

Multimedia Satellite Systems

{xtypo_sticky} Multimedia Satellite Systems (Connection Admission Control Algorithms and Efficient Traffic resources management) {/xtypo_sticky}

The advent of Ka-band satellites has made small and low-cost user terminals feasible and hastened the development of multimedia satellite networks; a multimedia satellite network is a space-based communications system that interconnects users who are mostly exchanging real time applications based on several data types (e.g., text, voice, images, and video).

The Digital Video Broadcasting by Satellite (DVB-S) standard allows Internet traffic to be multiplexed with traditional video services and broadcasted from a central (or regional) Hub Station to a multitude of terminals within a satellite down-link beam. In the last few years, a direct Return Channel System (RCS) has been standardized by ETSI.

This standard requires a forward link based on a DVB/MPEG-2 data format and a return link using a Multi-Frequency Time Division Multiple Access (MF-TDMA) scheme. A lot of studies have been conducted concerning Connection Admission Control algorithms opportunely designed in order to guarantee a good quality of services at critical traffic sources minimizing the signaling exchange between the on-board and on-earth segments of the system and reducing delays due to the processing of the call requests on board, in addition they present a very low computational complexity reducing at minimum the critical admission time. These algorithms can also guarantee an efficient manage of real-time multimedia video sources both with constant and high variable data rate transmission. A DVB-RCS system architecture using a multi-spot beam geostationary satellite with regenerative payload has been designed and implemented in order to test the robustness and the efficiency of the proposed CAC algorithms also in high load traffic conditions.