


1 Towards Zero Touch Configuration of 5G 2 Non-Public Networks for Time Sensitive 3 Networking

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14 — Abstract —

15 The need to increase mobility and remove cables in industrial environments is pushing 5G as a
16 valuable communication system to connect traditional deterministic Ethernet-based devices. One
17 alternative is the adoption of Time Sensitive Networking (TSN) standards over 5G Non-Public
18 Networks (5G NPN) deployed in the company premises. This scenario presents several challenges, the
19 most relevant being the configuration of the 5G part to provide latency, reliability and throughput
20 balance suitable to ensure that all the TSN traffic can be delivered on time. Our research work
21 addresses this problem from the perspective of automata learning. Our aim is to learn from the live
22 network to build a smart controller that can dynamically predict and apply a suitable configuration
23 of the 5G NPN to satisfy the requirements of the current TSN traffic. The article presents the main
24 ideas of this novel approach.

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26 Network performance modeling

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28 **Related Version** This paper will be published in IEEE Network Magazine, in the special issue
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