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THE PROBABILITY DISTRIBUTION SELECTION FOR SELF-CONFIGURATION AND TARGET CELL SELECTION FOR SELF-OPTIMIZATION IN 3GPP LTE SYSTEM

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Abstract. *This paper aims to minimize the handover drop rate and distribute the cell load evenly in the self organizing network (SON) of 3GPP long term evolution (LTE) system with a variable loading and dynamic mobility environment. To accomplish the object, we propose two schemes. Firstly, at self-configuration phase, we propose a probability distribution selection scheme for estimating the load change value which means the difference of load value changed during the time interval between the handover decision stage and the admission control stage. Secondly, at self-optimization phase, we propose a target cell selection (TCS) scheme reflecting the estimated load change value obtained from the above-mentioned scheme. The simulation results reveal that the proposed schemes provide better performance than the existing schemes in terms of handover drop rate and load balancing.*
Keywords: Probability distribution selection, Target cell selection, Cumulative distribution function, Load change value, Self-configuration, Self-optimization

1. **Introduction.** Recently, more demands for applications such as VoIP, Music streaming, Web browsing, and P2P services have motivated the 3GPP to work on the evolved UMTS terrestrial radio access network (E-UTRAN). The E-UTRAN is also known as LTE of the 3GPP system, which aims at the increased peak data rates, reduction of radio access network (RAN) latency, improved broadcasting, IP-optimized, and so on [1, 2, 3]. In the 3GPP LTE system, the SON is becoming an important issue and is mainly divided into self-configuration and self-optimization [4, 5]. Self-configuration process is defined as the process where evolved NodeB (eNB) is configured by automatic installation procedures to set the initial radio configuration for system operation and works in pre-operational state. On the other hand, self-optimization process is explained as the process where measurements between mobile station (MS) and eNB are used to tune the network automatically and works in operational state.

In the SON of the 3GPP LTE system with a variable loading and dynamic mobility environment, the efficient design of target cell selection (TCS) scheme for minimizing the handover drop rate and distributing the cell load evenly is an important issue. However, it is impossible to design the TCS scheme considering the load change value obtained from the direct measurement of the real load change between the handover decision stage in the serving eNB and the admission control stage in the target eNB (see Figure 1) in real-time because the load change is very fast. In the existing 3GPP system, since load information among the neighboring cells is exchanged under control of the radio network controller (RNC), it takes a long time to know the load information among the