

End System Multicast

Introduction

End System Multicast (ESM) is used for live audio and video streams to be broadcast over the internet using a peer-to-peer network. This means viewers help to distribute the broadcast to other viewers by both downloading the video stream and uploading it to other viewers. A viewer is automatically arranged into a broadcast distribution tree using a distributed protocol. The tree changes dynamically to improve bandwidth and latency.

Benefits

ESM does not need extra router support as is needed as in IP multicast solutions. There is no need for infrastructure servers as would be needed for content delivery services. ESM allows for better routing from the broadcaster to the viewer and has a low cost to the broadcaster. It reduces performance bottleneck since load is shared across end systems.

Multiple Video Streams

ESM has the capability to send multiple video streams with different qualities. This is necessary because over time some nodes might start to experience higher loss rates due to bandwidth issues. ESM monitors when there is a high loss rate in the high quality video and changes to a low quality stream. This helps in maintaining a viewer in the broadcast without sacrificing video quality.

Issues

ESM has a self-organizing overlay tree that should change to improve bandwidth and latency with each new viewer? How quickly can it change in order to avoid any viewer from receiving poor quality video or not receiving the broadcast? How effective is the monitoring systems?