

VIDEO MULTICAST USING NETWORK CODING

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ABSTRACT

Reliable video streaming over the Internet faces a lot of challenges that include limited available bandwidth, stringent delay conditions, and packet losses. Multiple description coding, along with error correction codes, has been shown to make the video bitstream robust to packet losses. Recently, network coding was shown to achieve the multicast capacity of the network. Randomized network coding enables doing away with multiple multicast trees that otherwise need to be maintained in traditional multicast systems. We present a scheme that combines the advantages of multiple description coding and network coding in directed acyclic graph networks. We effectively summarize the network so that multiple description coding can be performed in a centralized fashion. We compare the performance of our method with that of packet routing and replication schemes and find considerable improvement in quality of the received video. We also present a joint multiple description - network coding scheme for multicast to heterogeneous users in lossless networks.