows (remote) users to dynamically compose mobile network components into a variety of mobile network configurations to enable research (and teaching). Specifically, the infrastructure supports off-the-shelf, SDR-based and emulated versions of radio access network (RAN) technology, it supports the realization of mobile core network elements on either dedicated hardware or virtualized version for NFV experimentation, it supports SDN and cloud functions and also has various network emulation components (e.g., configurable delay nodes).

Testbed users express the desired resources and topology they want in a user defined "profile", or use one of the testbed-provided parameterized profiles. This user-supplied resource and topology specifications are mapped to available resources in the testbed,and then the actual resources are allocated and configured as requested. Users have exclusive access to this set of resources for the duration of their experiment. Once the experiment concludes, the resources are released, returned to the testbed pool and available for use by other experimenters. I will demonstrate this experimental workflow during my talk.

PhantomNet enables a broad range of mobile networking related research and teaching. I will provide an overview of a number of such efforts including the use of software-defined-networking and cloud computing to realize an IoT specialized mobile-edge-cloud and the use of network-function-virtualization to support mobile network service evolution.

Biography:


Kobus Van der Merwe is the Jay Lepreau Professor in the School of Computing and director of the Flux Research Group at the University of Utah. He joined the University of Utah after fourteen years at AT&T Labs - Research. He does networking systems research in a broad range of areas including network management, control and operation, mobile networking, network evolution,network security and cloud computing. He is leading an effort to build a testbed, called PhantomNet, to enable research at the intersection of mobile networking, software defined networking and cloud computing.