Dynamic Web Document Hosting:
One Size Does Not Fit All
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Edge-side Computing
- Simple
- Content is generated at each edge
- The database becomes the bottleneck

Database Query Caching
- Content is generated at each edge
- Data are available at each edge
- Consistency management costs
- Requires a database at each edge

(Partial) Database Replication
- Content is generated at each edge
- Data are available at each edge
- Consistency management costs
- Requires a database at each edge

Content-Aware Query Caching
- One database at each edge
- Merge query results to build a partial copy of the underlying database
- Good storage space utilization
- Containment check is expensive
- Database query execution costs

Content-Blind Query Caching
- No database at the edge servers
- Stores each result independently
- Fast cache lookup
- Good performance on cache hit
- Cache replacement easy
- Cached data are redundant

Performance
High Query Locality (RuBBoS)
- Content-blind caching scales best
- Gives best latency under high load

Low Query Locality (TPC-W)
- Database replication scales best
- Content-blind caching performs reasonably well

Conclusion
- Content-blind caching often works well with high query locality
- Database replica is preferable with low locality
- Let's build an adaptable system!