A Social-Network-Aided Efficient Peer-to-Peer Streaming System

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***Abstract:-* In current peer-to-peer (P2P) live streaming systems, nodes in a channel form a P2P overlay for video sharing. To watch a new channel, a node depends on the centralized server to join in the overlay of the channel. In today's live streaming applications, the increase in the number of channels triggers users' desire of watching multiple channels successively or simultaneously. However, the support of such watching modes in current applications is no better than joining in different channel overlays successively or simultaneously through the centralized server, which if widely used, poses a heavy burden on the server. In order to achieve higher efficiency and scalability, we propose a Social-network-Aided efficient live streaming system (SAVE).**

Keywords:P2Plive streaming, P2P Networks,Social Networks

1. INTRODUCTION:

peer-to-peer(p2p)streaming applications [1]– [3] Such as pplive and uusee are attracting millions of viewers every day. The success of these applications is rooted.in the decentralized nature of p2p networks, which relieves the load on the centralized server by utilizing the upload capacity of participating users. To watch a new channel, a node needs to contact the centralized server for the nodes in the channel in order to join in the channel's overlay.For example, nodes in uusee need to contact the server to obtain tens of nodes, which incurs a large amount of communication overhead on the server. The current wide coverage of broadband internet enables users to enjoy streaming programs smoothly, and the increase of channels triggers users' desire of watching multiple channels successively or simultaneously (i.e., multichannel watching mode). However, since most current p2p live streaming systems only allow users to share the stream in one channel, the support of successive and simultaneous watching modes in current applications is no better than joining in different channel overlays successively or simultaneously through the centralized server.

2.RELATED WORKS:

In[1],x. Liao, h. Jin, y. Liu, l. M. Ni, and d. Deng, “anysee: peer-to-peer live streaming,” in proc. Ieee infocom, 2006, pp. 1–10.

Efficient and scalable live-streaming overlay construction has become a hot topic recently.
In order to improve the performance metrics, such as startup delay, source-to-end delay, and playback continuity, most previous studies focused on intra-overlay optimization.Such approaches have drawbacks including low resource utilization, high startup and source-to-end delay, and unreasonable resource assignment in global P2P networks.Anysee is a peer- to-peer live streaming system and adopts an inter-overlay optimization scheme, in which resources can join multiple overlays, so as to (1) improve global resource utilization and distribute traffic to all physical links evenly; (2) assign resources based on their locality and delay; (3) guarantee streaming service quality by using the nearest peers, even when such peers might belong to different overlays; and (4) balance the load among the group members.

In[2],J. Kleinberg, “The small-world phenomenon: An algorithmic perspective,”In Proc. STOC, 2000, pp. 163– 170.
Long a matter of folklore, the small-world phenomenon" the principle that we are all linked by short chains of acquaintances was inaugurated as an area of experimental study in the social sciences through the pioneering work of Stanley Milgram in the 1960's. This work was among the _rst to make the phenomenon quantitative, allowing people to speak of the six degrees of separation" between any two people in the United States. Since then, a number of network models have been proposed as frameworks in which to study the problem analytically. One of the most refined of these models was formulated in recent work of Watts and Strogatz; their framework provided compelling evidence that the small- world phenomenon is pervasive in a range of networks arising

in nature and technology, and a fundamental ingredient in the evolution of the World Wide Web. But existing models are insuficient to explain the striking algorithmic component of Milgram's originalendings: that individuals using local information are collectively very effective at actually constructing short paths between two points in a social net- work. Although recently proposed network models are rich in short paths, we prove that no decentralized algorithm, operating with local information only, can construct short paths in these networks with non-negligible probability. We then define an infinite family of network models that naturally generalizes theWatts-Strogatz model, and show that for one of these models, there is a decentralized algorithm capable of ending short paths with high probability.

In [3] F. Wang, j. Liu, and y. Xiong, "stable peers: existence, importance, and application in peer-to-peer live video streaming," in proc. Ieee Infocom, 2008, pp. 2038– 2046.

Using traces from a real large-scale system as well as analytical models,we show that, while the number of stable nodes is small throughout a whole session Their longer lifespans make them constitute a significant portionin a per- snapshot view of a peer-to-peer overlay.As a result,They have substantially affected the performance of the overall system. Inspired by this, we propose a tiered overlay design, with stable nodes being organized into a tier-1 backbone for serving Tier-2 nodes. It offers a highly cost-effective and deployable alternative to proxy-assisted designs.We develop a comprehensive set of algorithms for stable node identification and organization.specifically, we present a novel structure, Labeled Tree, for the Tier-1 overlay, which, leveraging stable peers, simultaneously Achieves low overhead and high transmission reliability.Our tiered framework flexibly accommodates diverse existing overlay structures in the second tier. Our extensive simulation results demonstrated that the customized optimization using selected stable nodes boosts the streaming quality and also effectively reduces the control overhead. This is further validated through prototype experiments over the planetlab network

In [4],I. Bermudez, M. Mellia, and M. Meo, "Investigating overlay topologies and dynamicsof P2P-TV systems: The case of sopcast," IEEE J. Sel.Areas Commun., vol. 29, no. 9, pp. 1863–1871, Oct. 2011.

Several successful commercial P2P-TV applications are already available. Unfortunately, some algorithms and protocols they adopt are unknown, since many follow a closed and Proprietary design. This calls for tools and methodologies that allow the investigation of the application behavior. In this paper, we present a novel approach to analyze the graph properties and the traffic generated by P2P-TV applications run by customers in operative networks. The proposed methodology allows us to distinguish and investigate three different graphs: the social networks that link users based on their interest, the overlay networks created by peers that are watching the same channel, and the distribution networks that involve the subset of peers that are contributing to the video distribution. We apply this methodology to the traffic collected for more than one year from three national isps in Europe, where sopcast is the largely preferred application. Considering users'behavior, we uncover the attitude to use the P2P-TV application mainly to follow live sport events. P2P- TV systems have then to deal with both flash crowd and sudden peer departures that happen at the beginning and end of an event. Furthermore,channel zapping among channels offering the same event is also relevant. Sopcast deals with this by implementing a very robust and greedy overlay topology discovery process in which more than 170 peers are contacted every 60 s. Considering video distribution, we provide evidence that sopcast implements algorithms that as consequence restrict traffic within Autonomous System boundaries. Still, high bandwidth peers must be present to supply the necessary upload capacity to sustain the

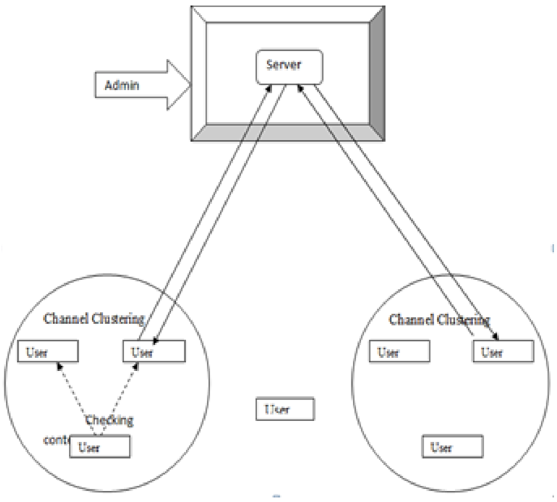
- video
- Service.

3.IMPLEMENTATION:

The friendlist scheme enablesa node to maintain a friendlist that records nodes withsimilar individual channel watching patterns (i.e., interest channelsand watching time). By relying on the friendlist, a node canquickly join in a channel that is not in its current cluster. Also,when a returning node (non- first-time user) starts to watch achannel, it can rely on its friendlist rather than the server to joinits desired overlay.

3.1.Modules:

- Categories and Upload Channels
- Network Formation and Discovering
- Requesting channels and Download
- Peer to peer Video Content Sharing



3.1.1.Categories and Upload Channels

In this module admin will upload the channels also categories the channel (sports , music).The list of categories and channels are also lively showing in user end. Admin can be access the server. In the server side change anything its show on user end. In this process maintain the categories and channels list.

3.1.2.Network Formation and Discovering

In this module we derive a user's interests. The interest facilitates queries in content-based file sharing and other components of our System .Collective of users that share common interests and meet frequently is grouped as a community. The probability of similar interested users meeting together and sharing the content. The server can be maintaining the video list and categories.

3.1.3.Requesting channels and Download

In this module user select the channel from all categories. Jetty server can be run on every user. The requested channel will search within neighbor. If neighbor is having the channel the user can download or play. If the neighbor doesn't have the requested channel it will forward the server and download the requested channel on user end. And also streaming the video from server.

3.1.4.Peer to peer Video Content Sharing

In this process, user wants to download and streaming the video content, request to the common interest users. If the users have the requested content then it shares to another user. If the common interest user doesn't have whole requested content then request will forward to server and download the content. Suppose the user disconnect the file sharing process to reconnect another common interest user or connect to the server and streaming the video. Every user have individual jetty server and the streaming is done by server location.

4. CONCLUSION:

In this paper, we propose a social-network-aided efficient P2P streaming system. This system supports successive and multiple-channel viewing with low switch delay and low server overhead by enhancing the operations of joining and switching channels. Streaming system considers the historical channel switching activities as the social relationships among channels and clusters the frequently interacted channels together by merging overlays or building bridges between the overlays.

5. FUTURE ENHANCEMENT:

Our survey on user video streaming watching activities confirms the necessity and feasibility of Social Network Aided Efficient Video Streaming System.Through the experiments on the PeerSim simulator and PlanetLabtestbeds, we prove that Streaming system outperforms other representative systems in terms of overhead, video streaming efficiency and server load reduction, and the effectiveness of Streaming system's two strategies. Our future work lies in further reducing the cost of streaming system in structure maintenance and node communication.Also, we will design algorithms for cluster separation and decentralized cluster head election.

6. REFERENCES:

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