

# Graph Model for Optimal OVSF Code Placement Strategies

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## Abstract

The code utilisation of OVSF-CDMA systems are significantly impacted by the code placement and replacement schemes which have been studied by many researchers as independent problems. We formally define the placement optimality and present a novel graph model, CIDP, which is proved to be NP-complete for general graphs where the CIDP graphs reduced from the OVSF code placement problem are trivial perfect graphs. A unified algorithm UCMS-1, provided to firstly address both OVSF code placement and replacement jointly, achieves placement optimality in linear time complexity. It shows that OVSF code placement optimality problem is in P.

Keyword : graph models; OVSF-CDMA; code blocking; code placement; constrained independent dominating sets; code replacement; placement optimisation.