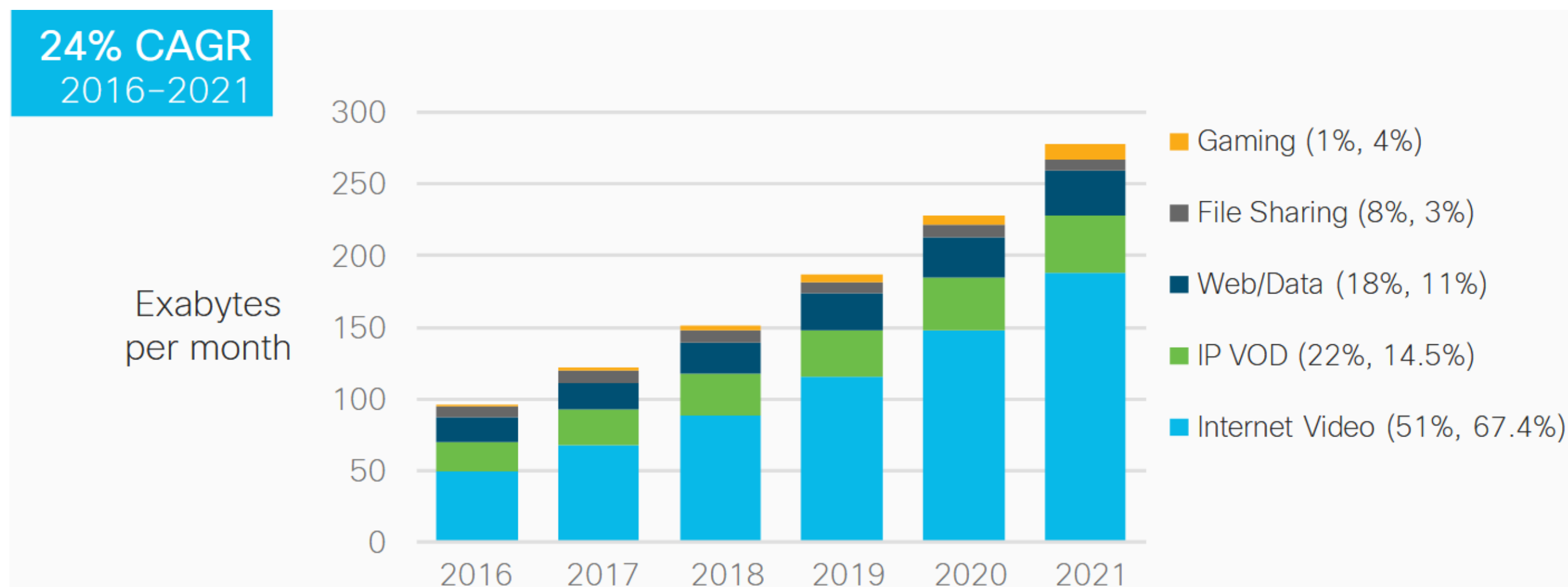


# PRIVA-STREAM: Private Collaborative Streaming

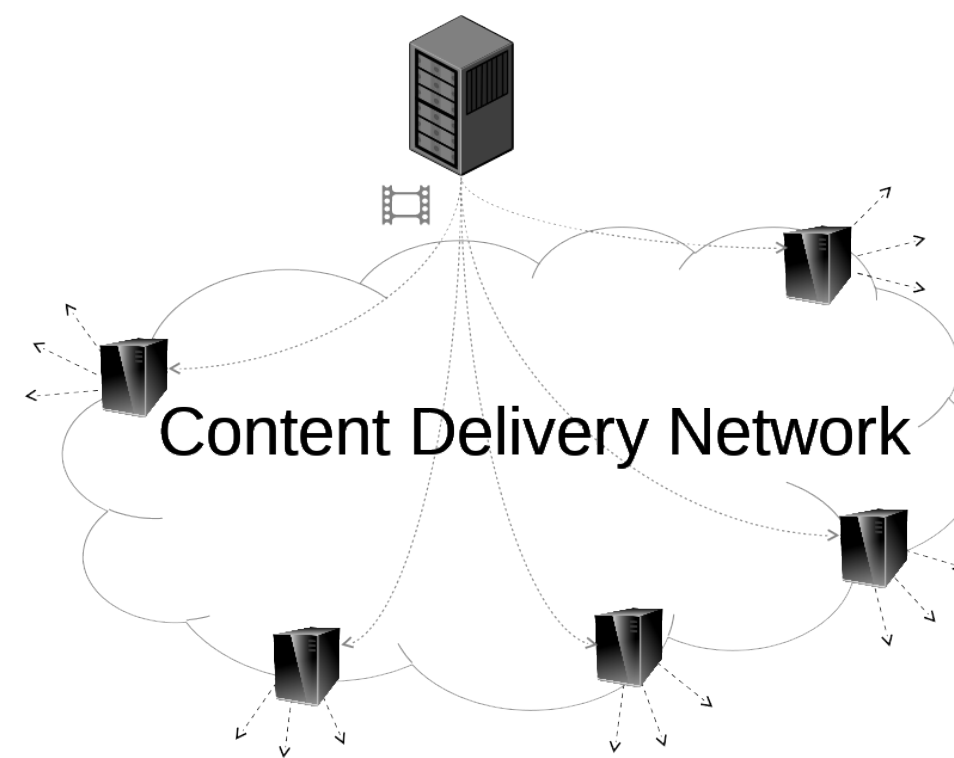
Simon Da Silva - Daniel Negru, Laurent Reveillere  
PROGRESS - Univ. Bordeaux, LaBRI, France

*Inria*  
inventeurs du monde numérique

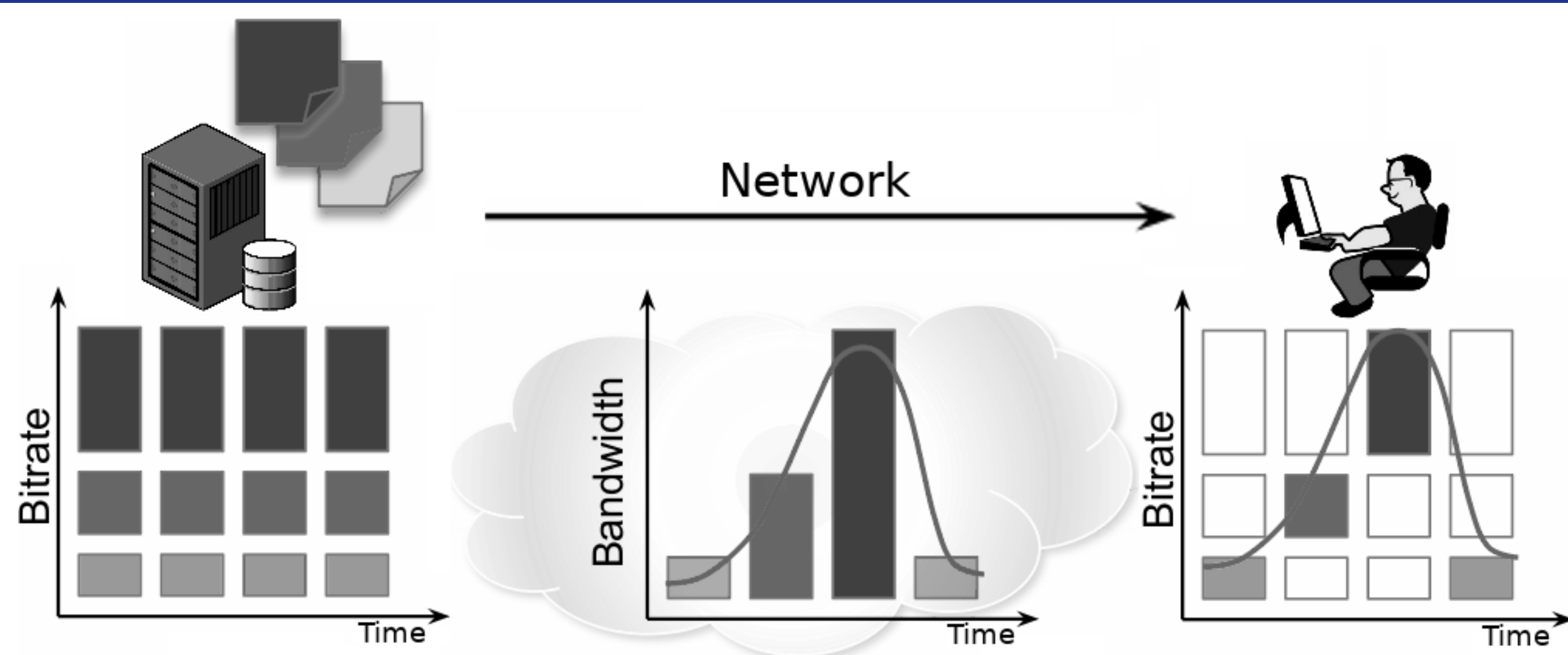
## Video content consumption



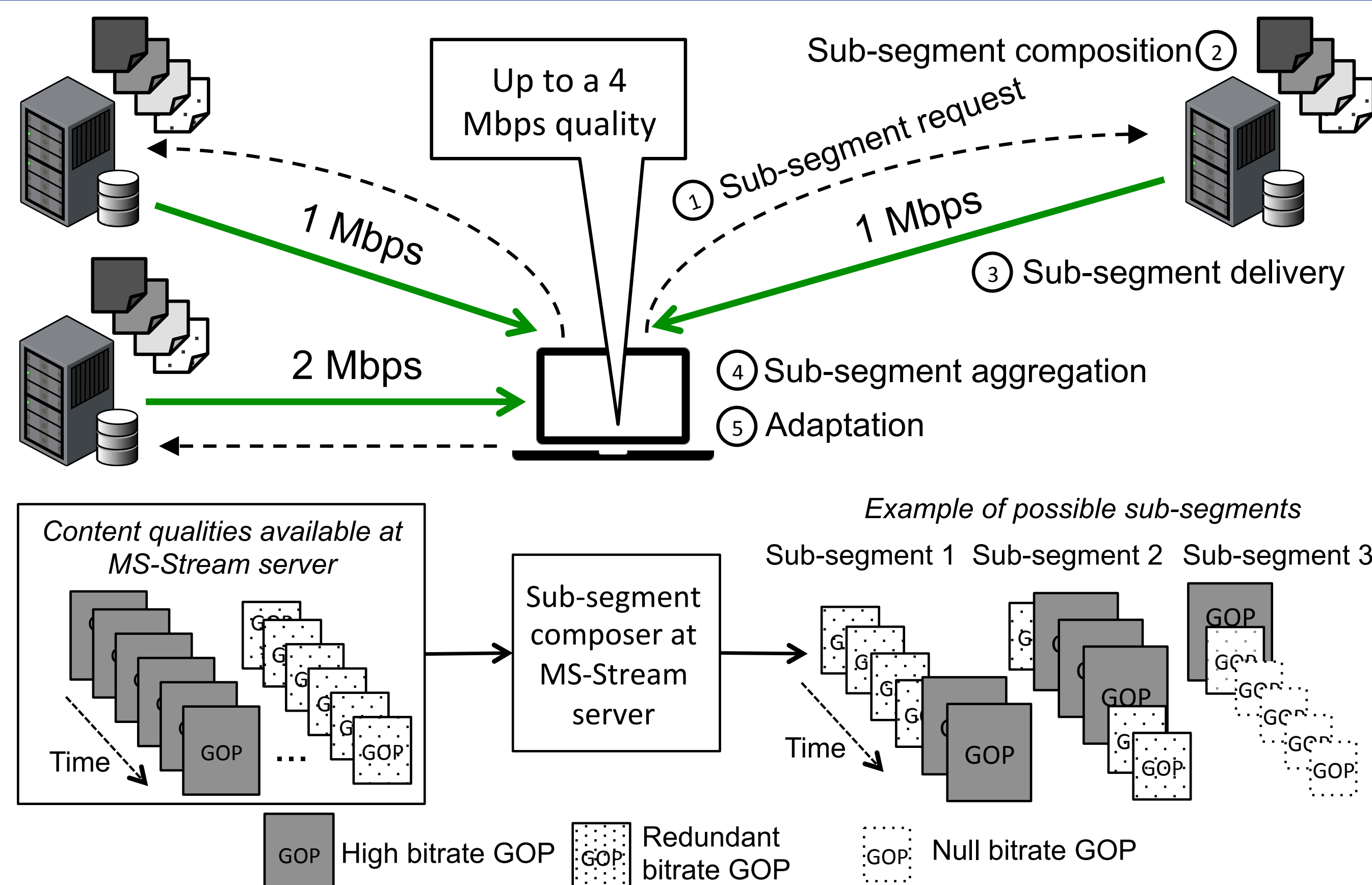
## Content Delivery Networks (CDN)



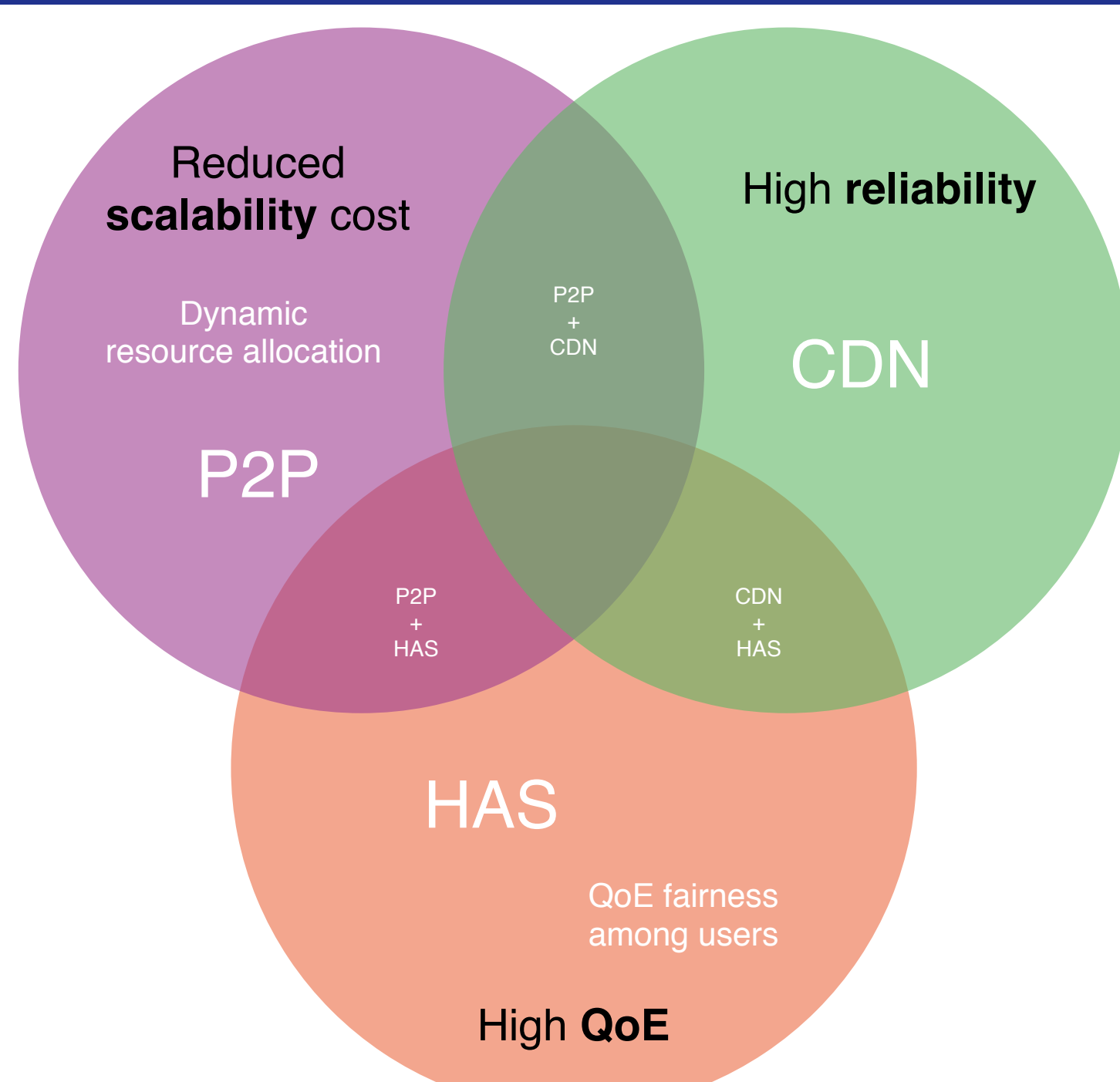
## HTTP Adaptive Streaming (HAS)



## MS-Stream: Multi-Source Streaming over HTTP



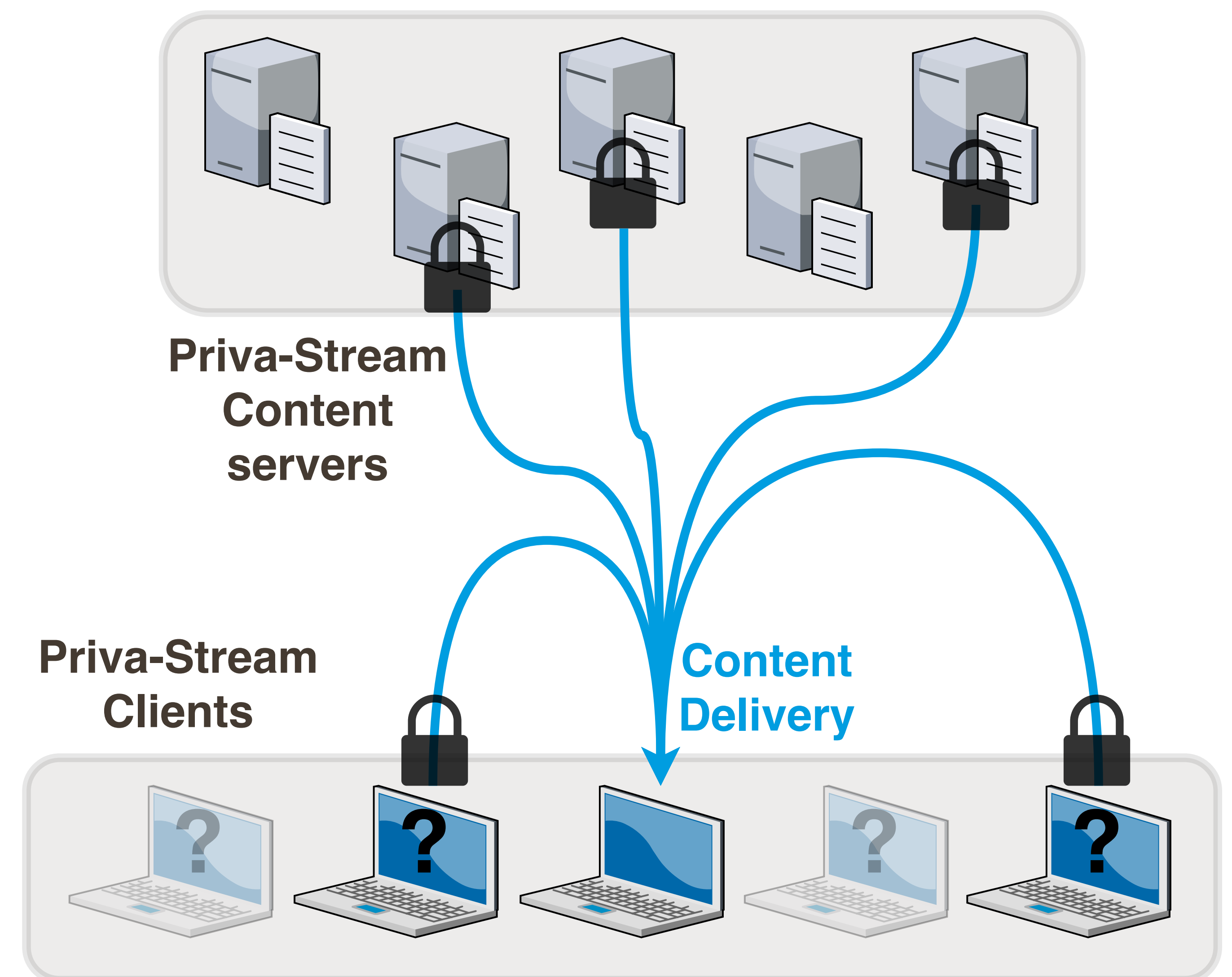
## Problem statement



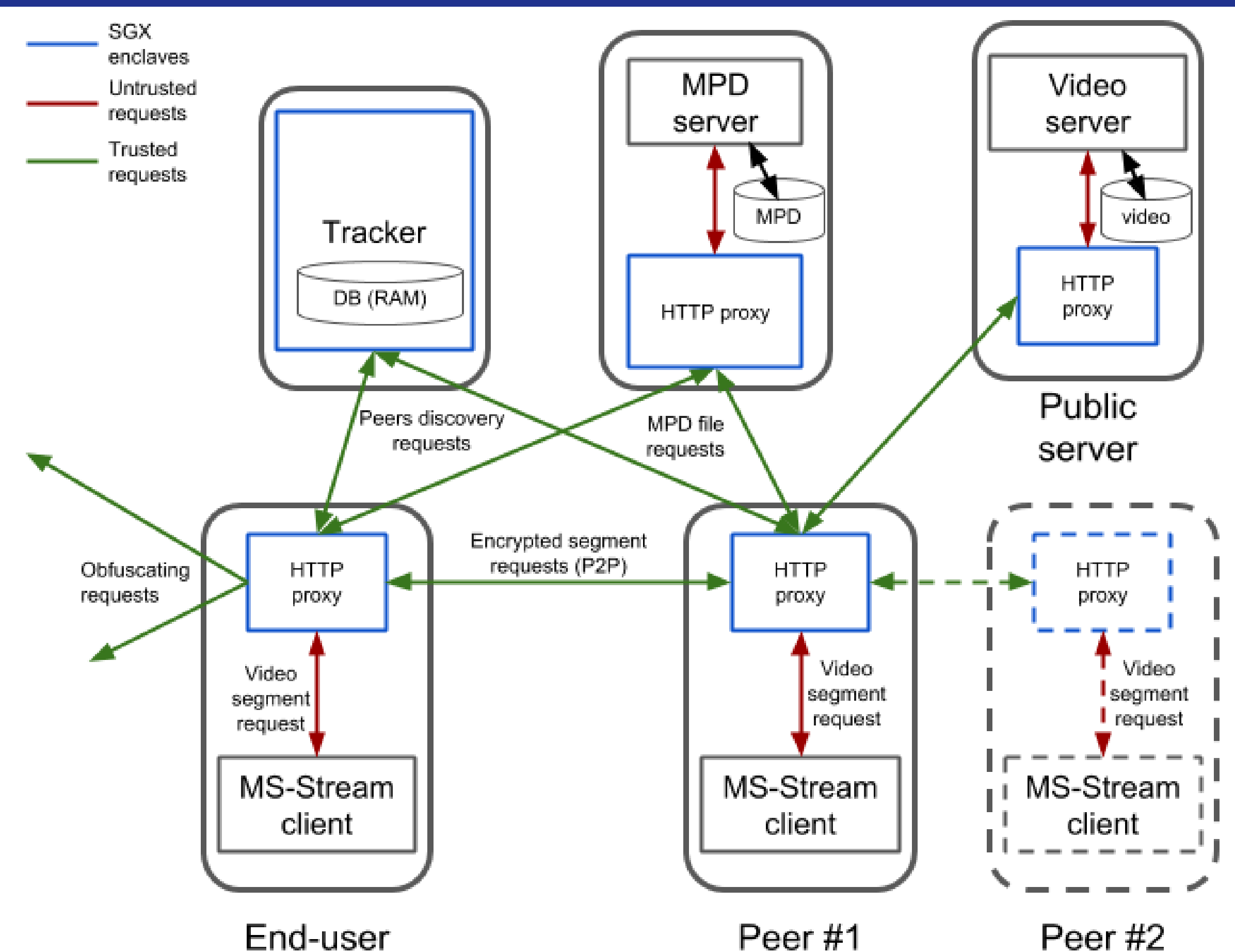
## PRIVA-STREAM idea

- Reliability, QoE and scalability  
MS-Stream: Multiple-Source adaptive streaming over HTTP
- Incentive to contribute  
Rewarding: contributing users get a higher quality
- End-users privacy  
TEE (SGX): encryption, NAT and anonymity

## PRIVA-STREAM overview

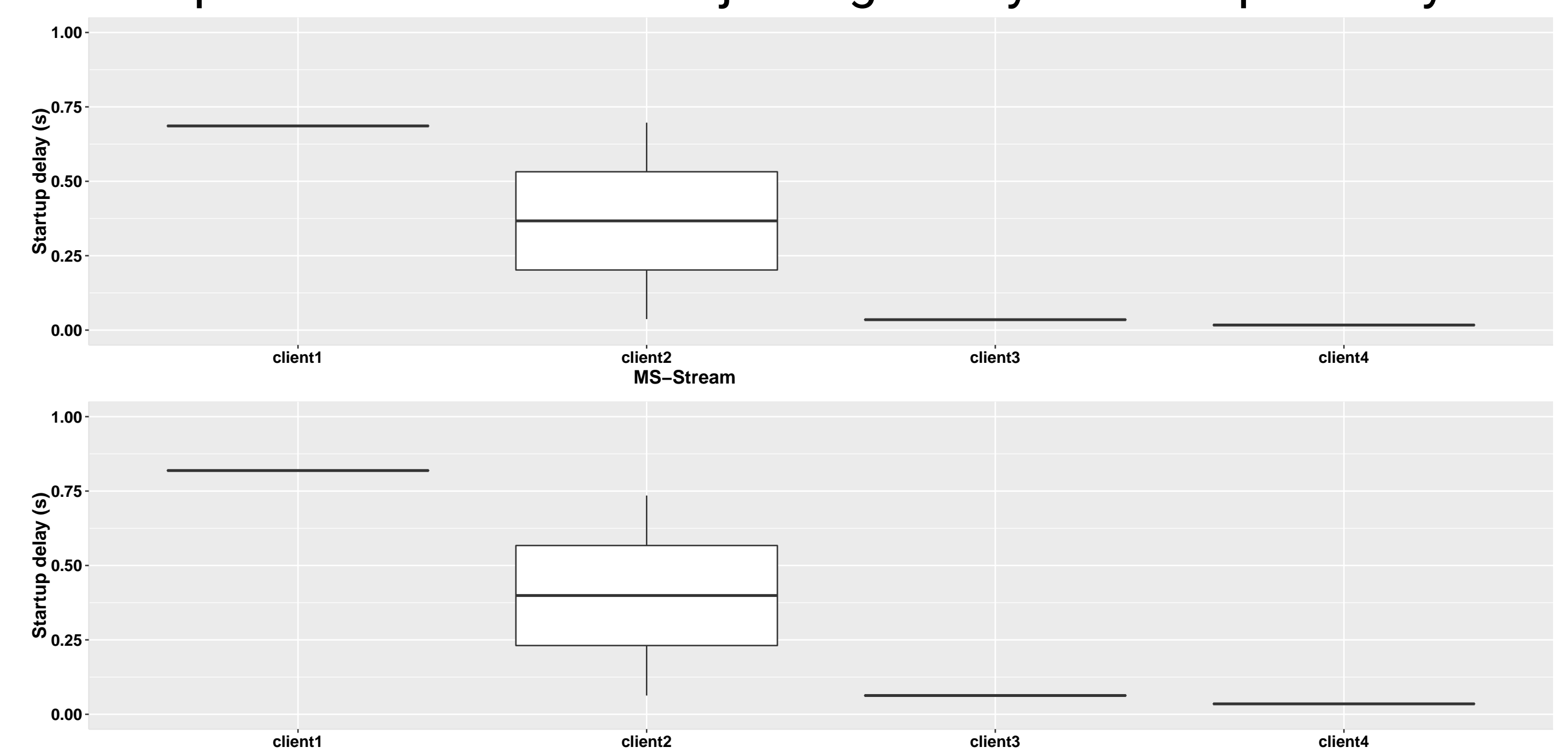


## PRIVA-STREAM technical description



## PRIVA-STREAM early results

Experiment: Four clients joining the system sequentially



Startup delay (s) - MS-Stream (top) vs PRIVA-STREAM (bottom)