

Proposal of multi-service (MS) code to differentiate quality of services for OCDMA systems

ABSTRACT

The emergence of a broad range of network-driven applications (e.g. multimedia, online gaming) rises the demand for network environments with ability to provide multiservice capabilities with diverse Quality of Service (QoS) requirements. In this paper, a new code family of novel spreading sequences, called Multi-Service (MS) code has been constructed in order to support multiple services in OCDMA system. The performance of the proposed code is demonstrated using mathematical analysis. Different numbers of basic users are used to support triple-play services (audio, data and video) with different QoS requirements. Results indicate that the technique can clearly provide a relative QoS differentiation. Lower value of basic users can support larger number of subscribers as well as delivering better performance in terms of acceptable BER of 10^{-9} at fixed code weight.

Keyword: Fiber optics communications; Multi service (MS) code; Optical code division multiple access (OCDMA); Quality of service (QoS)