# The model of conjoint servicing of real time traffic of surveillance cameras and elastic traffic of NB-IoT devices with access control

Umer Mukhtar Andrabi
*Department of Infocommunication Systems and Networks*
*Moscow Institute of Physics and Technology (State*
*University)*
Moscow, Russia
umer.andrabi@phystech.edu
000−002−2638−6170

Sergey N. Stepanov
*Head of the Department of Communication Networks and*
*Switching Systems*
*Moscow University of Communication and Informatics*
Moscow, Russia
stpnvsrg@gmail.com
0000−0002−9815−9532

*Abstract*— There has been a massive increase in the capacities and diversity of data being collected over the Internet of Things (IoT) applications and the management of such enormous data is one of the critical tasks for networking corporations as they advance from 4G+ to true 5G systems. Predominantly the majority of this traffic comprises complex, unstructured, and varied data (Big Data) originating from smart networking environments (LTE-devices, NB-IoT devices). Though 5G proposes various low power wide area technologies (Lora WAN, GSM, and NB-IoT, etc.), predominantly NB-IoT appears very promising to address the challenge because of its evident features such as high fault tolerance, delay tolerance, higher coverage area, etc. However, due to the constricted bandwidth (180 kHz) accessibility, one of the challenges is how to proficiently use these resources to support and handle a massive number of growing IoT devices, also resource management and allocation methodology between real time traffic and NB-IoT traffic flows resources. To address such a challenge, we have developed a dynamic scheduling model based on processor scheduling (PS) to manage radio resources, especially for shared servicing of real-time and elastic IoT traffic flows. Dynamic Scheduling based on processor sharing (PS) has been considered for an Operator Surveillance system for shared servicing of real-time video traffic coming from surveillance cameras and NB-IoT data traffic coming from devices such as smart meters and actuators over LTE cell facilities.

*Keywords*— *Processor sharing (PS) Scheduling, Radio Resource Management (RRM), Narrowband Internet of Things (NB-IoT), Network Slicing, Operator surveillance system*