Practical Incremental Network Coding for Multimedia Content Delivery

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***Abstract*— Random linear network coding is a promising solution to improve network capacity by allowing intermediate node that combines incoming packets into network coded packets. Nevertheless, there are two main drawbacks: rank deficiency and processing delay. The first drawback can be solved by performing systematic network coding, in which sender transmits all uncoded packets in the first phase and coded packets in the second phase. The processing delay still remains in practical communication system and multimedia content delivery. In this paper, we propose a practical incremental network coding for application of multimedia content delivery over multi-hop network. We implement the proposed scheme using Raspberry Pi as transmission node and evaluate performance in terms of throughput and the attainable video quality (i.e., peak signal-to-noise ratio). The results demonstrate that our proposed incremental network coding outperforms conventional network coding schemes.**

***Keyword*— Random Linear Network Coding, Systematic Network Coding, Device-to-device, Internet of Things**

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