

Public Abstract**First Name:**Aleksandre**Middle Name:****Last Name:**Lobzhanidze**Adviser's First Name:**Wenjun**Adviser's Last Name:**Zeng**Co-Adviser's First Name:****Co-Adviser's Last Name:****Graduation Term:**FS 2007**Department:**Computer Science**Degree:**MS**Title:**BUILDING HYBRID MULTICAST BY COMBINING IP AND APPLICATION LAYERS

Nowadays Internet TV (IPTV) is becoming more and more popular; number of IPTV subscribers increases exponentially. Internet Service Providers (ISPs) face challenge of video distribution to multiple users.

Multicasting is one of the most efficient ways for media distribution over the network.

There are two widely used techniques of multicasting. IP Multicasting is a way by which Internet Service Provides can distribute the TV content over the Internet effectively; however it requires hardware update at every single LAN.

The other way is Overlay Multicast (OM), which is more flexible, and easy to deploy, but performance is significantly worse due to lack of knowledge about physical condition of network.

Our study shows that if we combine both of these techniques, we can achieve much better performance.

We implement a new software application called Hybrid Multicast (HM) that can be installed at any type of network. HM tries to use IP Multicast wherever available since it has better performance. If there is no such capability, it uses OM.

Internet is pretty dynamic, and network conditions change over time, this causes delays and failures by which media quality suffers. In our work, we try to consider all important details and design reliable, easy-to-deploy and cost-effective algorithm that would allow Internet Service Provides distribute the quality media to end users without need of hardware updates or increased cost.

Our experimental results indicate that Hybrid Multicast performs much better than other existing protocols. Main advantage of HM is smaller delay and adaptability to network changes. Until most ISPs become IP Multicast enabled, we can use hybrid technique to optimize recourse usage.