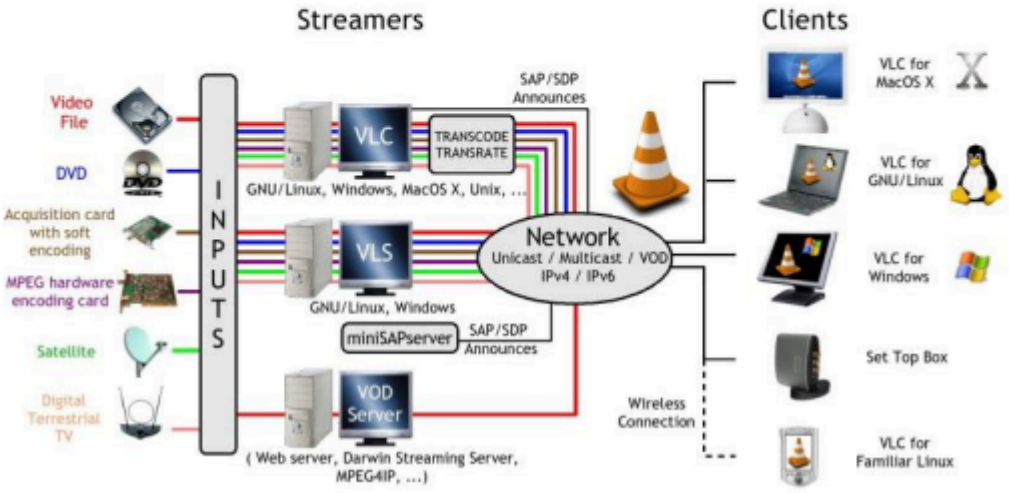
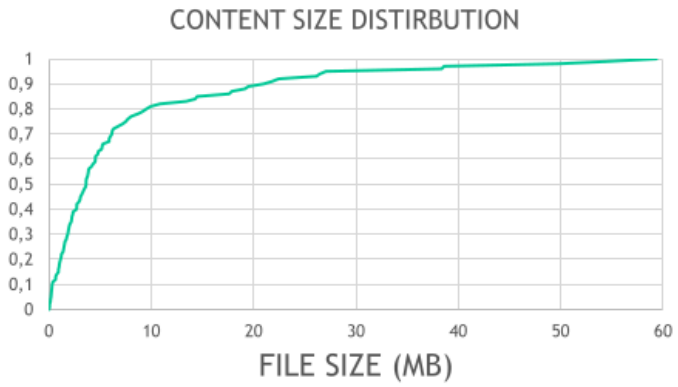
20.Multi- Class Queueing Networks



We consider a simple streaming server system. It can be modelled with a M/G/1 PS queue(separable model)

We measure its main performance indices, and we guess its average service time and current workload.



$U = 0.356$
$X = 5\ file\ /\ s$
$R = 116\ ms$
$N = 0.562\ files$

Average file size: *7.2 MB*
Average network speed: *100 MB/s*

$\rightarrow S = 72\ ms$

Modelling the system we see that the model overestimate the response time for small arrival rate and underestimates it for higher workloads. This is useless and it happens because the service time distribution is very tricky as we have a pletora of different requests that can be

really different.

If the growth is proportional the ratio between jobs remain the same so the solution of the single-model works flawlessy. If the proportion of the jobs changes the multi-class models works better as they have multiple class with different parameters.

We can capture how the changes in the request changes thanks to the classes and not only globally. We can have open, closed and mixed models. A mixed model is a model where some jobs remain in the system and other exit the system.