Towards 4G - Technical Overview of LTE and WiMAX

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The current 3rd generation cellular wireless systems are evolving into 4th generation. As a pathway to 4G, 3GPP is currently developing Long Term Evolution (LTE) standard and IEEE 802.16-based WiMAX is also gaining attention as a 4G solution. In this tutorial, we first survey the underlying techniques of the 4G systems such as OFDMA, SC-FDMA, MIMO, fractional frequency reuse (FFR), and fast multi-carrier resource scheduling. Then, we give technical overview of 3GPP LTE and WiMAX. Specifically, we describe the system architecture, physical layer, and MAC layer of each system, including LTE-A and IEEE 802.16m.

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