

# A Framework to boost the potential of network-in-a-box solutions

Carlos Baena, Sergio Fortes, Oswaldo Peñaherrera and Raquel Barco  
TELMA – Instituto de Telecomunicación Universidad de Málaga  
CEI Andalucía, TECH, E.T.S. Ingeniería de Telecomunicación  
Bulevar Louis Pasteur 35, 29010 Málaga (Spain)  
Email: {jcbg,sfr,sppulla,rbm}@ic.uma.es

## ABSTRACT:

The expected heterogeneous connectivity provided by the fifth generation mobile network (5G) implies a huge revolution in the telecommunication field. Here, virtualisation and software implementation of network elements have been positioned as a key elements for this revolution. At the same time and as a consequence of the evolution of these two paradigms, network-in-a-box solutions have also emerged as a potential way in the deployment of networks, offering a portable infrastructure. Here, this work presents a framework for easing the management tasks of the network-in-a-box devices, allowing abstracting the hardware and software implementation of these kind of solutions. We provide an experimental validation of the framework through the deployment of a portable cellular network. Besides, a Cloud Gaming service is launched on this scenario, showing the versatility and strengths that the framework provides to these novel solutions.

## ACKNOWLEDGMENT

This work has been partially funded by “Ministerio de Asuntos Económicos y transformación digital” (red.es, “Piloto 5G Andalucía, Caso 31 OpenRAN”), by “Ministerio de Ciencia e Innovación” (grant FPU19/04468), and by Junta de Andalucía and European Regional Development Fund (ERDF) through AECMA-5G (UMA-CEIATECH-14) and post-doctoral grant (DOC01154, PAIDI 2020)