

Dynamic Provider Deployment using Monitoring Data

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Introduction

- Increasing need for storage space
 - TB/PB-sized files
- Cloud computing
 - “Grid computing made accessible to anyone with a credit card”
 - Already popular
 - Pay for what you use

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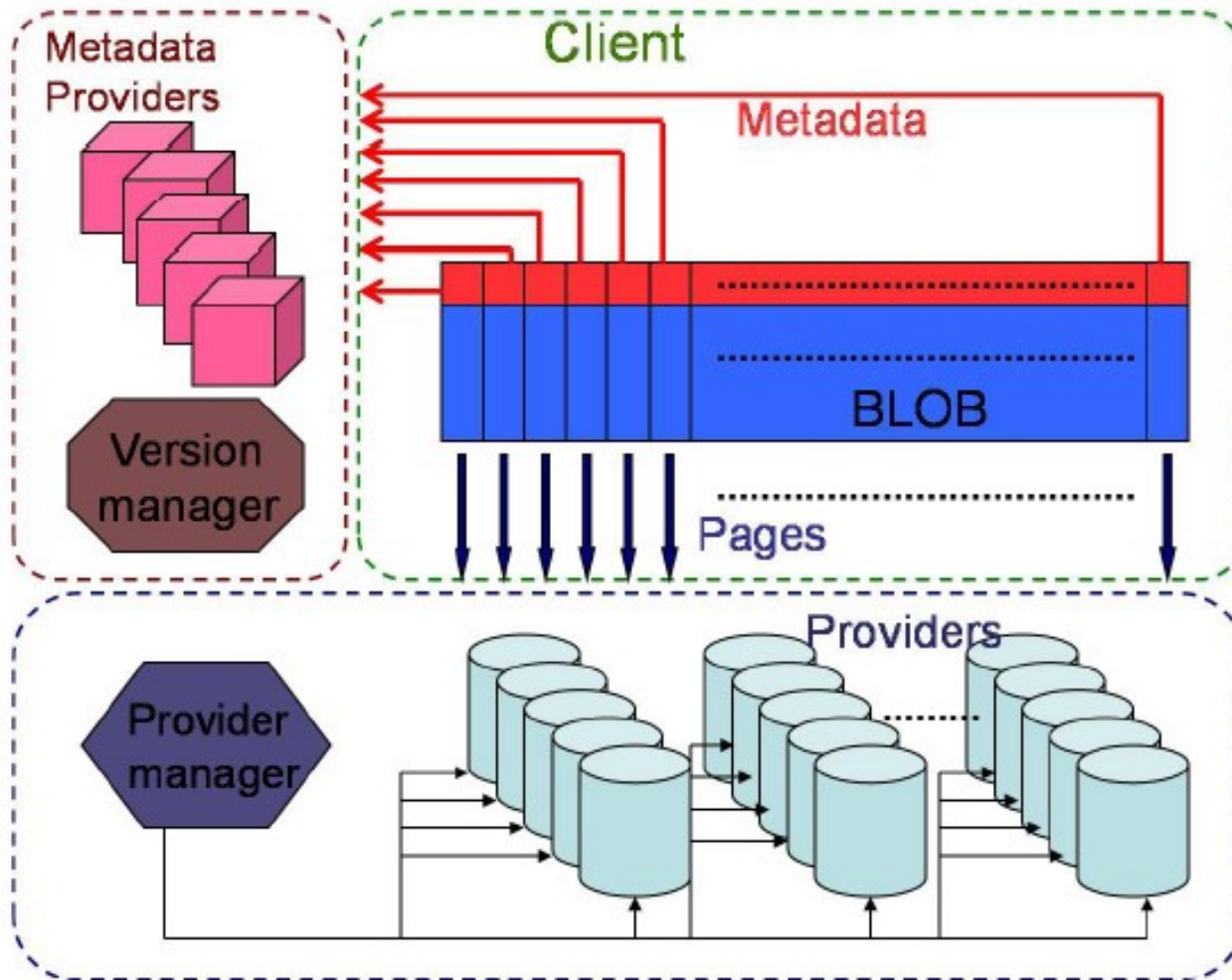


Idea: Take a Distributed File System and analyze it in a Cloud Computing Context

Objectives

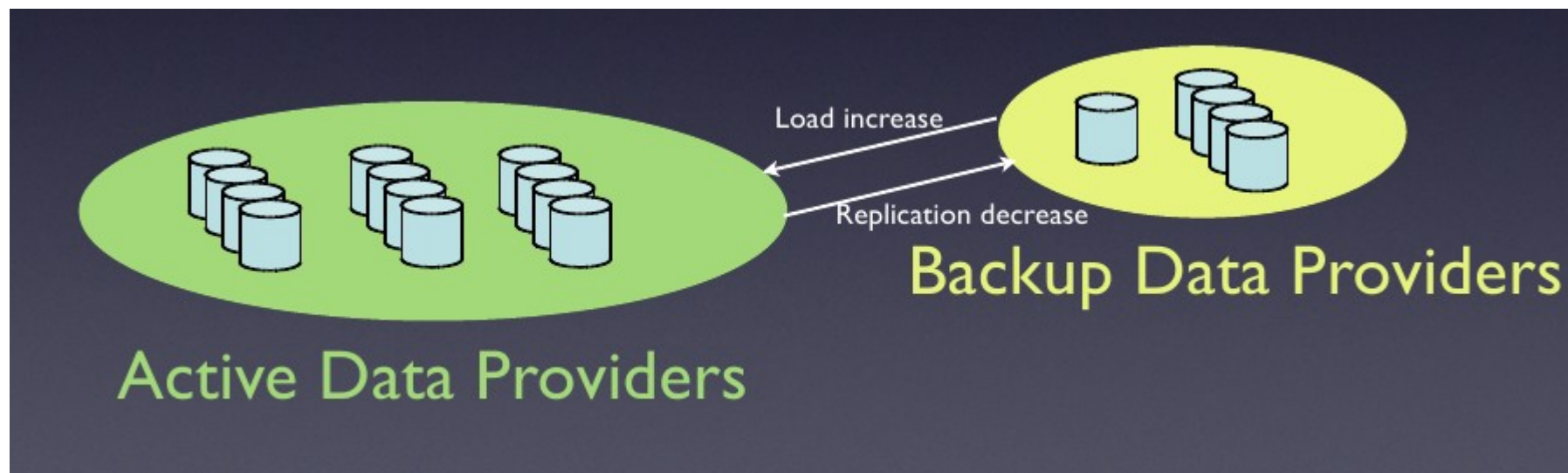
- Scale data storage systems up and down as needed
- Cut costs
- Auto-adaptive solution
- Be as less intrusive as possible

The Distributed File System BlobSeer



The Cloud Context

Dynamic Deployment



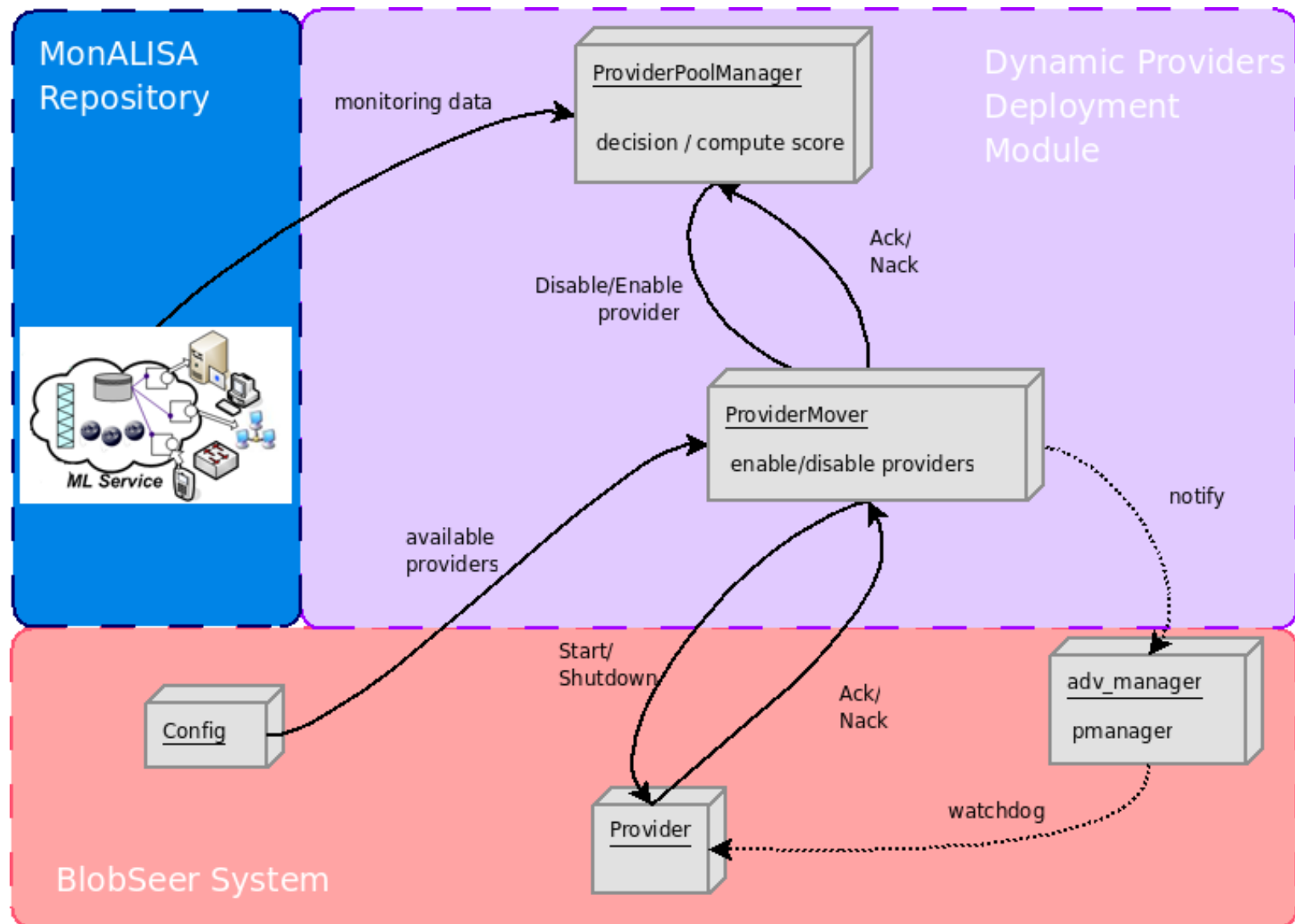
Related Work

	Fine Grain Access	Concurrent Reads	Concurrent Writes	Concurrent Appends	Versioning
Regular FS	X	-	-	-	-
GFS, HFS	X	X	-	X	-
S3	-	X	X	-	-
DeepStore	X	-	-	X	X
BlobSeer	X	X	X	X	X

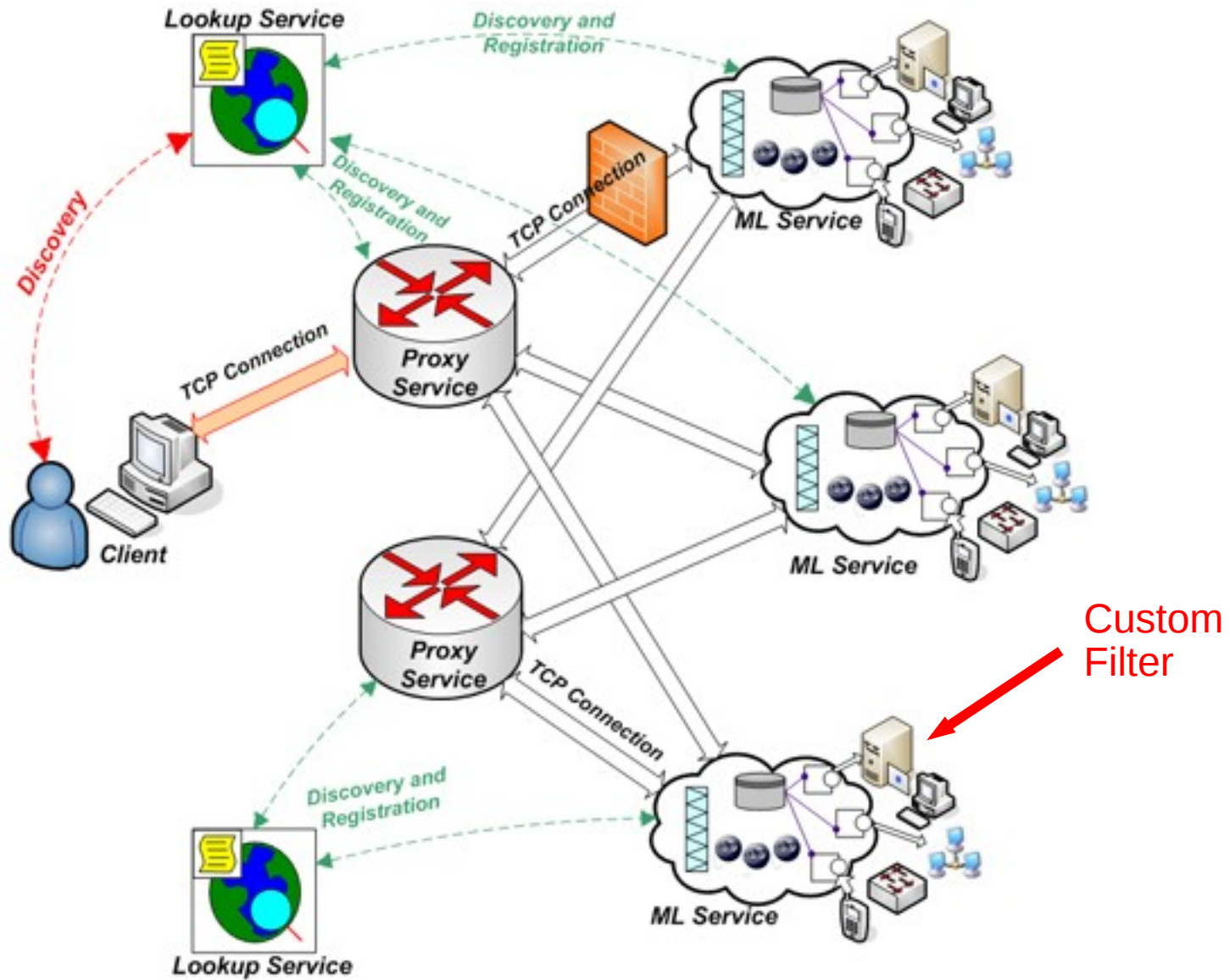
Extract from: Bogdan Nicolae, Luc Bouge, Gabriel Antoniu

BlobSeer: dealing with increasing storage demands of large-scale data-intensive distributed applications

Technical Solution



Monitoring Data – MonALISA

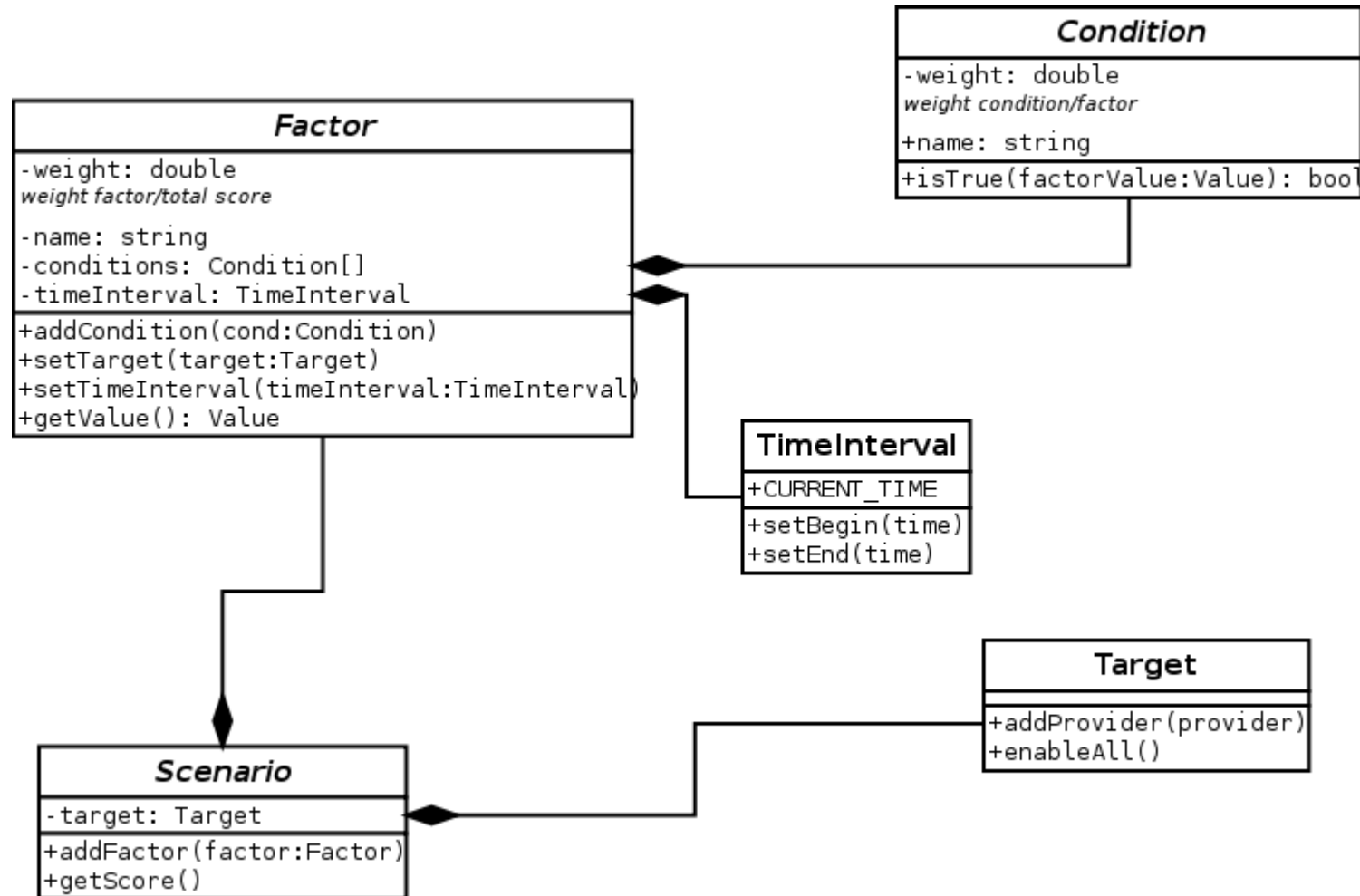


Scoring Algorithm

- Factors
 - Internal: number of read/write accesses, replication degree
 - Physical: disk space, avg. bandwidth
- Heuristic

$$S = \sum_{i=1}^n wft_i \times wcf_i$$

Scenario Specification



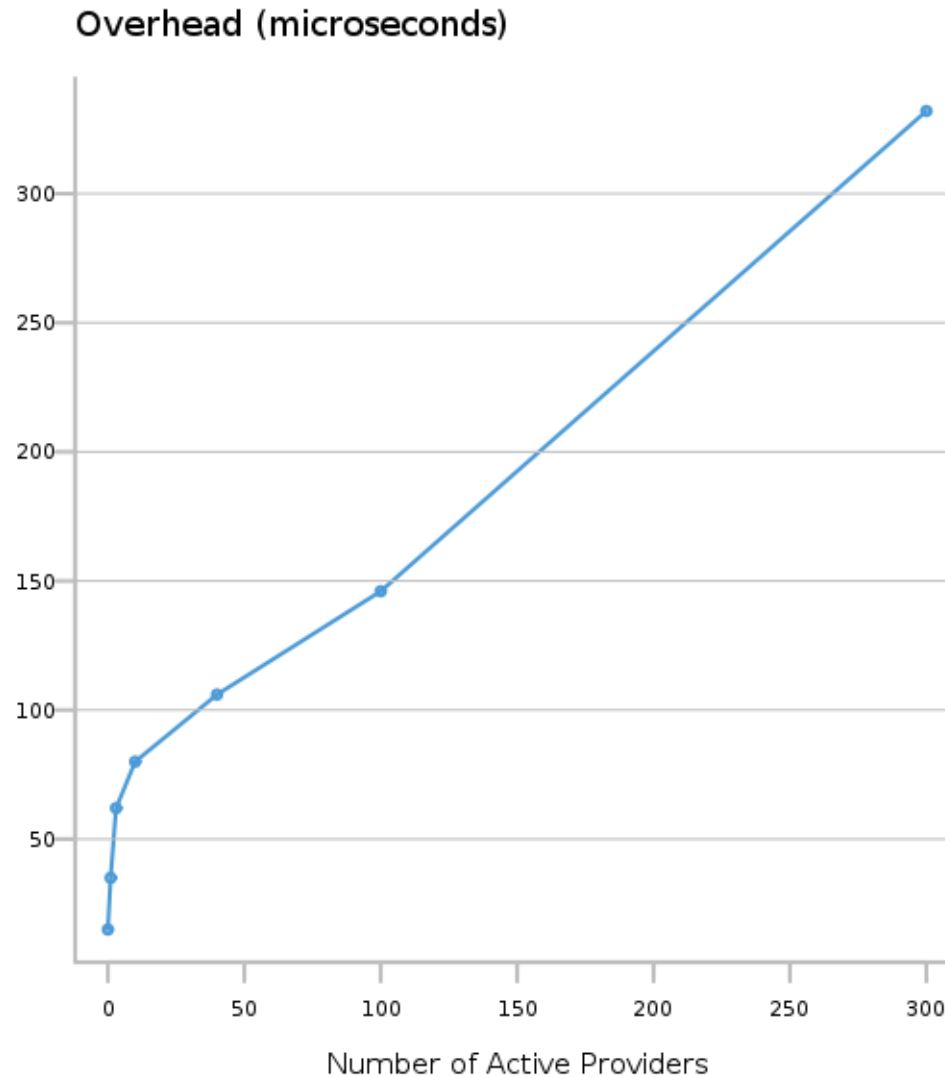
Latency Time Test

- Complex system → not easy to compute
- Sum of multiple factors

$$t_{latency} = t_{mon} + t_{wait} + t_{list} + t_{analyze} + t_{provider}$$

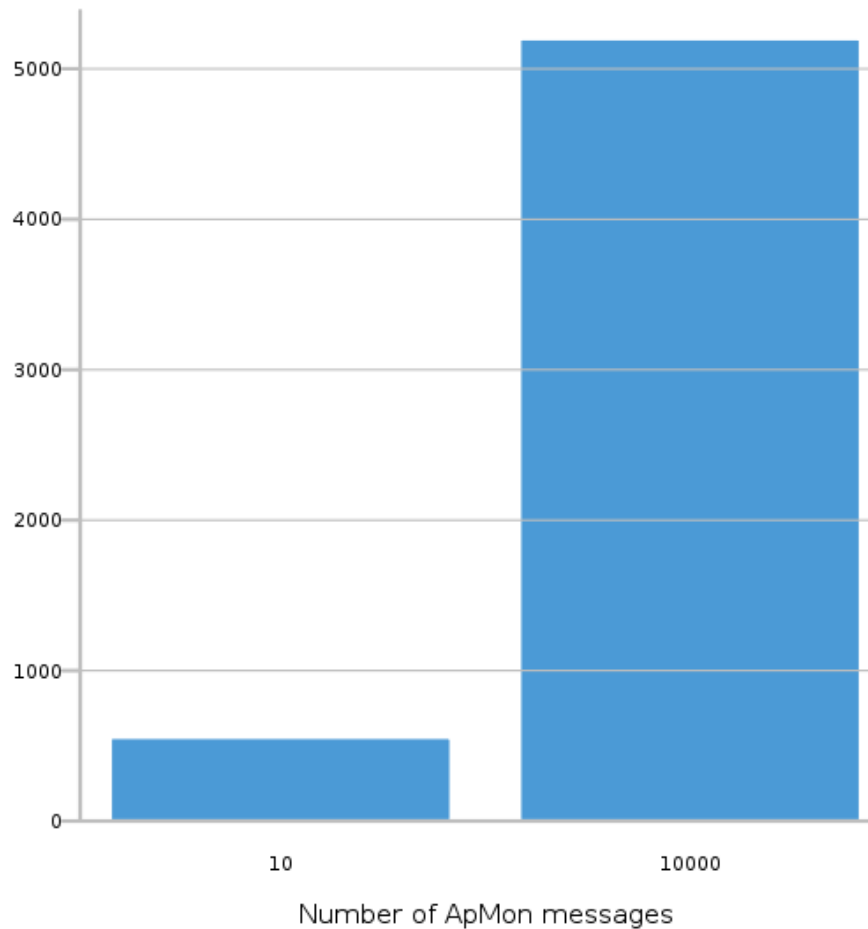
- Network time not included (!)
- Local test yielded 2-3s total time

Intrusiveness Test

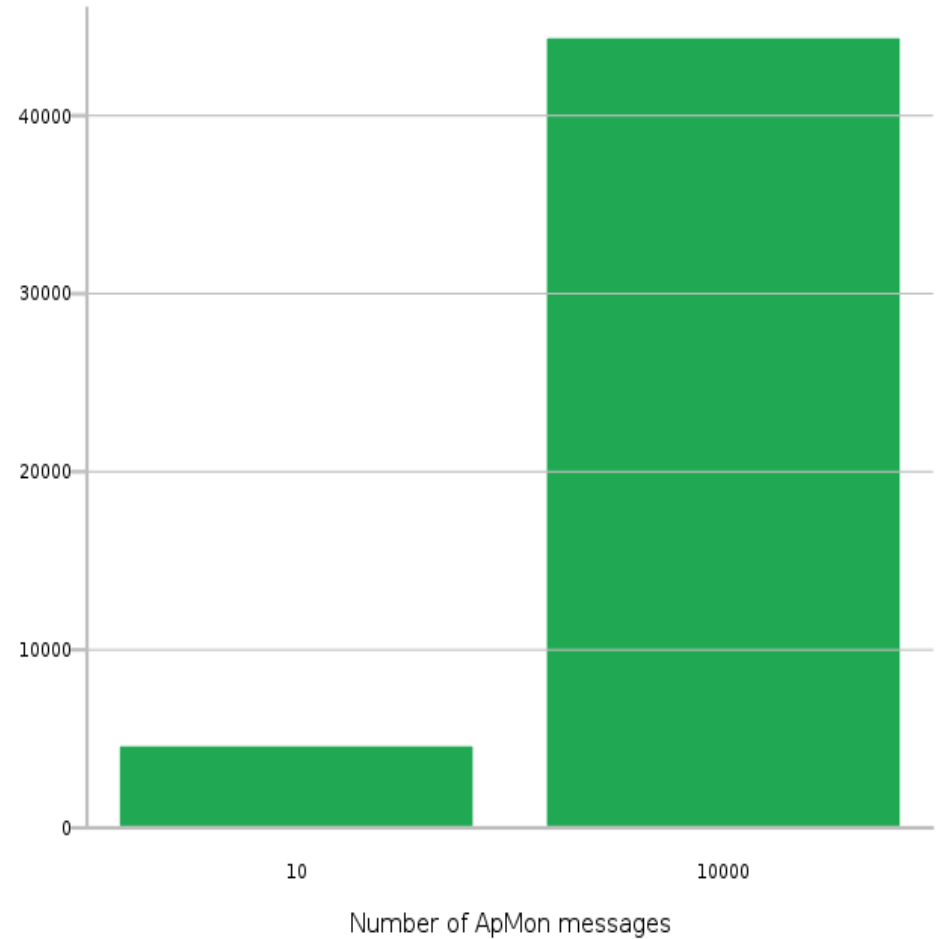


Monitoring Data

Monitoring Data Size(KB) for 128MB of Useful Data



Number of Records in the Database for 128MB of Useful Data



Credits

- Alexandru Costan
 - Support
 - Mentoring
- Alexandra Carpen-Amarie
 - Monitoring module help

Q & A