

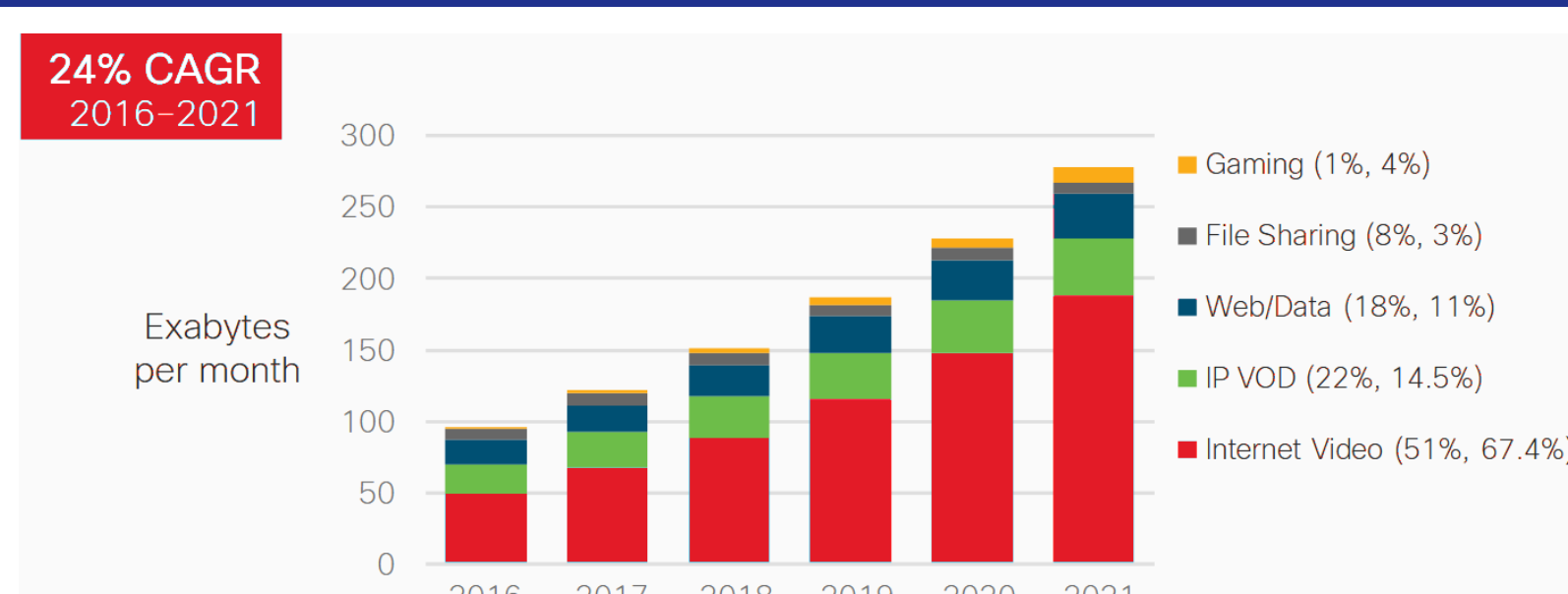
PRIVA-STREAM: Private Collaborative Streaming

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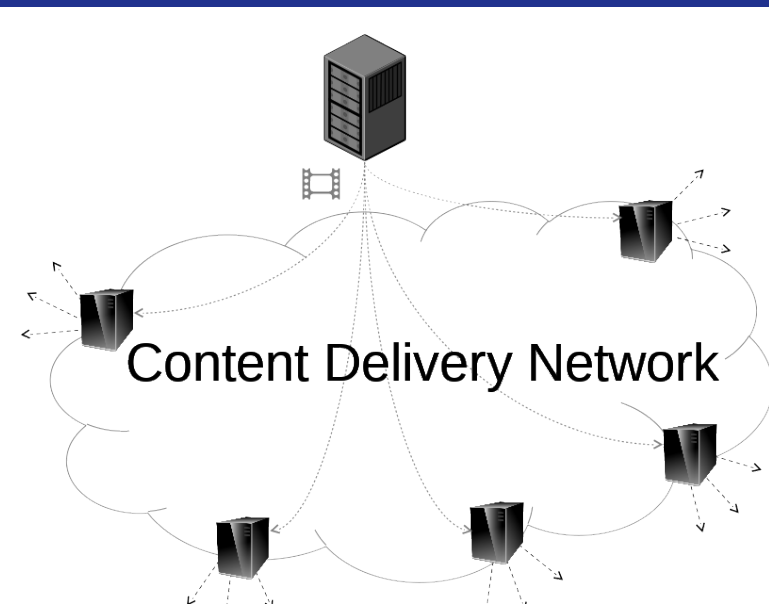
PROGRESS - Univ. Bordeaux, LaBRI, France

LaBRI

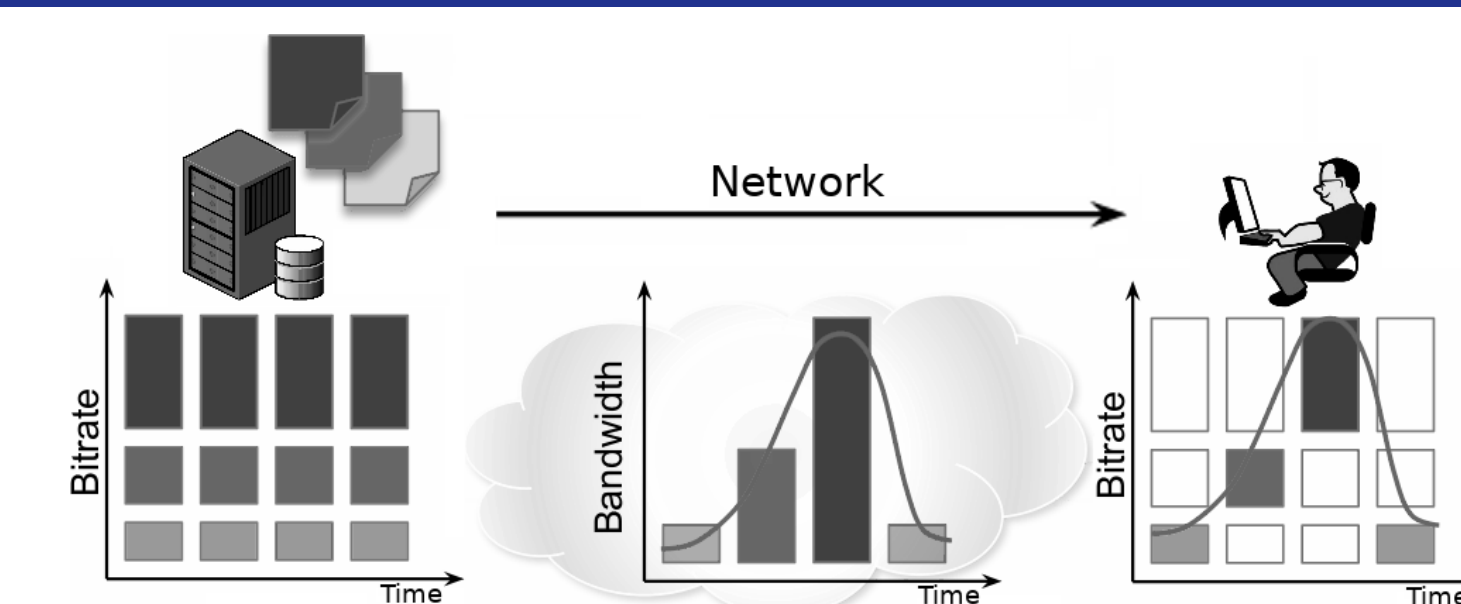
Video content consumption



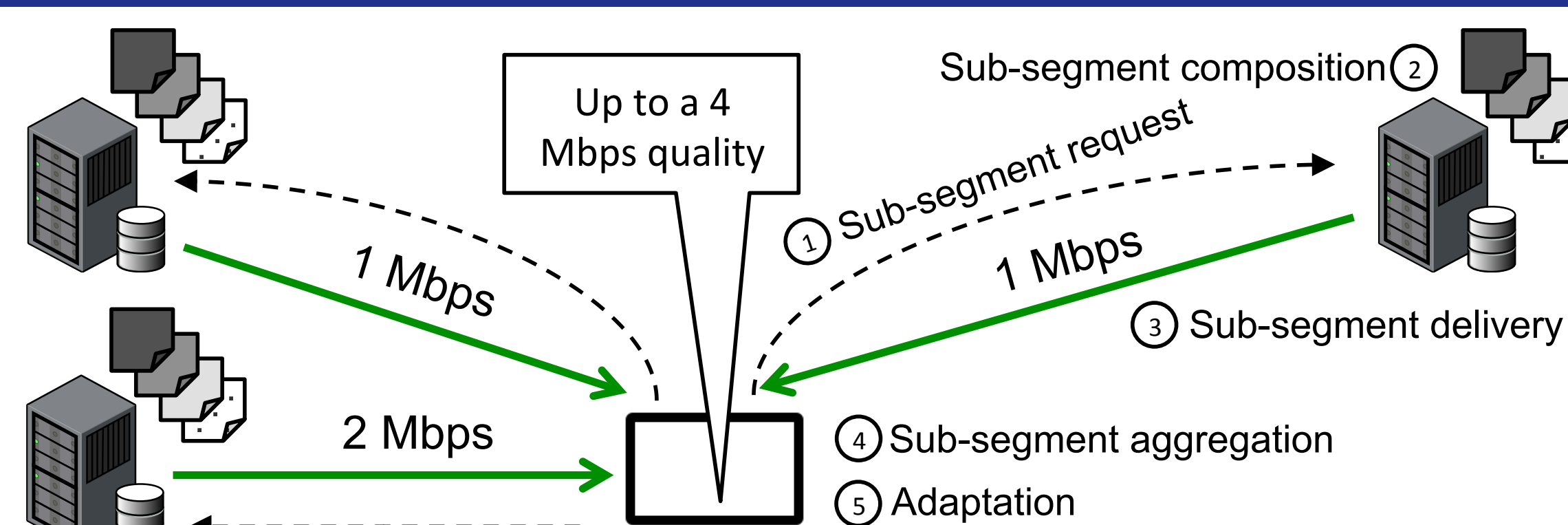
Content Delivery Networks (CDN)



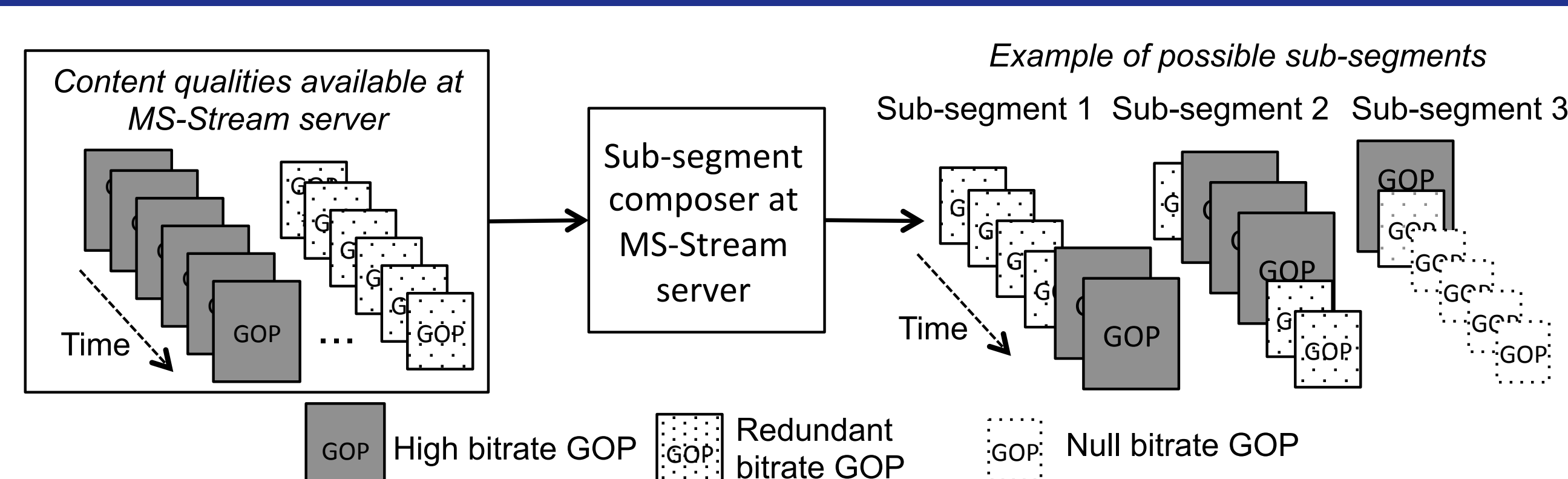
HTTP Adaptive Streaming (HAS)



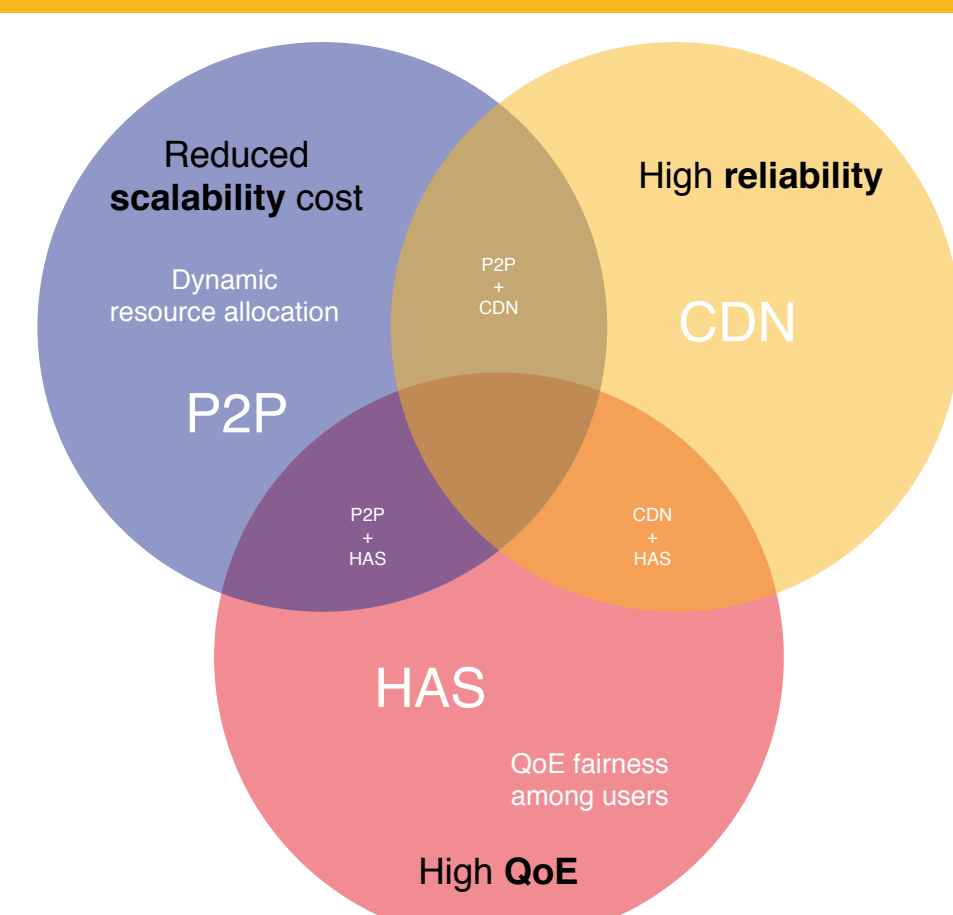
MS-Stream: Multi-Source Streaming over HTTP



MS-Stream: Segments and Groups of Pictures handling



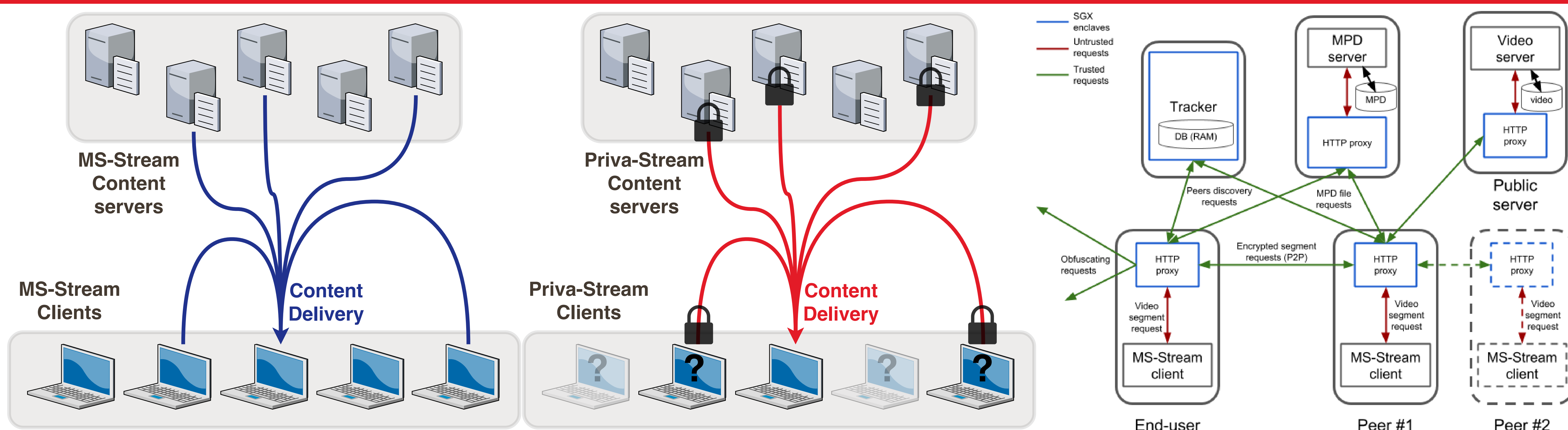
Problem statement



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) for encryption, NAT and anonymity

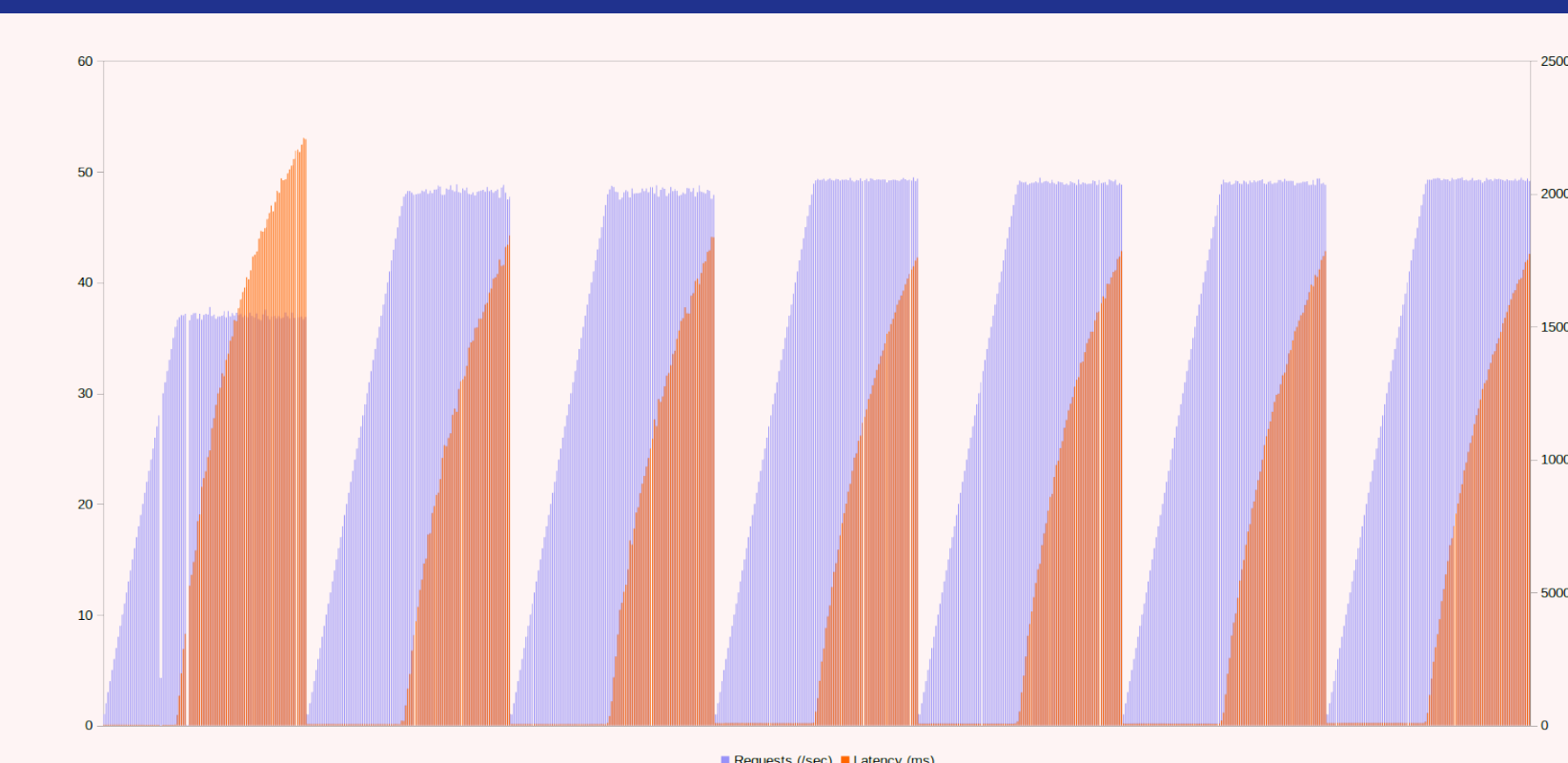
PRIVA-STREAM overview



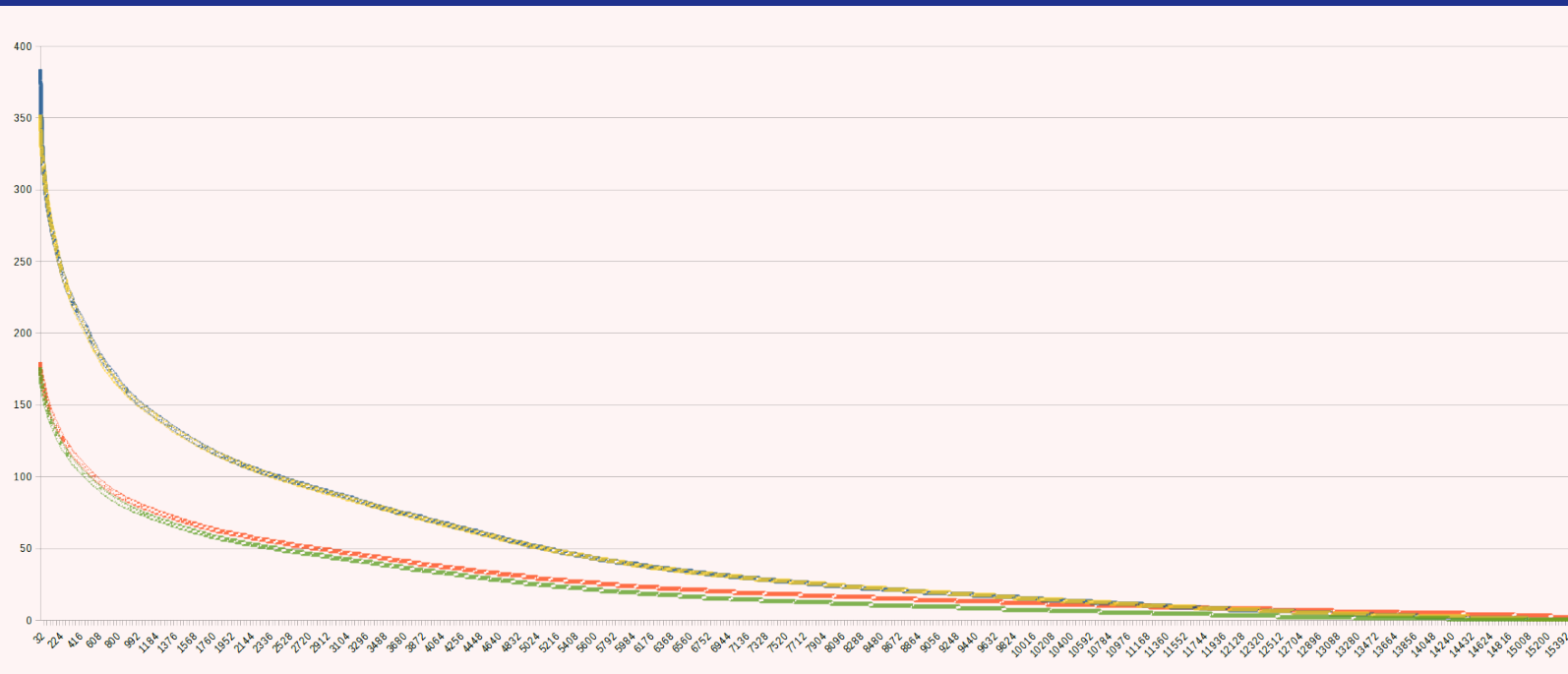
PRIVA-STREAM evaluation

1. PRIVA-STREAM server stress test
 - 1 content server, 1 stressing client
2. QoE evaluation
 - 1 content server, 1 tracker server, 12 clients
3. Privacy evaluation
 - MovieLens database over 1 year - Jan-Sep: training, Oct-Dec: logging

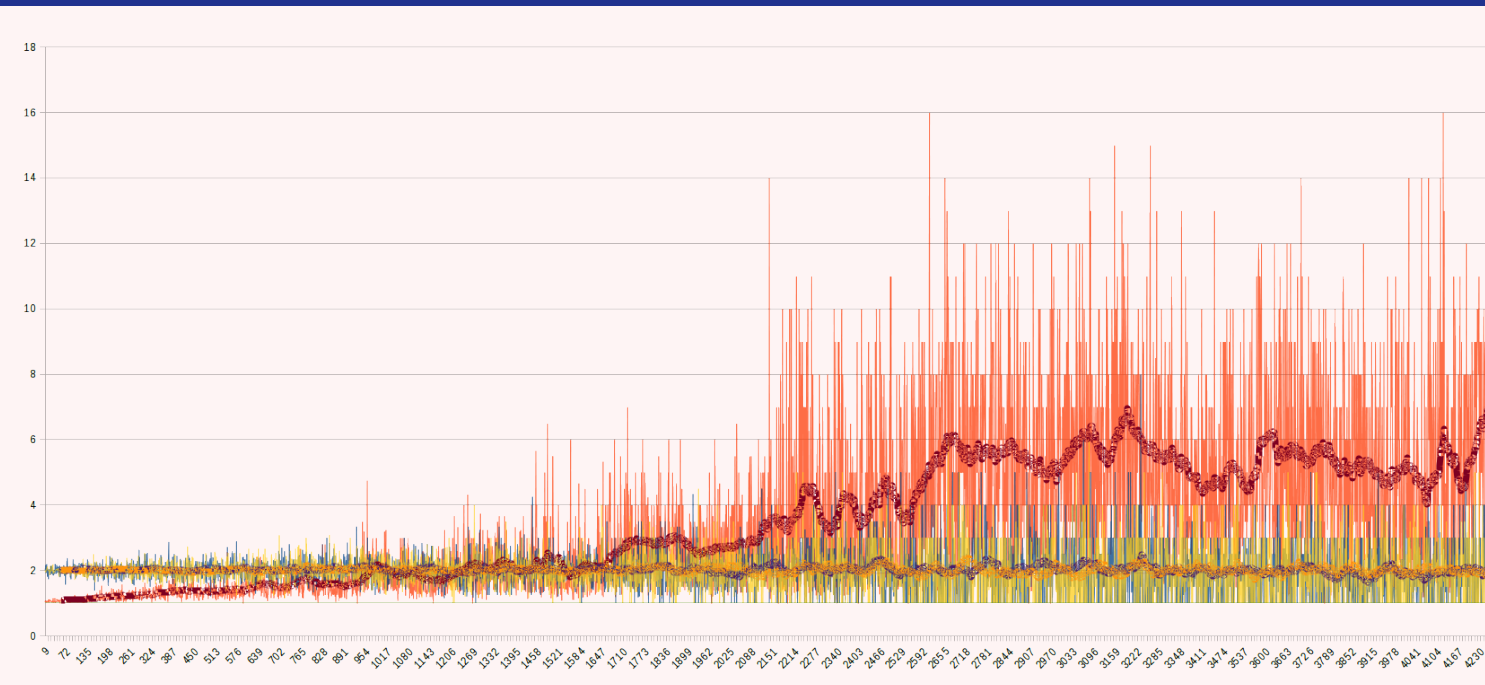
PRIVA-STREAM server stress test



Number of peers available - 100%



Total replicas (normalized) - 100%



Fake queries policies stats

Fake percent	100%			
Policy	Mean	Median	Var	Std
pop	2.0036408	2	0.4224206	0.6499389
rand	3.539698	2.5	6.68705	2.585933
samepop	1.9987026	2	0.4218561	0.6495045