CHAPTER 8

CONCLUSION AND FUTURE ENHANCEMENTS

8.1 CONCLUSION

This thesis proposes new techniques for handling VCR operations in a P2VoD environment, using the VIPV system. The VIPV offers the peer users a new and efficient way to obtain VCR queried video chunks or segments instantly. Moreover, this system proposes an architectural framework with a novel approach, that places elements carefully at each level of the P2VoD system, to reap major benefits as a whole for the entire system.

It starts with the QPMVM by increasing the normal playback video quality to 94%, and the VCR video quality to 97% for lower bandwidth users, when compared to the existing systems. The next is the placement of the video content in the cache using Network Code based push that intensifies the peer sharing and correcting of erroneous packets.

Various mechanisms such as, cache content placement, incentivize sharer, stream structures AVL and the Splay, learning based neighbor selection with ant based search, and modified Transient Resilient Protocols are combined in this work, to provide the best for the working of the system on hand. The system thus, is adaptable and highly robust, by dispersing the core operation to multiple elements in the scenario.

8.2 CONTRIBUTIONS

A lot of research has been done, related to the improvement of the VCR operations in P2VoD systems. But, most of them focus only on network
issues. However, the real requirement in this area is to deploy additional functional components in the media server, peer systems, etc. In our research work we focus on all components of the P2VoD system, and provide an integrated framework to deal with VCR operations, through our proposed VIPV framework.

1. The performance of the VIPV system is better with lower cost and higher user satisfaction.

2. Heterogeneous client management, with equality based video quality perception, is provided. A novel integrated framework with video transcoding support performs an optimized solution for VCR interactivity at the server. This guarantees QoS for lower bandwidth clients also. This is done in the Quality Preserving Multivariate Video Model (QPMVM), which performs better with lower cost and higher user satisfaction.

3. A push based scheme, applying NC in streaming, translates the stored video content to serve optimally during loss or during instant requirement such as for the VCR, is deemed novel. With decreasing costs on network usage and client cache, this technique, when piggybacked with the actual multicast video streams, is highly effective and is more useful in satisfying VCR queries.

4. Tracker management for searching video contents and peer nodes through MRSM and OPNS, supports video multicast streaming, particularly the VCR streams in an optimum manner.

   i. The tiers of overlay structures in MRSM, with inputs from the AVL and Splay, improve VCR streaming.

   ii. The AGILE, performs through learning based peer neighbour prediction, that adapts to system changes over time. This provides the selection of neighbour nodes for sharing with a
higher positive degree. This adaptive system proves to be better than commonly applied flooding and gossiping techniques.

5. Peer handling and server operations on the streams are fed to the tracker to improve the performance. The proposed elements at the tracker, such as, Peer Client Helper and Server-side Helpers are adaptive to the environment in streaming structures.

6. Boosting peer sharing through Fair Placement Policy and Fine Tuned ‘tit-for-tat’ incentive is another leap in the p2p streaming system.

7. The Transient Resilient Protocol helps to rectify transient nodes, using the combined knowledge of the network, system and the node. This is an added advantage to the VIPV system.

8. The tracker’s application in congestion reduction, and its use in suppressing the peer sharing induced congestion, is a successful leap in our VIPV work. Constant interaction among the media server, tracker and peer network is managed extraordinarily through proper co-ordination, with lesser overhead.

8.3 FUTURE WORKS

Future works in VIPV could be studied with robust distributed trackers. This might increase the feasibility of fault tolerant systems. In this direction, the use of ontology for effective processing of complex queries with profile data, can also be studied and implemented. Moreover, security is not included in the current system. It can be incorporated throughout the system. Client profile with rule management, for optimizing video search and categorization of clients, can be another enhancement to make the operations effective. The VIPV can be upgraded to further include components, that reduce the query processing cost, and maintain integrity, consistency and security.