

On the SAVI Testbed for Software-Defined Infrastructure

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Abstract—In this talk we discuss the role of virtualization and software-defined infrastructure (SDI) in the design of future application platforms. A multi-tier computing cloud is presented in which resources in the “Smart Edge” of the network play a crucial role in the delivery of low-latency and data-intensive applications. Resources in the Smart Edge are virtualized and managed using cloud computing principles, but these resources are more diverse than in conventional data centers, including programmable hardware, GPUs, etc. We propose an architecture for future application platforms, and we describe the SAVI Testbed (TB) design and its deployment in a Canadian national testbed. The design features a novel Software-Defined Infrastructure manager that operates on top of OpenStack and OpenFlow. We conclude with a speculative discussion of the implications of the Smart Edge design on the future telephone networks as well as smart infrastructures.

Bio: Professor Alberto Leon-Garcia is Distinguished Professor in Electrical and Computer Engineering at the University of Toronto. He is a Fellow of the Institute of Electronics and Electrical Engineering "For contributions to multiplexing and switching of integrated services traffic". He is also a Fellow of the American Association for the Advancement of Science and a Fellow of the Engineering Institute of Canada. He has received the 2006 Thomas Eadie Medal from the Royal Society of Canada and the 2010 IEEE Canada A. G. L. McNaughton Gold Medal for his contributions to the area of communications. Professor Leon-Garcia is author of the textbooks: Probability and Random Processes for Electrical Engineering, and Communication Networks: Fundamental Concepts and Key Architecture. He is currently Scientific Director of the SAVI NSERC Strategic Network.