

A Novel Fully Distributed EPON-Based 5G RAN Architecture Modeling with Handover Analysis

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Abstract— Traditional mobile backhaul Radio Access Network (RAN) employ centralized data and control plane scheme. In this work, we propose a novel Passive Optical Network (PON) based next-generation mobile backhaul RAN architecture in a distributed scheme that enables the redistribution of some of the intelligence currently centralized in the Mobile Packet Core (MPC) platform out into the access nodes of the RAN. Specifically, this work proposes a fully distributed ring-based EPON architecture that enables the support of a converged PON-5G option 3X access networking transport infrastructure to seamlessly backhaul both mobile and wireline multimedia traffic and services. Performance analysis show that the proposed distributed architecture show better results in throughput, latency and handover analysis.

Keyword—5G, EPON, LTE, Option 3x, PON, TDM



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