

**CHENNAI – PONDICHERRY**

**Dynamic SON-Enabled Location Management in LTE Networks**

**Abstract:**

Wireless networks are facing various challenges that demand continuous and rapid improvement. Long-Term Evolution (LTE) is a preferred wireless technology because of its satisfactory performance. Owing to an exponential increase in demand and new potential applications, the core network of LTE, which is known as the Evolved Packet Core (EPC), is affected by a surge in signaling caused by a variety of control functions. The signaling overhead decreases the users’ Quality of Experience (QoE). The current study attempts to improve the intelligence of location management techniques. As an extension of our previous study, a Self-Organizing Network (SON) that enables dynamic reconfiguration of cellto- TAL/MME is introduced. Both centralized and distributed pooling schemes are tested in terms of signaling overhead and user power consumption. A decomposition model that reduces the original formulated problem to two sub-problems is proposed, each of which is solved optimally. In addition, a smart cell-to- TAL selection scheme is proposed to prioritize potential cells that might be visited by a user equipment (UE). Our method is shown to outperform several state-of-the-art methods presented in the literature. Finally, a heuristic algorithm is presented to obtain a less complex solution than the optimal one.

**Existing System:**

Wireless technologies continue to be challenged by severe traffic that affects their bandwidth. The proliferation of hand-held devices and their applications has caused signaling traffic to exceed user data traffic. Signaling traffic is initiated each time there is a transmission or reception of packet streams between user equipments (UEs) and mobile networks, regardless of the actual size of the data traffic. Nokia Siemens Networks have predicted that in the coming years, the increase in signaling will be up to 50% faster than that in data traffic. Moreover, LTE suffers from greater signaling overhead than 3G technologies because its flat IP architecture does not include a medium entity, such as a Radio Network Controller (RNC), between a base station and the core network [2]. Thus, the average signaling overhead of LTE is 42% greater than that of HSPA per subscriber.

**Proposed System:**

A dynamic cell-to-TAL problem is proposed and formulated as a mixed integer non-linear programming (MINLP) problem with quadratic equality constraints. This approach is different from the previous approach presented, where the problem was solved statically by finding the optimal assignment once. The proposed dynamic technique is realized through an SON scheme along with a new smart cell selection approach instead of the conventional ring-based cell selection presented in the literature.

The problem is solved using a decomposition model that divides the problem into two sub-problems. The decomposition model allows optimal assignment of cellto- TAL dynamically instead of having it known a priori in a static fashion.

A new heuristic algorithm differs from the one proposed and constitutes of two sub-problems in the same manner as the decomposition model. The algorithm dynamically diversifies the TALs among the cells which helps in reducing the TAU signaling load.