Abstract

This paper focuses on the network selection for group calls in heterogeneous wireless networks (HWNs) with dynamic criteria. A group call comprises multiple independent calls, such as: voice, file-download, video-streaming, online-gaming sessions, etc. that are activated concurrently on a multimode mobile node (MN). The next generation wireless networks (NGWNs) have the capability to support group calls from multimode MNs. Network selection for group calls in HWNs is a complex and multi-criteria group decision (MCGDM) problem. Existing works in the literature that addresses the network-selection problem of the vertical handover (VHO) of group calls assumes that the multiple criteria used for making network selection decisions are static. However, in NGWNs, some criteria, such as: MN’s speed, network’s service price, and network traffic load, are used for making network-selection decisions for VHO that are dynamic. The dynamics of the network selection criteria for VHO of group calls affect the choice of the most suitable selected network. Thus, it is important to consider decision criteria dynamics when making network selection decisions for the VHO of group calls in NGWNs. In this paper, a new network selection algorithm that uses a MULTIplicative-form with
Multi-Objective Optimization Ratio Analysis (MULTIMOORA) for making network selection decisions for the VHO of group calls is proposed. An investigation into the effect of decision criteria dynamics on VHO decisions for group calls is carried out. The performance of the MULTIMOORA is validated by comparing it with TOPSIS, a well-known MCGDM algorithm. The performance of TOPSIS is seen to be unstable at high MN speed regions, unlike MULTIMOORA. The simulation results show the effectiveness of the proposed scheme for making network selection decisions for group calls in HWNs with dynamic multi-criteria.

References


31. W. Brauers and E. K. Zavadskas, “Project management by multimoora as an instrument
The Effect of Decision-Criteria Dynamics on Network Selection for Group Calls in Heterogeneous Wireless Networks


Index Terms

Computer Science Wireless

Keywords

Dynamic multi-criteria, Group calls, Network selection, Multicriteria group decision-making