

SOURCE: Instituto Superior Técnico, Lisboa, Portugal
NOS, Lisbon, Portugal

Design of C-RAN Fronthaul for Existing LTE Networks

Abstract— C-RAN is a mobile network architecture that enables the share of network resources in a centralised data centre, being cost-effective to the operators. This work consists of a study of the impact of C-RAN in an operator's network, namely the latency and the capacity needed per data centre. It is also analysed the costs associated with the implementation of C-RAN, comparing it with the correspondent decentralised network, both in green field. A model was implemented taking as an input the positioning of RRHs and possible BBU Pools available, as well as the costs associated with each component. The model presents four types of connection algorithms based on technical issues in order to test different aspects of the network. Finally, an analysis of Minho is made using typical values for the various delay and capacity contributions. In what concerns to the fronthaul connections, the outcomes illustrate that a microwave link is not cost effective comparing with fibre. It is also shown that the cost savings, comparing a decentralised with a C-RAN architecture, is around 13%. Due to the dimension of the scenarios, the fronthaul costs reveals to be the most expensive component.

Hugo da Silva
Instituto Superior Técnico / INESC-ID
University of Lisbon
Lisbon, Portugal
hugo.miguel.r.da.silva@gmail.com

Luis M. Correia
Instituto Superior Técnico / INESC-ID
University of Lisbon
Lisbon, Portugal
luis.m.correia@tecnico.ulisboa.

Pompeu Costa
NOS
Lisbon, Portugal