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An Efficient Web Cashing Algorithm based on LFU-*K* replacement policy

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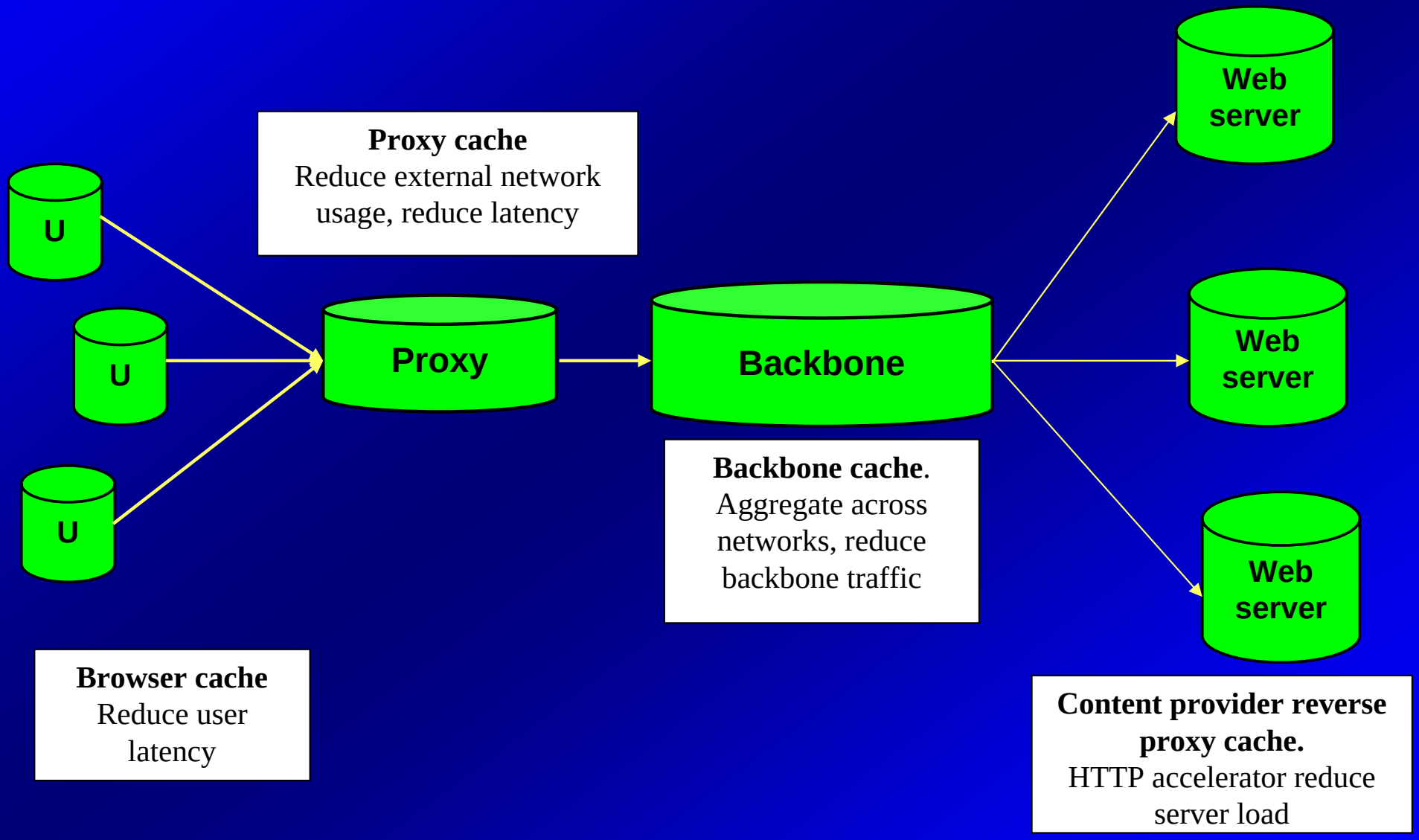
Caching in the Web

- → Reduce network traffic
- → Reduce page load time
- → Economy of money recourse

Web Cache Architecture



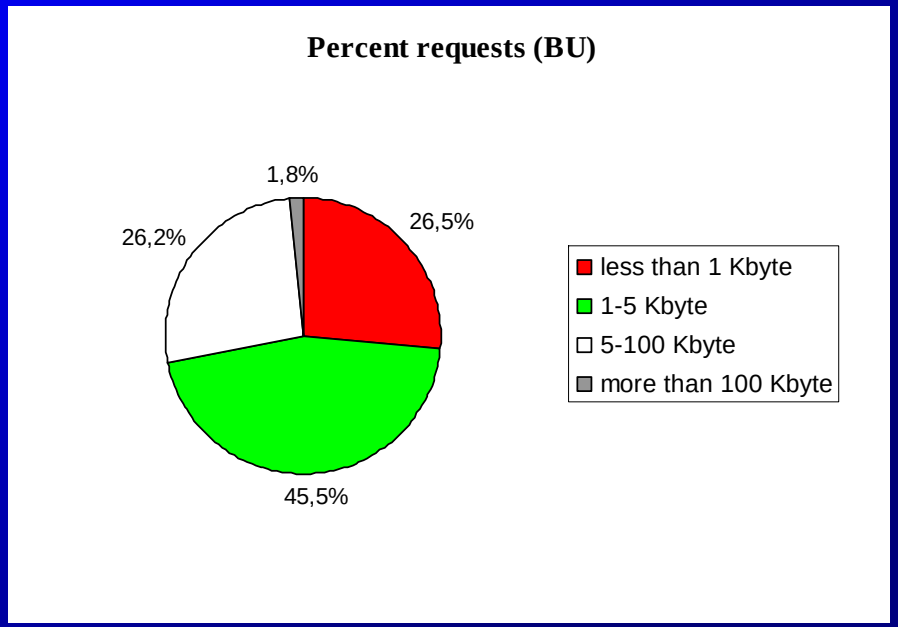
Cache Replacement Policy.

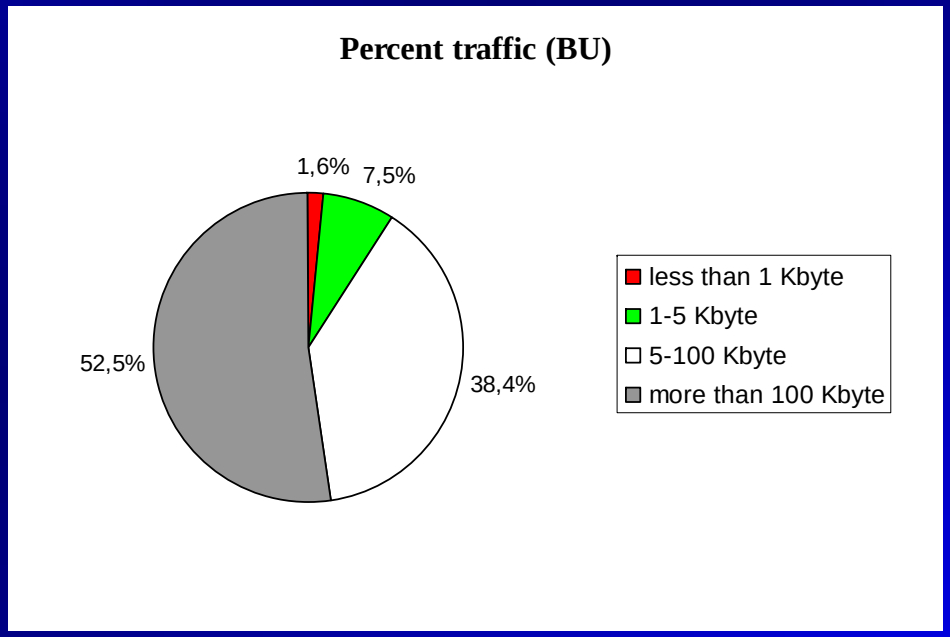
Problem: *keeps popular documents in the cache and replaces the ones rarely used..*

Measure of Efficiency

- → **hit rate**
- → **byte hit rate**
- → **average object retrieval latency (or page load time)**
- → **CPU and I/O system utilization**

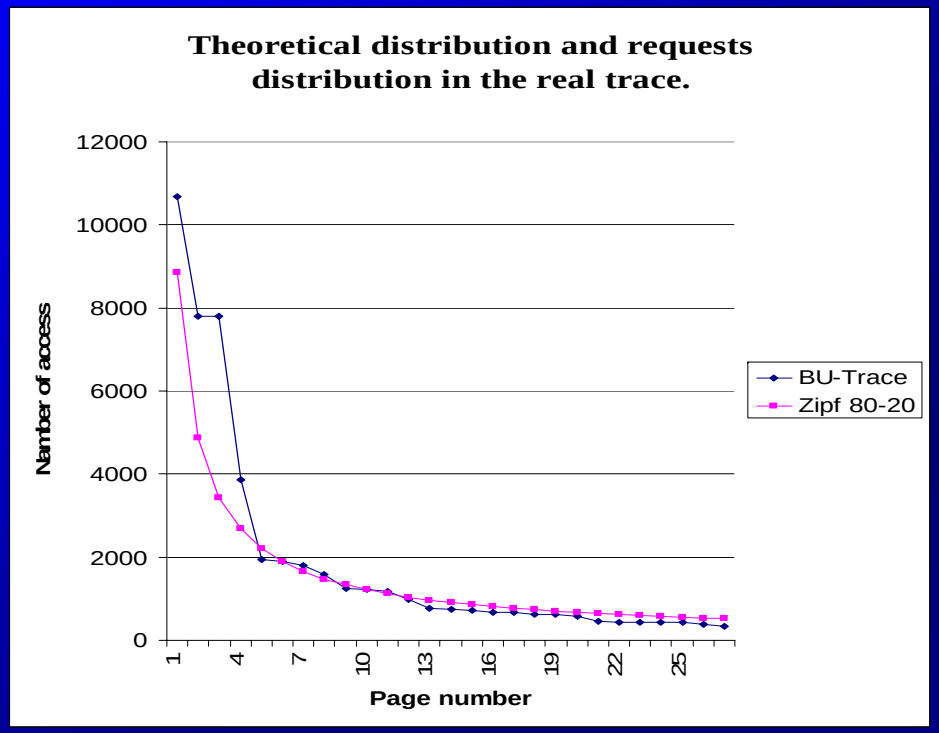
Proxy traces analysis (size objects)

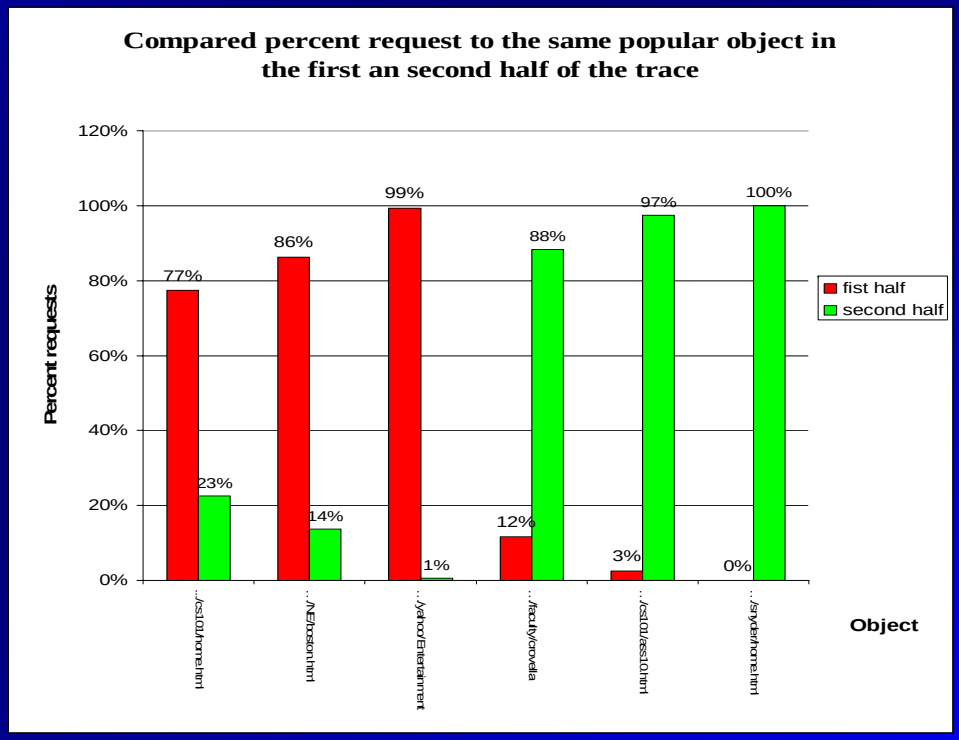




Conclusion: ***small-size objects caching leads to high effectiveness in Hit Rate metric and not high one in Byte Hit Rate***

Probability change of accesses to documents.

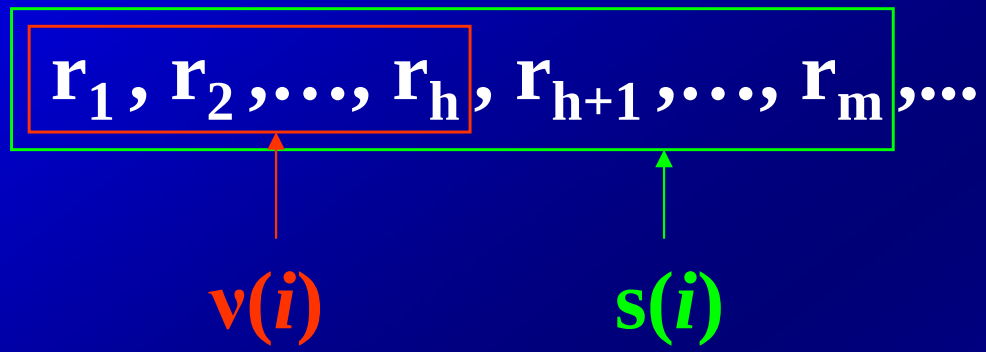




Conclusion: ***necessary to use replacement policies aimed to distinguish changes in object popularity***

Algorithm LFU-K

Version LFU-1



$Rating(i) = s(i) + v(i) * t$; where $t = m/h$.

m,h - parametrs

LFU-1 vs. most popular policies.