

In the next step we investigate DP versus the G as depicted in Fig.14. DP values range between 78.61 % and 96.75 % while the corresponding values for G range between 16.44 % and 65.89 %. The majority of points from graph are located in the area with high DP and high G . There are several points that are far away from the cluster.

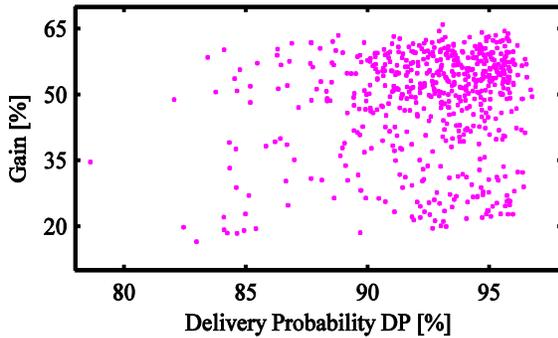


Fig.14. DP with respect to Gain

In the Fig.15 we investigate the percentage of number of all native packets that are coded together. Result is presented as histogram where x-axis represent number of native packets coded together (2, 3, 4, 5) and y-axis represents percentage of native packets encoded together in coded packet (31.9 %, 15.4 %, 5.8 %, 0.1 %), respectively.

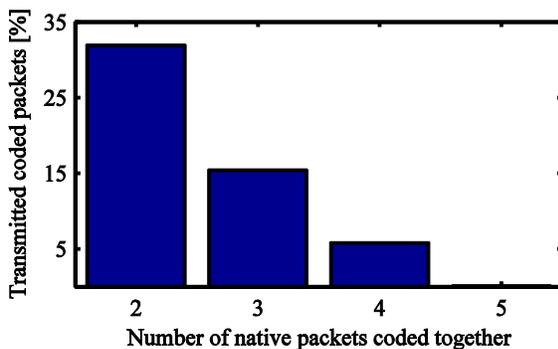


Fig.15. Histogram of transmitted coded packets [%]

Furthermore, the coding and decoding require additional delay. Still, we expect that the additional delay introduced by our scheme will not affect the Quality of Experience (QoE) on the client side as all the operations will be carried out within the buffer time of the stream which is in our case 0.3 s (RTO).

5 Conclusion

In this paper we proposed wireless broadcast transmission scheme for reliable video streaming

service. The main contribution of this work is the use of a XOR-ed transmission scheme based on the information gathered from explicit NACK messages, sent by remote clients. From this information, the server generates different combinations of the transmitted packets, aiming that all of them are to be retrieved in every intended destination. Using the proposed approach, the overall number of transmissions is reduced and the wireless link is less utilized.

We showed using wireless testbed that our solution compared to no NC retransmission approach reduces the bandwidth up to 15 %. This bandwidth reduction in practice is important for ISPs as they can offer services to higher number of clients using the same equipment or, alternatively, they can introduce new services.

With the proposed scheme high gains can be obtained for different delivery probabilities. Higher gains can be obtained with higher number of clients, which is usually the case in the real environment, as we have more different streams. With more clients, more different packets can be coded together which results in more coding opportunities and fewer transmissions.

The presented approach can be implemented in the wireless broadcast network when wireless technology is used for the last mile access. Our scheme introduces bandwidth reduction for video-streaming applications such as IPTV.

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