# 混合式服務環境中服務品質為基礎之機會排程演算法

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## 摘要

802.16e 規格已製訂完成且即將被應用於未來的無線通訊系統中。為了符合未來應用服務之趨勢，未來通訊系統必需考量混合式服務，而非單一的即時性與非即時性服務，而不同服務有不同的服務品質要求，系統需根據不同的要求以支援不同服務以符合其要求之服務品質；除此之外，希望盡量提升系統之應用效能以極大化頻寬使用效率，而適切的排程演算法即扮演了達成此二目的的重要角色。此篇論文中，探討如何妥善地處理混合式服務的排程以確保服務品質要求和提升頻寬使用效率。在論文中首先對非即時性服務提出一新的服務品質之定義，「軟性延遲限制」，利用此概念，即可以類似的標準來一併處理即時性與非即時性服務，以滿足在混合式環境下之對不同服務有著不同的服務品質要求。除此之外，此篇論文提出一創新的排程演算法，「服務品質為基礎之機會排程演算法」，以此演算法提升傳送效率以容納更多使用者，同時能夠達成維持混合式環境中服務品質之要求。此設計概念應用了「最早到達延遲限制者先傳輸」、「機會排程演算法」以及根據到達延遲限制時間將封包區分為不同群組以避免欲傳送之封包發生衝突的概念，以這些概念相結合而開創出「服務品質為基礎之機會排程演算法」，並將該排程演算法應用於 802.16e 系統中。

# QoS-based Opportunistic Scheduling Algorithm for Mixed-traffic Environment

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## Abstract

The 802.16e standard is standardized and soon be one of the popular technique which will be used in the future wireless communication environment. To meet the future trend, there must be some way to deal with mix-traffic environment to support their different QoS requirement. Besides, utilize the bandwidth efficiently is important to enhance system performance. In this thesis, it gives a QoS definition to non-real-time service, soft delay bound. Using this concept system can easily handle the mix-traffic environment to meet their QoS requirement. Besides, we propose a new algorithm, QoS-based opportunistic algorithm, to utilize the bandwidth efficiently but still maintain the QoS requirement of users, even in the mix-traffic environment. The designing concept uses EDF, opportunistic scheduling, and the mechanism to divide packet into different groups based on their delay bound to avoid packets conflict in one frame. The algorithm will be implemented in 802.16e system.

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