Report for Reading assignment on SplitStream

# Motivation

Why is the problem addressed in the paper interesting and important for the larger community to be solved?

The problem is that in conventionally tree-based multicast system, the job of forwarding as well as duplicating multicast messages are only taken care of by interior nodes, however those nodes are small subset, and if they are not highly available nor dedicate organized, the system doesn’t work. On the other hand, the majority, those leaf nodes, contribute no resources to forwarding load, wasting their outband bandwidth. What’s more, once the tree grows deep, the system is not practical, since it becomes fault prone and introduces large delay.

# Contribution

What are the main contributions of the paper?

The main contribution of the paper is to introduce SplitStream, presenting a forest of interior-node-disjoint multicast trees that enables distribution of high-bandwidth content with application-level multicast in a cooperate environment. The goal is to make all peers contribute resources in order to distribute the forwarding load.

Another point of the paper is the idea of splitting the multicast stream into multiple stripes with separate multicast trees based on a non-dedicated infrastructure, so that it accommodates different limitations, since each node may have different bandwidth capacities, and also increases the resilience to node failure and sudden node departures.

# Solution

How did the authors solve the problem at hand?

Network proximity-aware routing is obtained by means of two auxiliary routing tables, and constrained load balancing is supported through a combination of searches in both string name and numeric address space.

# Evaluation

How good is the solution? How did the authors evaluate their solution?

How good was the evaluation of their work?

# Disadvantages of the Solution

What are the disadvantages and shortcomings of the solution given by the authors?

It’s expensive to perform insertions and deletions in a perfect Skip List.

Constrained load balancing can’t be performed over an arbitrary subset of the nodes of the overlay network.

CLB domain is encoded in the name of a data object, thus transparent remapping to a different load balancing domain is not possible.

It may be possible to target traffic between an administrative domain and the outside world with fewer attacking nodes.

# Disadvantages of the Evaluation

During the evaluation of their solution, did the authors overlook something?

# Further improvements

Are there any further improvements that can be made to the solution?

Use a reliable protocol to transfer the routing operation message.

Are there any future directions you can think of?

Consider network partitions on systems in which partially or overall independent portion of systems are formed, update their own states, and then rejoin later, therefore we have to enforce state consistency between peers updating replicated data.