



# Modernizing the monitoring of Mass - storage systems

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› Supervisors:  
Sebastien Ponce  
Hervé Rousseau

Rosy Gupta  
IT-ST-FDO



# Why do we need storage?

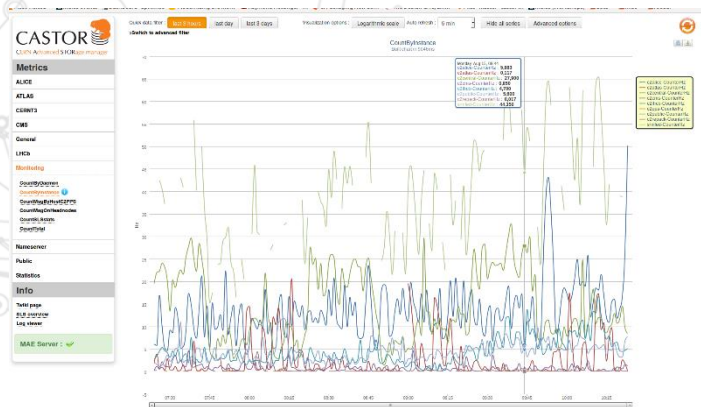
Experiments produce 50 PB of data per year. Need to develop storage solutions.

- › EOS (2010)
- › CASTOR (late 90's)

Focus on CASTOR and its monitoring: **CASTOR Cockpit**

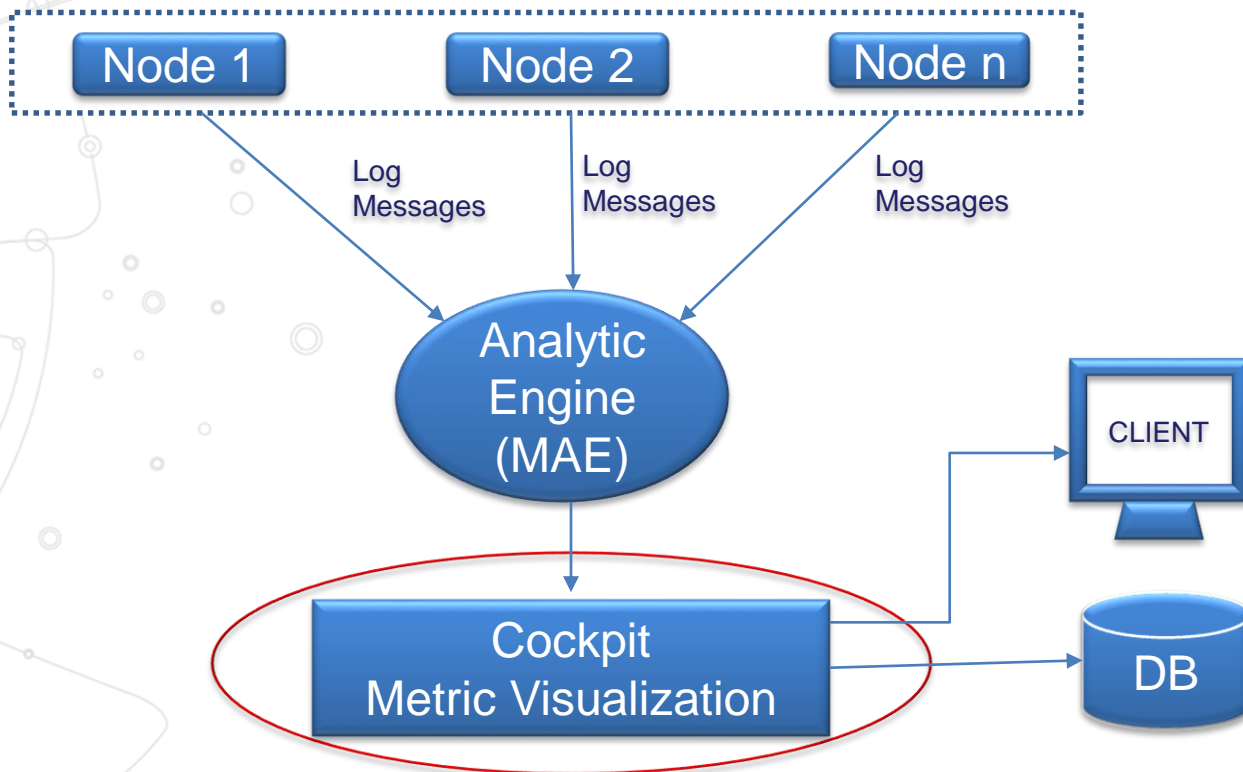
# What is CASTOR Cockpit?

- Monitoring tool for CASTOR
- Display charts with metric data computed by the Analytic Engine (MAE)



**django**  HIGHCHARTS

 **jQuery**





**CASTOR**   
CERN Advanced STORAGE manager  
Cockpit



# Can we do better?

Users



Graphite  
webapp



Carbon cache

Metrics

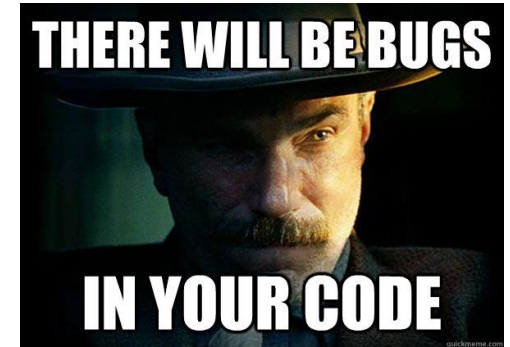


Whisper DB



# Why Graphite?

- › Agile Infrastructure
- › Performance
- › Scalability
- › Better monitoring
- › Multi year retention
- › Less code -> Less bugs

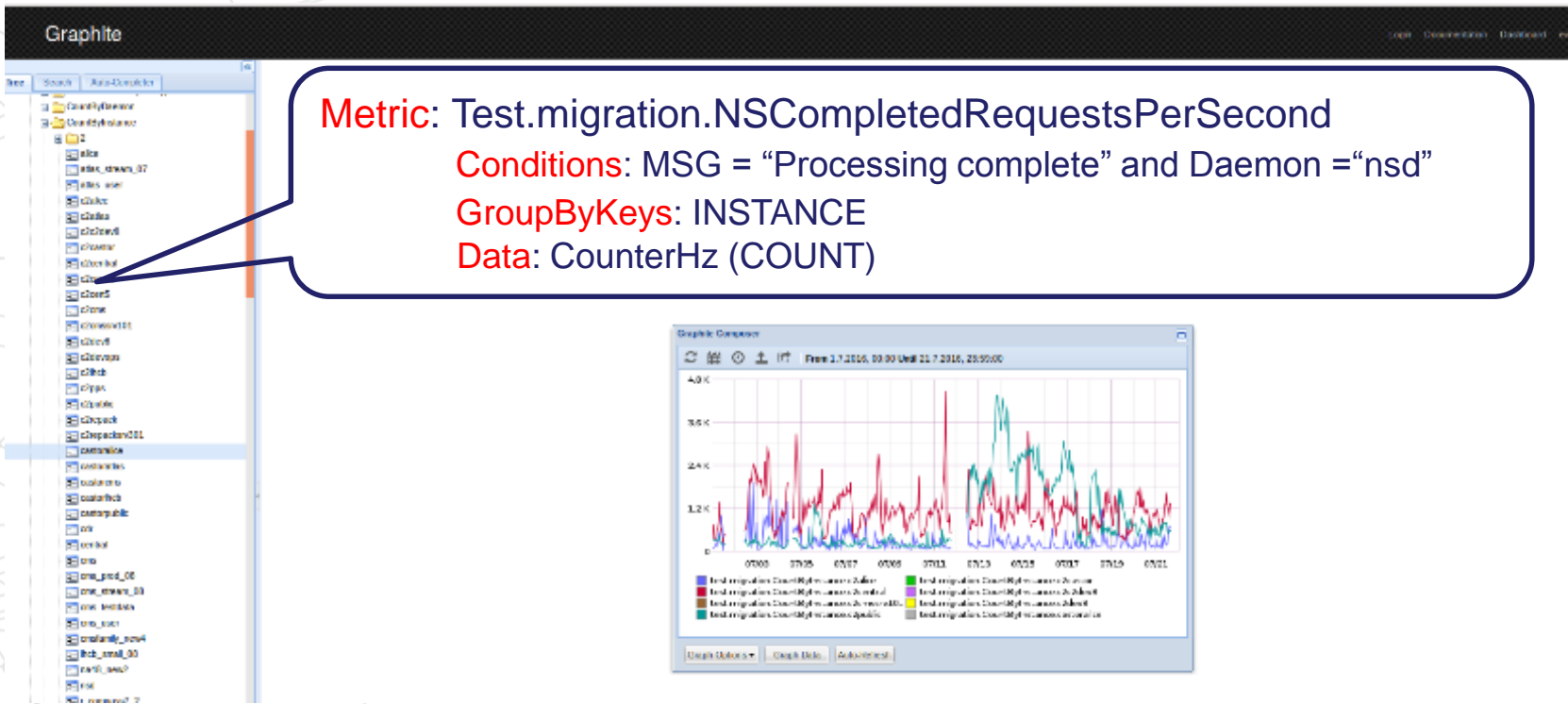


# Key Features

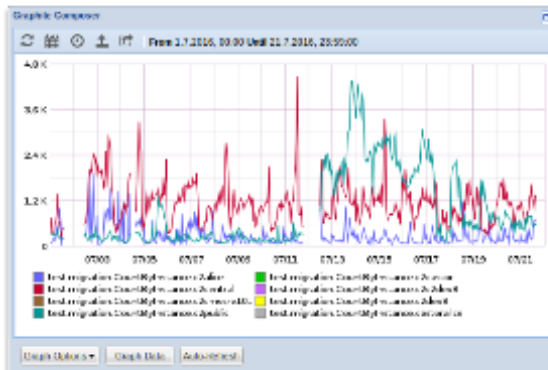
- › Numeric time-series data
- › Render graphs
- › Structured format
- › Aggregation of data
- › Grafana dashboard



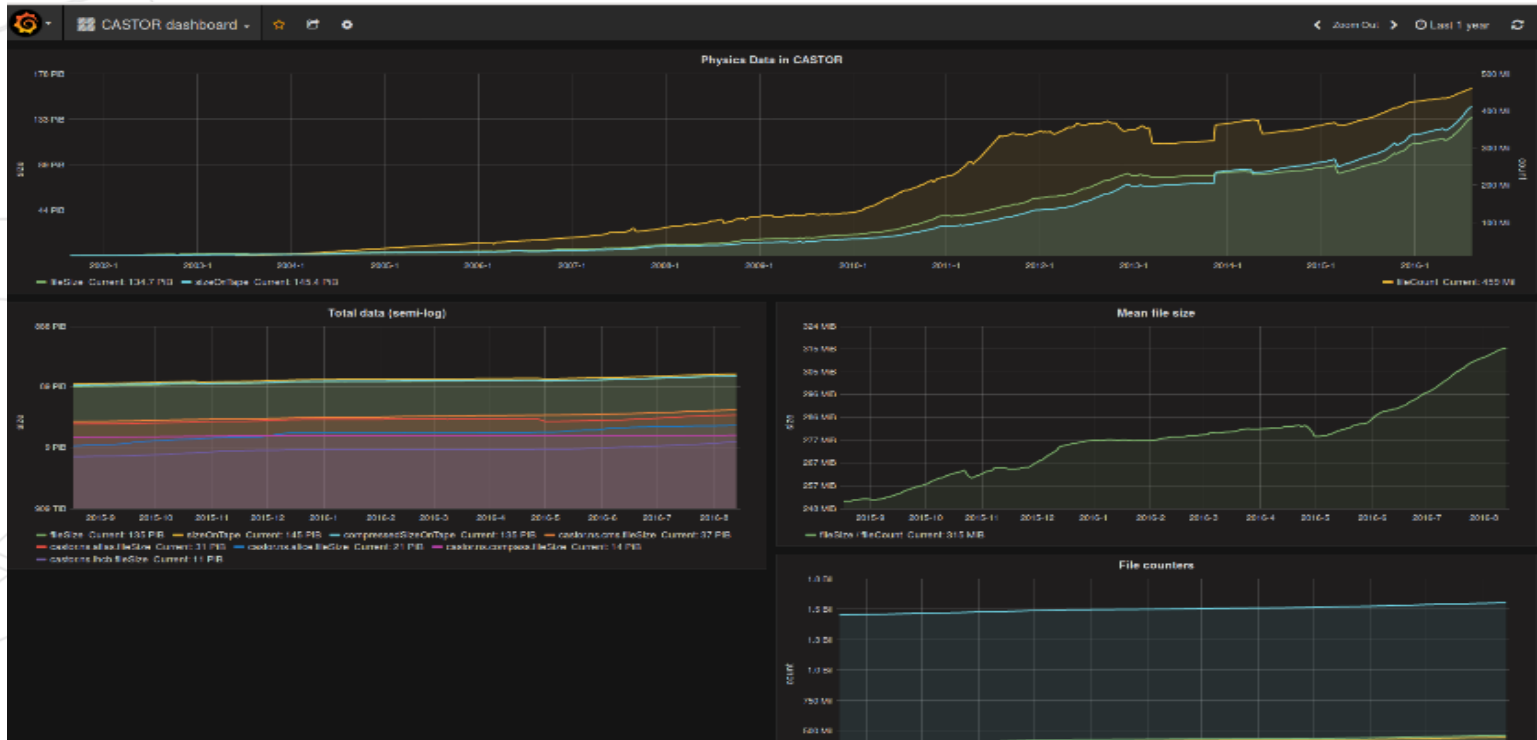
# Graphite Dashboard



**Metric:** Test.migration.NSCompletedRequestsPerSecond  
**Conditions:** MSG = "Processing complete" and Daemon = "nsd"  
**GroupByKeys:** INSTANCE  
**Data:** CounterHz (COUNT)



# Grafana dashboard



# Future Work

- › Code in production
- › Migrate old data
- › Sample Grafana dashboards
- › Do my report

