

Chapter 8

Summary

In order to meet the very high traffic capacity requirement of 5G, UDN is a very promising technology direction. In this book, an UUDN concept is proposed. Based on the UUDN concept, we provide a novel network architecture. The new architecture is designed with the idea of localization, flatter, U/C separation, user-centric, intelligent and flexible networking.

Based on the new architecture and challenges analyses, many key technologies are introduced to provide high QoE, high area spectrum efficiency, low costing and green communication. Four promising technology directions are discussed in details, including DAPGing, intelligent networking, advanced interference management and security.

Simulation results of virtual cell show the significant gain on user mobility experience. And with the advanced interference process technologies in open office environment deployed with very dense APs, there are two times of average spectrum efficiency and 3–4 times of user experience data rate achieved.

For future works, detailed DAPGing, intelligent networking use cases and solutions, advanced interference management solutions and security solutions with real deployment limitation need to be further studied.

Besides above area, more directions need to be studied to bring the UUDN into a realistic deployment. For those very high density deployment scenarios, it is very difficult to connect each AP with ideal wired backhaul. A flexible backhauling to support ideal/non-ideal, wired/wireless backhaul is very important to ensure the deployment of UUDN.

Heterogeneous and cooperative networking is another problem to be further investigated. It's a big challenge to support UUDN with complex multi-tier scenario, multi-RATs, and irregular coverage.

In UUDN scenario, the use of mmWave bands is a promising way to provide very high data rate with very wide bandwidth. Many new features will be introduced due to very high frequency band, such as beamforming, coverage enhancement, integration of high and low band network, etc. Those will impact the mobility management, interference management and radio resource management.