

ABSTRACT

With existing video compression technology and standards, delivery of video and audio is made possible through distribution of media such as VCD and DVD. However this would require the end user to have a relatively powerful computer system and the corresponding hardware or software to ensure smooth playback. Using disc media as a form of content delivery also confines the service to only one user per one system at any time. Using the network enables many users to acquire the same video or to have a wider variety of video for viewing from the local system without having to physically attain the media. This is made possible with the help of networking and video server.

The cost of a large-scale implementation for sending video when acquired across the network, which exists on a commercial basis through what is known as Video on Demand, is still high. An alternative is to use existing facilities while waiting for the technology to become affordable. On the other hand, delivering high quality video requires network to have wide bandwidth due to its high video bit rate. Using existing network to run applications such as this would require extensive research to identify many factors of the network, client end and server end. With the understanding of the type of network protocol, network design and network implementation, video performance across such network can be optimized.

The main objective of the thesis work is to determine the internetwork performance between different network technologies through experimentation and the use of video streams. The different internetwork environments are identified and listed as network models in this thesis. These network models come about from observing the networks implemented on a real world environment, the campus network. Different network technologies are deployed and put to work together seamlessly. After the experiments have been carried out, analysis ensues on the results collected. From these results, limitations on the network are recognized and efforts are centered on solving the network problem to improve internetworking performance.

Before the experiments, test parameters are identified. A general client server relationship is used to deliver the video stream(s). All experiments will be based on this relationship. Different bit rate video is also created with the help of software encoder. These video files are hosted in the server and delivered as on-demand basis to clients. Test parameters include the client and server subsystems as well as the network and protocols installed that are relevant to the experiments. Other parameters are related to the video and audio component of the re-encoded video files.

Lastly, work is centered on the suggestion of a network model to eliminate the inherent problems in the network models identified. The same video performance evaluation is conducted across the proposed model to show the improvements gained from the new model. The method to overcome the limitation is documented and discussed.

This research requires the understanding of the existing network architectures, to improvise and design a system that would allow satisfactory video transmission in the campus network in order to deliver multimedia rich education material or lecture across different network platform.