KEYNOTE/PLENARY

Title:

From Clouds for 5G Systems to Clouds for 6G Systems: A Bumpy Road Ahead

Speaker:

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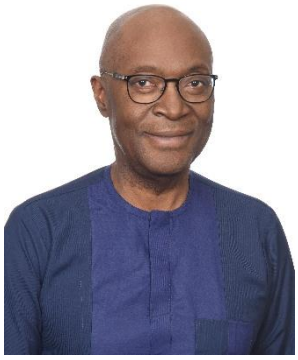
Abstract

Each generation of telecommunication systems brings additional levels of sophistication to the services offered to end-users. The Ultra Reliable Low Latency Communications (URLLC) services (e.g. remote robotic surgery) promised by the fifth-generation (5G) are compelling examples. They are a far cry from the Short Message Service (SMS) offered by the second-generation (2G), and the simple multimedia services offered the third and fourth generations (3G/4G). The deployment of 6G systems is expected for the 2030s, and much more sophisticated services (e.g. immersive holographic type – communications services) are expected. Clouds are the pillars of 5G and Beyond (5GB) due to the fact that features such as elasticity, scalability, and provisioning on-demand can successfully tackle the everlasting challenges such as lack of flexibility and over provisioning faced by telecommunication systems. 6G requirements are now known and are far more stringent than their 5G counterparts. Expected end-to-end latency for instance is now 0.1 milli-second instead of the 1 milli-second that is hardly met nowadays. Clouds for 5G will certainly fail when it comes to meeting 6G challenges. Thus, the need of a new generation of clouds for 6G. However, the road ahead from clouds for 5G to clouds for 6G will certainly be bumpy due to the numerous challenges.

In the first part of this keynote speech, we will introduce the expectations of 6G systems on clouds, and discuss why clouds for 5G cannot meet them. In the second part, we will sketch the research directions that may bring us to clouds for 6G. The third part will show that clouds alone will not be sufficient for 6G. It it will be necessary to complement them by other paradigms. In-Network Computing (INC) is a good candidate. This is likely to bring us to a paradigm of "cloud-edge continuum enriched by INC" for 6G.

Biography



Roch H. Glitho is the Ericsson / ENCQOR Senior Industrial Research Chair in Clouds/Edges for 5G, and a Full Professor of Networking and Telecommunications at Concordia University, Montreal, Canada. In the past, he has held a Canada Research Chair at the same university, and has also worked as a Principal Researcher at Ericsson. He is a Fellow of the Canadian Academy of Engineering (CAE), and the Engineering Institute of Canada (EIC). He is the founding Editor-In-Chief of IEEE Communications Surveys and Tutorials journal, and has served as Editor-In-Chief of IEEE Communications Magazine and as IEEE Distinguished Lecturer. He is the inventor/co-inventor of several dozen patents (granted or under evaluation), and has widely published in areas such as cloud/edge/fog, 5G and beyond, Internet of Things (IoT), and Content Delivery Networks (CDNs).