

FIWARE
**Global
Summit**

**From Data
to Value**

OPEN SOURCE
OPEN STANDARDS
OPEN COMMUNITY

Highly-Scalable Deployments

The Context Broker on Kubernetes

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#FIWARESummit



Agenda

1. Use-case analysis
2. Infrastructure
3. Optimization examples
4. Testing
5. Repository walk-through

Know your use-cas

- Decide on the core measurements to optimize for

Read vs. Write

- Focus on high frequency updates
- Many parallel (retrieval) requests
- Mixture of both

Update size and parallelity

- Single entity/attribute updates
- Batch updates (of varying sizes)
- Few high-frequency clients
- Many parallel clients

Know your use-case

- Decide on the features required for the use-case

Subscriptions

- Multiple Subscribers
- Single/few subscribers
- Full data updates

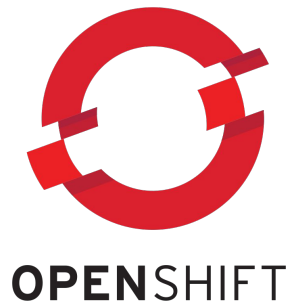
Temporal representation of entities

- Full History for every entity
- History for subsets only
- Reduced density enough
- History retention/down-sampling

Take a look at [Orion Performance Tuning](#) for further details.

Be aware of you infrastructure

- Flexibility for downscaling
- Rolling updates
- Automated(versioned) configuration and deployment
 - <https://github.com/FIWARE/helm-charts/tree/main/charts/orion>



Be aware of you infrastructure

- Operational tooling
 - Logging
 - Monitoring
 - Alerting
- Ingress
 - Scale with the broker
 - Support operational aspects
- Persistence
 - HDD vs. SDD

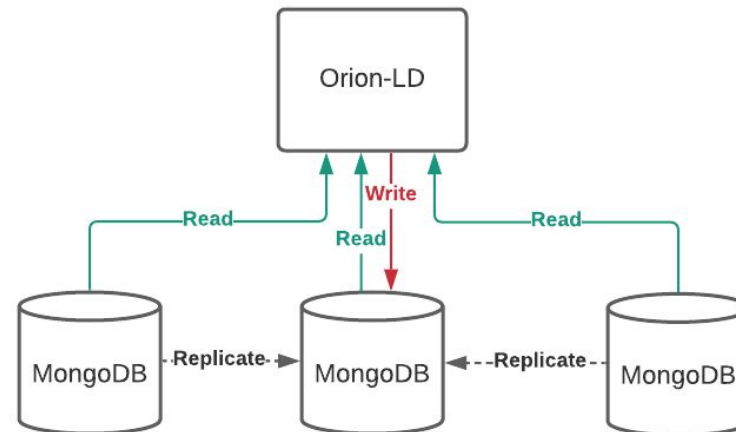


Improve write performance

- Set “db.entities.createIndex({“_id.id”:1})” on MongoDB
- Use SSD-Disks on MongoDB(if self-managed)
- Prefer scaling MongoDB vertical over horizontal
- Batch-Operations: Increase the memory assigned to Orion-LD

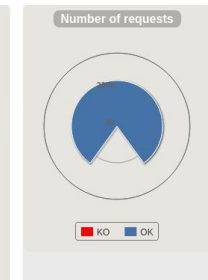
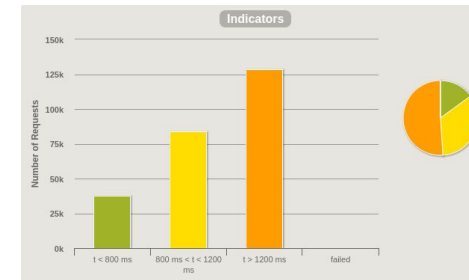
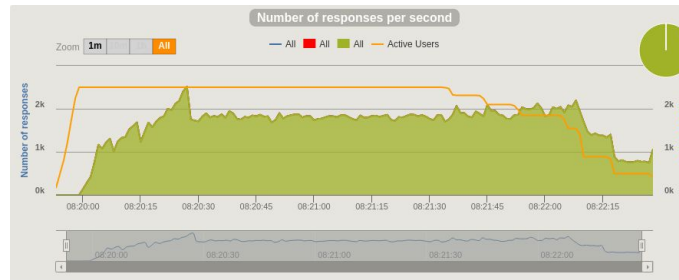
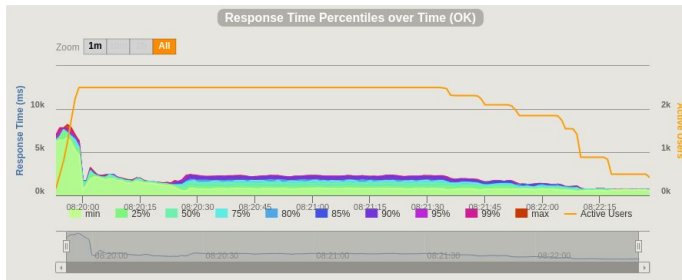
Improve read performance

- Indexes fitting the common queries
- Use read replicas
- If available, use InMemory-Engine for MongoDB(Read-Nodes)



Test the assumptions

- Load-tests for running against the NGSI-LD/V2 context broker
 - <https://github.com/FIWARE/orion-loadtest>
 - Gatling framework, multiple scenarios implemented
 - Reports for multiple sizes available, including the configurations
- Execute tests from local(mvn, gatling reporter)
- Execute distributed in the cluster(via kubernetes jobs)
- Can be used to evaluate different configurations for specific use-cases



Repository walk-through

- Helm-Charts: <https://github.com/FIWARE/helm-charts>
- Test-framework: <https://github.com/FIWARE/orion-loadtest>
- Marinera(see David's presentation): <https://github.com/FIWARE-Ops/marinera>

The slides: <https://github.com/wistefan/presentations>

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Thanks!

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Spain
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