Abstract

Femtocells are intelligent cellular access points that support any mobile device using standard cellular air interfaces, such as UMTS, CDMA2000 and LTE. They contain cellular radios that are tightly integrated with the existing macrocell radio network and thus create a seamless experience for mobile users as they move in and out of femtocell coverage, whether on an active call or in standby. Femtocells learn their radio frequency (RF) surroundings and use this information to self-optimize their operation. In particular, femtocells use their RF awareness to control interference between themselves and between femtocells and macrocells. The surest way to increase the system capacity of a wireless link is by getting the transmitter and receiver closer to each other, which creates the dual benefits of higher quality links and more spatial reuse. In a network with nomadic users, this inevitably involves deploying more infrastructure, typically in the form of microcells, hotspots, distributed antennas, or relays. In this paper contains the technical view for femtocells, and describe the state-of-the-art on each front. Also describe the technical challenges facing femtocell networks, and give some preliminary ideas for how to overcome them.
- 3g home nodeb study item technical report. 2008. 3GPP, Tech. Rep. TR. 25. 820 v8. 2. 0.
Femtocells: Smart Approach Analysis to Macrocells


**Index Terms**

Computer Science

Biotechnology

**Keywords**

LTE-Advanced  3GPP  Relay deployment  backhaul  amplify  forward relaying