



PARALLELIZED KNOWLEDGE ANALYSIS IN KODMAS

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Motivation


- Continuous monitoring of local resources
- Automation of Data Storage management using fuzzy logic
- Necessity to reduce time spent in knowledge analysis

➤ Our solution

- Exploits knowledge described by fuzzy logic
- Is able to perform independent actions

OUR POSTER

We invite You to our poster.



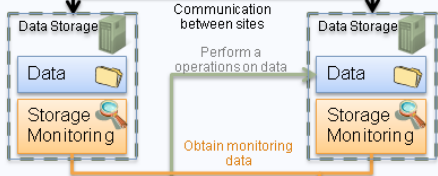
Parallelized knowledge analysis in KODMAS

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MOTIVATION

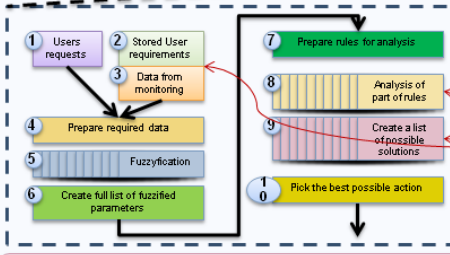
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KODMAS MANAGEMENT TOOL



KODMAS (KNoWledge based Data Management Support) exploits fuzzy logic as the Knowledge engine which is responsible for management of data storage location on the available resources. The engine in its current development was implemented in a way which allows for parallelization of a time-consuming stage - the knowledge analysis. The analysis of knowledge is split into three main steps. The work of the system is as follows:

1. Obtain a request from user to access/ upload data to the infrastructure.
2. Check the QoS database to obtain the user requirements.
3. Collect the latest monitored data which relate to resources which can be used.
4. Prepare the data to the fuzzyfication
5. Fuzzyfication is done in parallel
6. Create a full list of parameters after the fuzzyfication
7. Prepare the knowledge, load rules, divide knowledge to independent parts
8. Analyze the independent subset of knowledge in parallel
9. Propose a list of possible solutions
10. Combine the solutions lists and pick the best solution



After all the analyses the system is able to perform the best solution for the observed situation

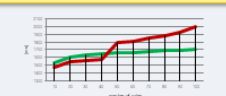
The rules which are used in our approach are similar to JBoss Drools. An example rule is presented below. Our system contains a large set of rules that implement all its operations.

```

IF READ_REQ is SMALL AND READ_SF_HOST1 is MEDIUM than HOST1
                    
```

Steps 5, 8, 9 are performed in parallel, the rest is done sequentially.

Evolution of parallelization in KODMAS



The red curve represents the sequential KODMAS solution, the green one represents the timing of the parallelized knowledge analysis in function of the number of rules used.

SYSTEM EXTENSION COMPARISON WITH EXISTING SEQUENTIAL VERSION AND FUTURE WORK

- KODMAS is able to perform the solution which best fits to the observed situation.
- The parallelization of the knowledge allows to reduce the time which is important in situation when the infrastructure contains many of resources (each disk drive may have its own monitored parameters) also the rules set may be too big to be analyzed by only one process.

REFERENCES

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[2] J. Xiu, M. Zhao, J. Fortes, R. Carpenter, M. Younis: Autonomic resource management in virtualized data centers using fuzzy logic-based approaches, Cluster Comput. 2008 pp. 213-227

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