PRCA: Priority and Reservation based OVSF Code Assignment in W-CDMA

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ABSTRACT

W-CDMA (Wideband Code Division Multiple Access) 3Gmobile- systems use OVSF (Orthogonal Variable Spreading Factor) code as channel codes. There are real time services and non-real time services in the 3G mobile-systems. This study develops a real time services friendly method to assign OVSF codes. We try to handle real time services and non-real time services differently by assigning different priority to each kind of services. In fact, we attempt to reduce the number of reassignment of real-time services by assigning high priority to real-time services. The code-reassignment is performed under the following two considerations: 1. Reduce the number of reassignment of real-time service to ensure the QoS (Quality of Service); 2. Make more high-priority calls to be accepted. While the mobile system tries to reassign channel codes, it chooses a sub tree with minimum priority and minimum number of the busy codes to reassign. If the sub tree with the minimum priority doesn ’ t have minimum number of busy code, we also reassign the busy codes under the condition of that its BC (number of busy codes) - min BC (minimum number of busy codes) is less than the threshold (h). Moreover, the proposed method involves a code-reserving mechanism to increase the number of accepted high-priority calls. The simulation illustrate the performance in terms of number of total accept calls, number of reassignment, number of rejected calls, and number of cumulative reassignment of the same code. The simulation result shows that the PRCA_D1(PRCA ： Priority and Reservation based OVSF Code Assignment；D：Down)of the five proposed methods outperform DCA (Dynamic Code Assignment) [13] and others.

Keywords : Quality of Service (QoS), Code Reassignment, Dynamic Code Assignment (DCA), Orthogonal Variable Spreading Factor(OVSF) code, Wideband Code Division Multiple Access (W-CDMA)

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