

Dissertation release

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Service Continuity in 3GPP Mobile Networks

Title of the dissertation Service Continuity in 3GPP Mobile Networks

Contents of the dissertation The mobile wireless communication network or cellular network landscape is changing gradually from homogeneous to heterogeneous. Future generation networks are envisioned to be a combination of diverse but complimentary access technologies, like GPRS, WCDMA/HSPA, LTE and WLAN. These technologies came up due to the need to increase capacity in cellular networks and recently driven by the proliferation of smart devices which require a lot of bandwidth. The traditional mechanisms to increase capacity in cellular networks have been to upgrade the networks by, e.g. adding small cells solutions or introducing new radio access technologies to regions requiring lots of capacity, but this has not eradicated the problem entirely. The integration of heterogeneous networks poses some challenges such as allocating resources efficiently and enabling seamless handovers between heterogeneous technologies. One issue which has become apparent recently with the proliferation of different link layer technologies is how service providers can offer a consistent service across heterogeneous networks. Service continuity between different radio access technologies systems is identified as one key research item.

The knowledge of the service offering in current and future networks, and supporting interworking technologies is paramount to understand how service continuity will be realized across different radio access technologies. We investigate the handover procedure and performance in current deployed 3GPP heterogeneous mobile networks (2G, 3G and 4G networks). We perform measurements in the field and the lab and measure the handover latency for User Datagram Protocol (UDP) and Transmission Control Protocol (TCP) applications. The results show that intersystem handover latencies in and across 2G and 3G radio access technologies are too long and have an impact on real time packet switched (PS) real-time services. We also investigate the current proposed interworking and handover schemes in 2G, 3G and 4G networks and present their limitations. We further highlight some open issues that still need to be addressed in order to improve handover performance and provide service continuity across heterogeneous mobile wireless networks such as selection of optimal radio access technology and adaptation of multimedia transmission over heterogeneous technologies. We present the enhancements required to enable service continuity and provide a better quality of user experience.

Field of the dissertation Telecommunication Software

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Tekstirivi 1

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