ABSTRACT
The purpose of this research is to design an efficient network coding based architecture for peer-to-peer live video streaming over mesh-based networks (wired and wireless) such that it can provide high video quality on peers. Moreover, three main objectives of this research for providing smooth video playback in mesh-based P2P live video streaming system can be propounded as follows: 1. To propose an efficient coefficients matrix generator with very low computation complexities and transmission overhead in random network coding. 2. To propose a new hybrid data exchange method such that it decreases the inherent problems in pull- and push-based approaches. 3. To propose a new hybrid routing protocol in WMNs with high network throughput, low routing overhead, jitter and end-to-end delay. Finally, in order to provide a comprehensive evaluation of these objectives, a combination of the first and the second main objectives for P2P live video streaming over mesh-based wired networks is considered. Moreover, a combination of all main objectives for P2P live video streaming over wireless mesh networks is performed. Finally, an efficient network coding based architecture which includes three mentioned objectives is designed and implemented to achieve high perceived video quality on all peers.

KEYWORD
Random Network Coding, Mesh-based networks, Video Streaming, P2P Systems