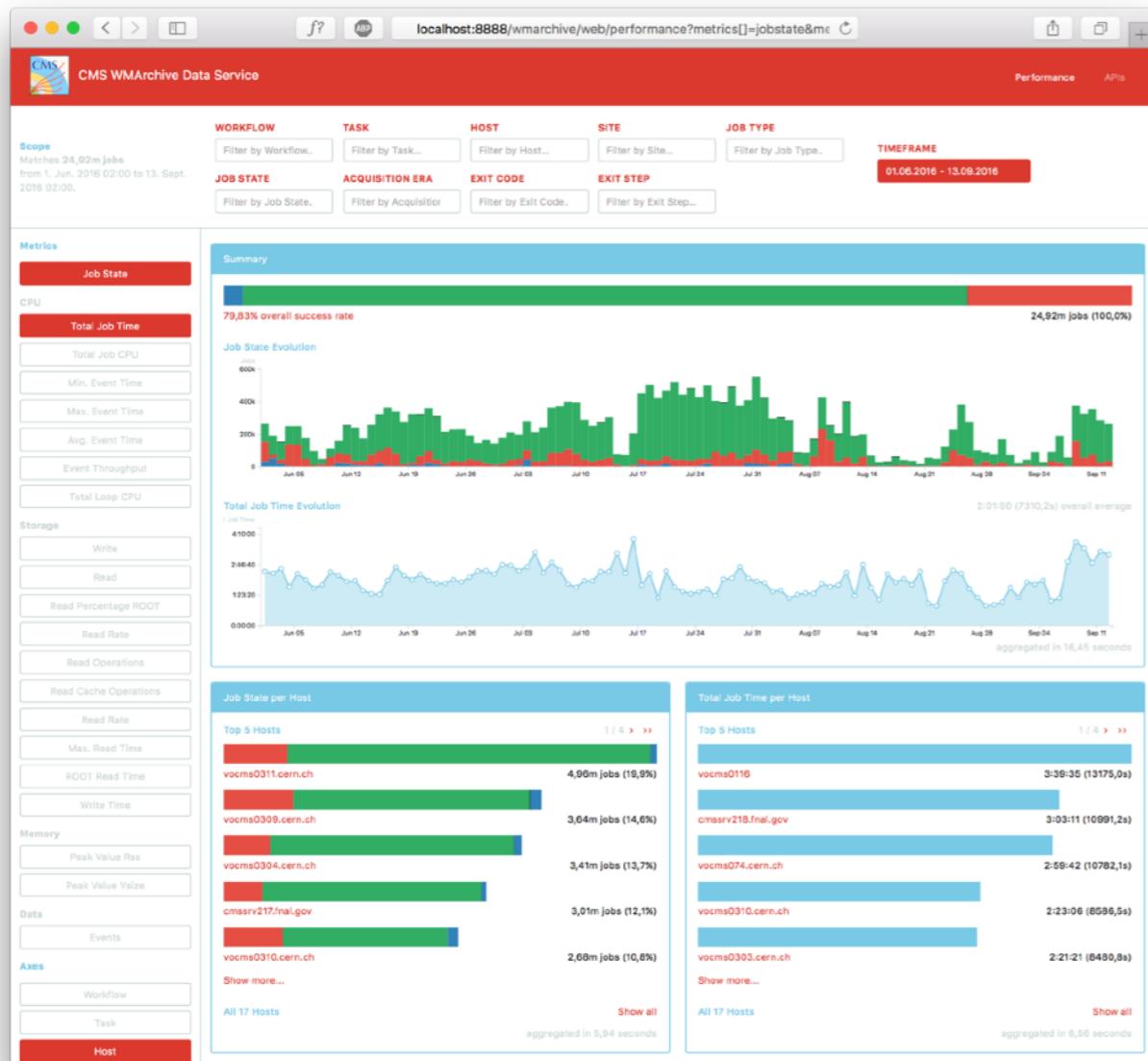


# WMArchive

# Performance Service



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CERN Summer Student  
Programme 2016

Follow along at:  
<https://cmsweb-testbed.cern.ch/wmarchive/web/performance>

# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)



**production agents**  
schedule jobs

# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)



**production agents**  
schedule jobs

# Update on WMArchive

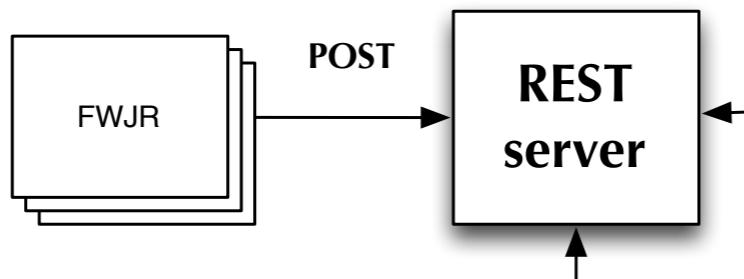
- Long-term storage for WMAgent's framework job reports (FWJRs)



**production agents**  
schedule jobs

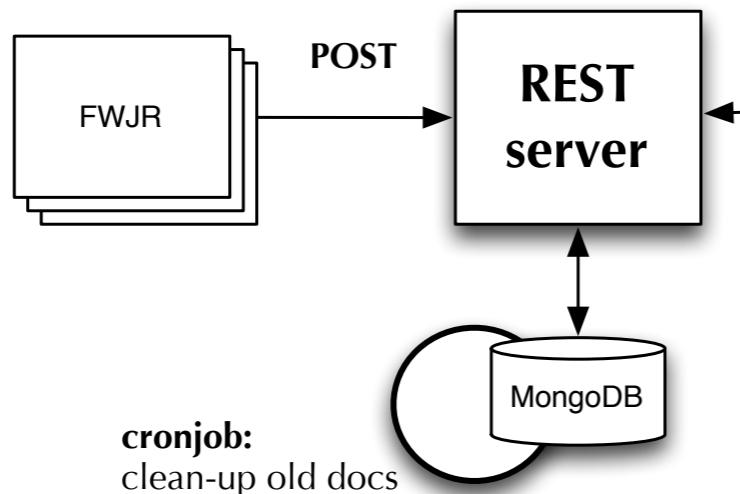
# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)



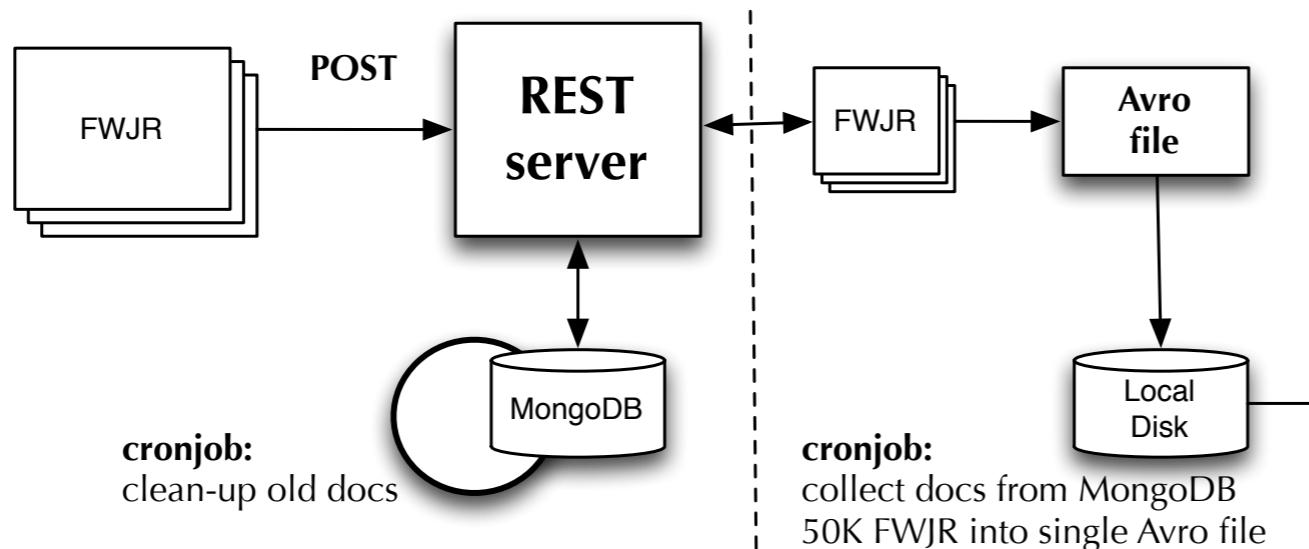
# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)



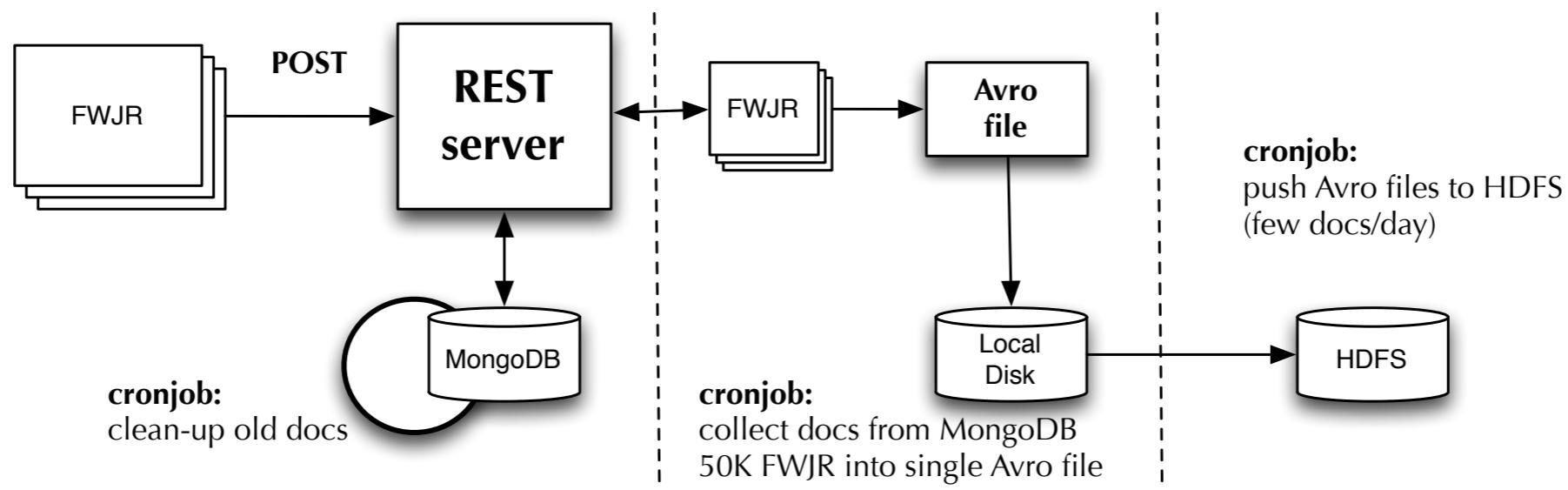
# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)



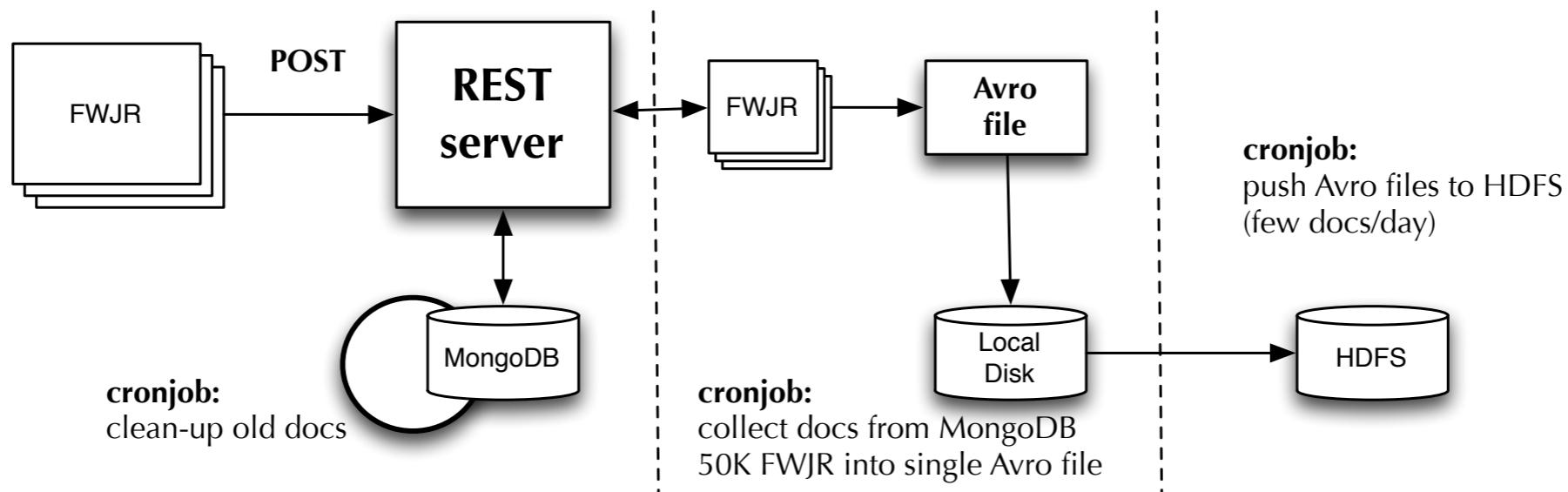
# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)



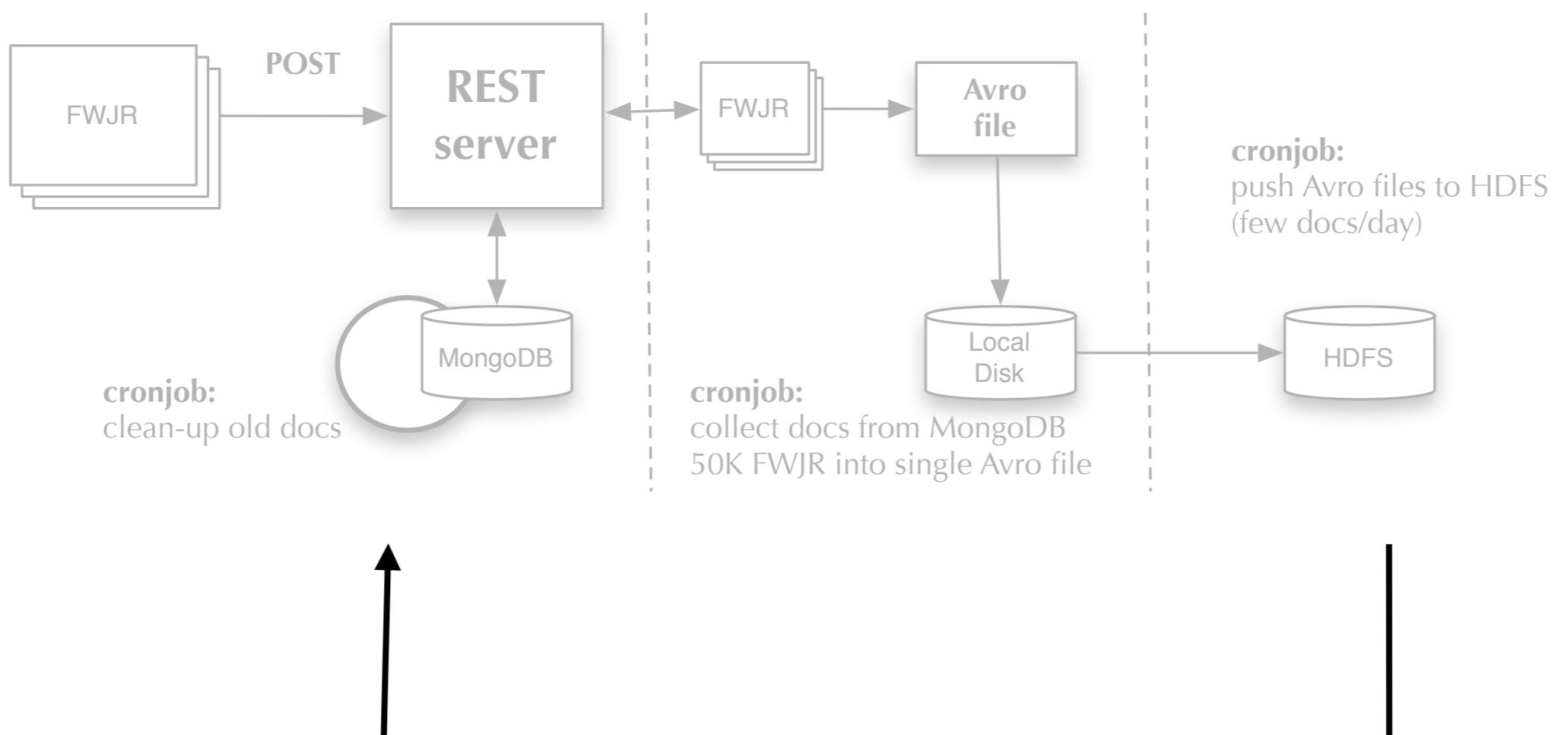
# Update on WMArchive

- Long-term storage for WMAgent's framework job reports (FWJRs)

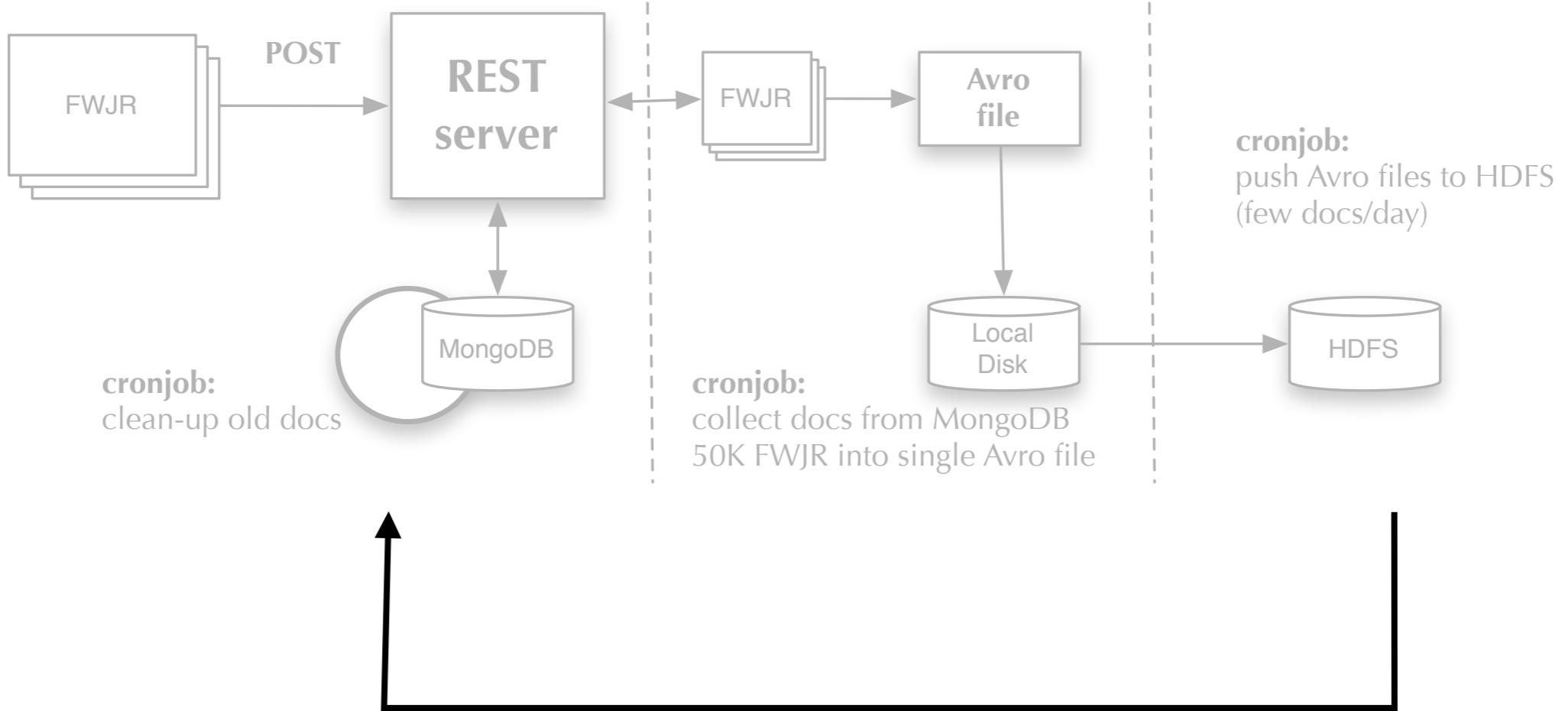


- FWJRs stored in MongoDB buffer first and then migrated to HDFS for long-term storage

# Visualization in web UI



## Aggregation of performance metrics

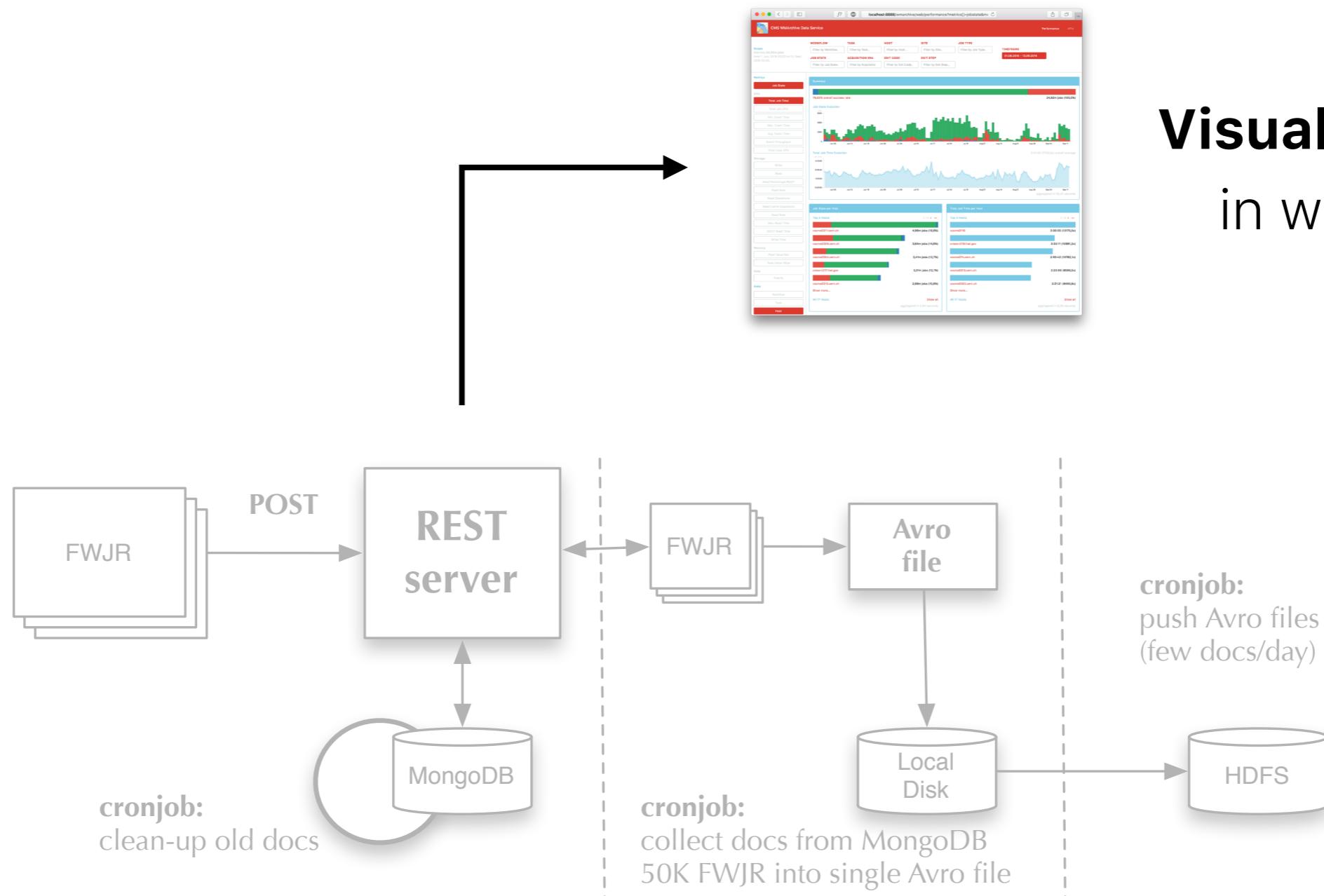


## Aggregation of performance metrics

- cache of aggregated performance data
- accessible by REST server
- scheduled with varying granularity

# WMArchive

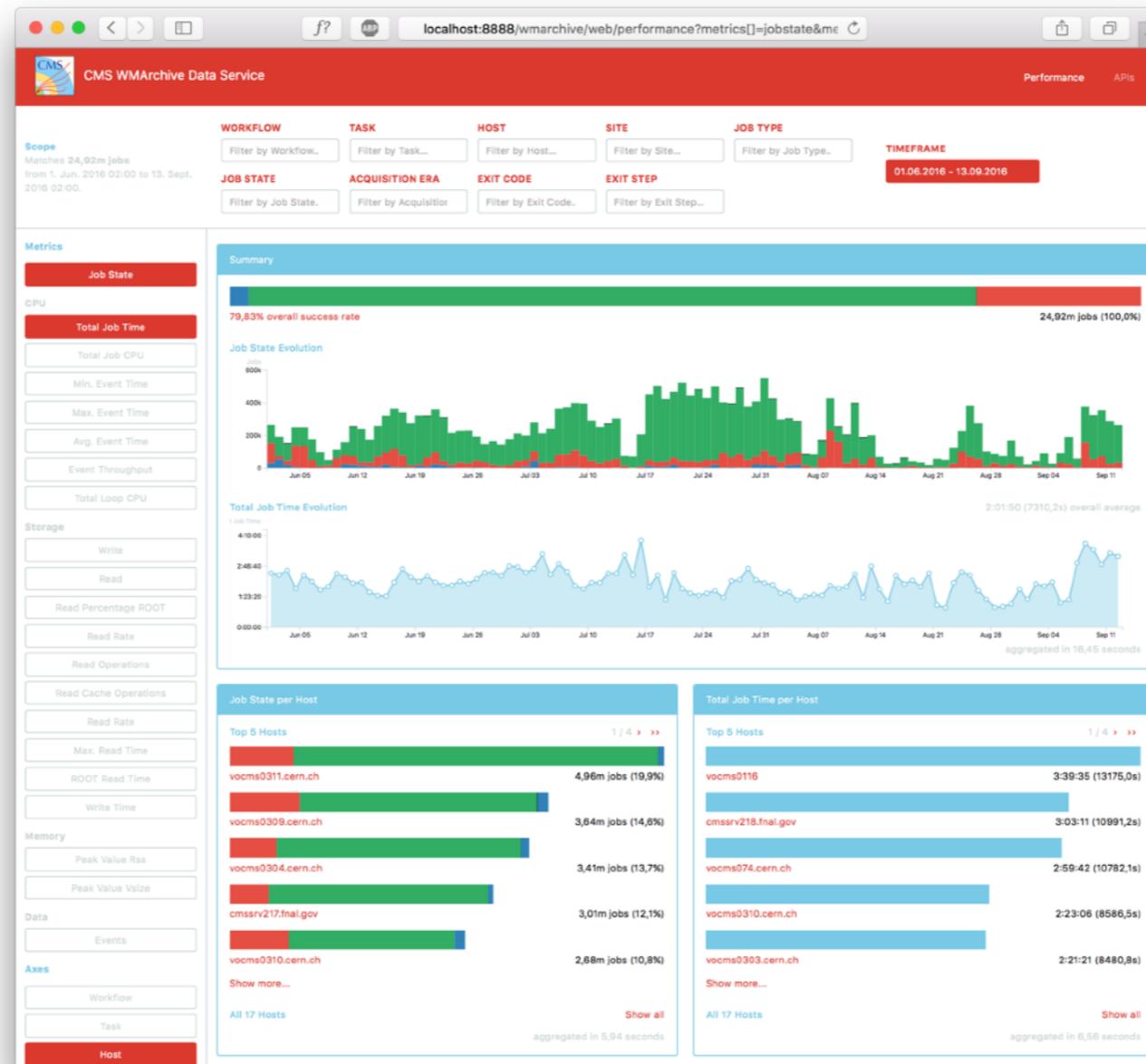
# Performance Service



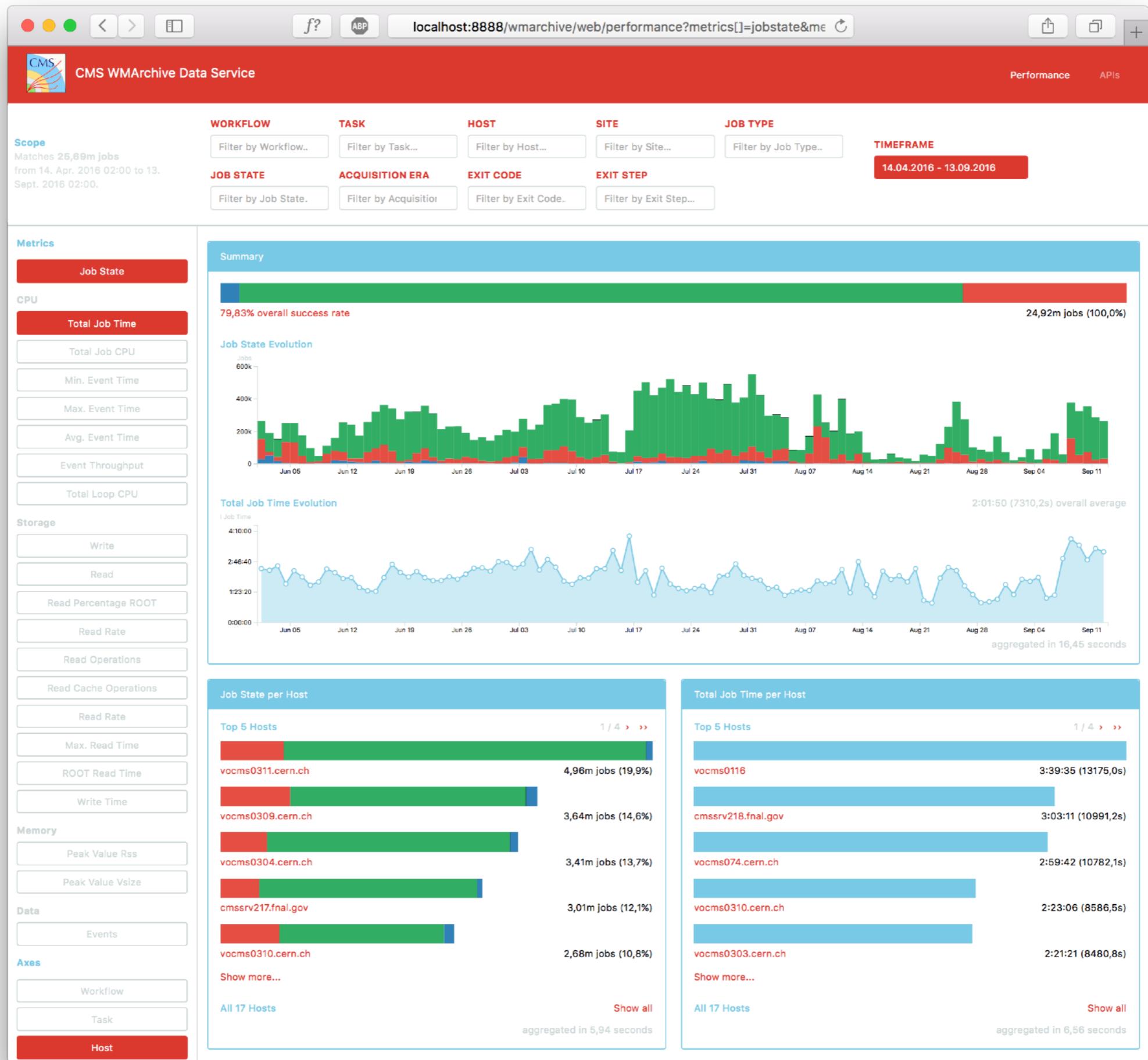
**Visualization**  
in web UI

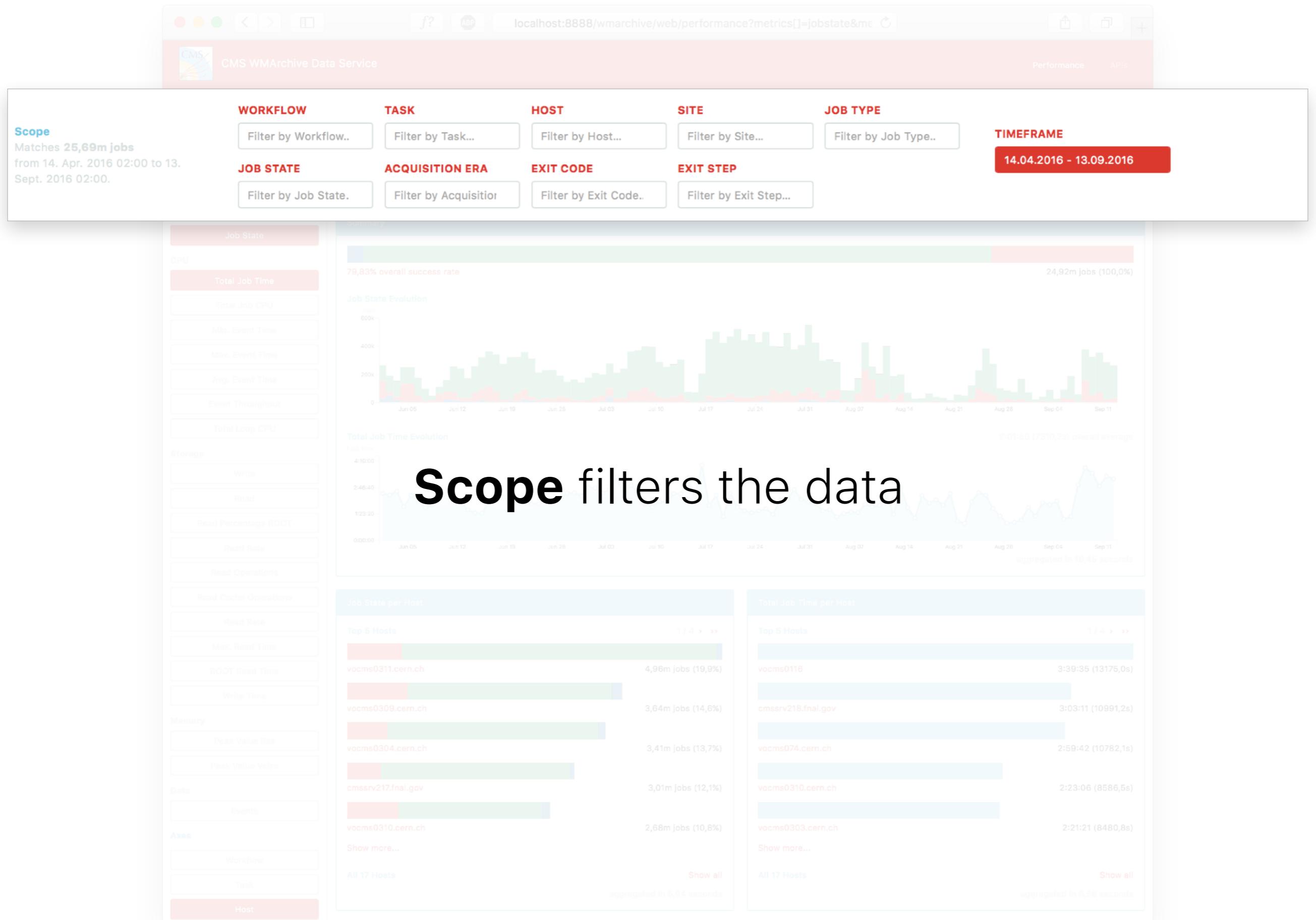
# WMArchive

# Performance Service



<https://cmsweb-testbed.cern.ch/wmarchive/web/performance>





# Scope filters the data

CMS WMArchive Data Service

Performance APIs

**Scope**  
Matches 9,76m jobs  
from 14. Apr. 2016 02:00 to 13. Sept. 2016 02:00.

**WORKFLOW** Filter by Workflow..  
**JOB STATE** Filter by Job State..

**TASK** Filter by Task...  
**ACQUISITION ERA** Filter by Acquisitior

**HOST** Filter by Host...  
**SITE** Filter by Site...  
**JOB TYPE** Filter by Job Type..

**TIMEFRAME** 14.04.2016 - 13.09.2016

**STEP** Filter by Exit Step...

**Total Job Time**  
Total Job CPU  
Min. Event Time  
Max. Event Time  
Avg. Event Time  
Event Throughput  
Total Loop CPU

**Storage**  
Write  
Read  
Read Percentage ROOT  
Read Rate  
Read Operations  
Read Cache Operations  
Read Rate  
Max. Read Time  
ROOT Read Time  
Write Time

**Memory**  
Peak Value Rate  
Peak Value Value

**Data**  
Events

**Axes**  
Workflow  
Task  
Host

**Job State Evolution**  
0-600k  
Jun 05 Jun 12 Jun 19 Jun 26 Jul 03 Jul 10 Jul 17 Jul 24 Jul 31 Aug 07 Aug 14 Aug 21 Aug 28 Sep 04 Sep 11

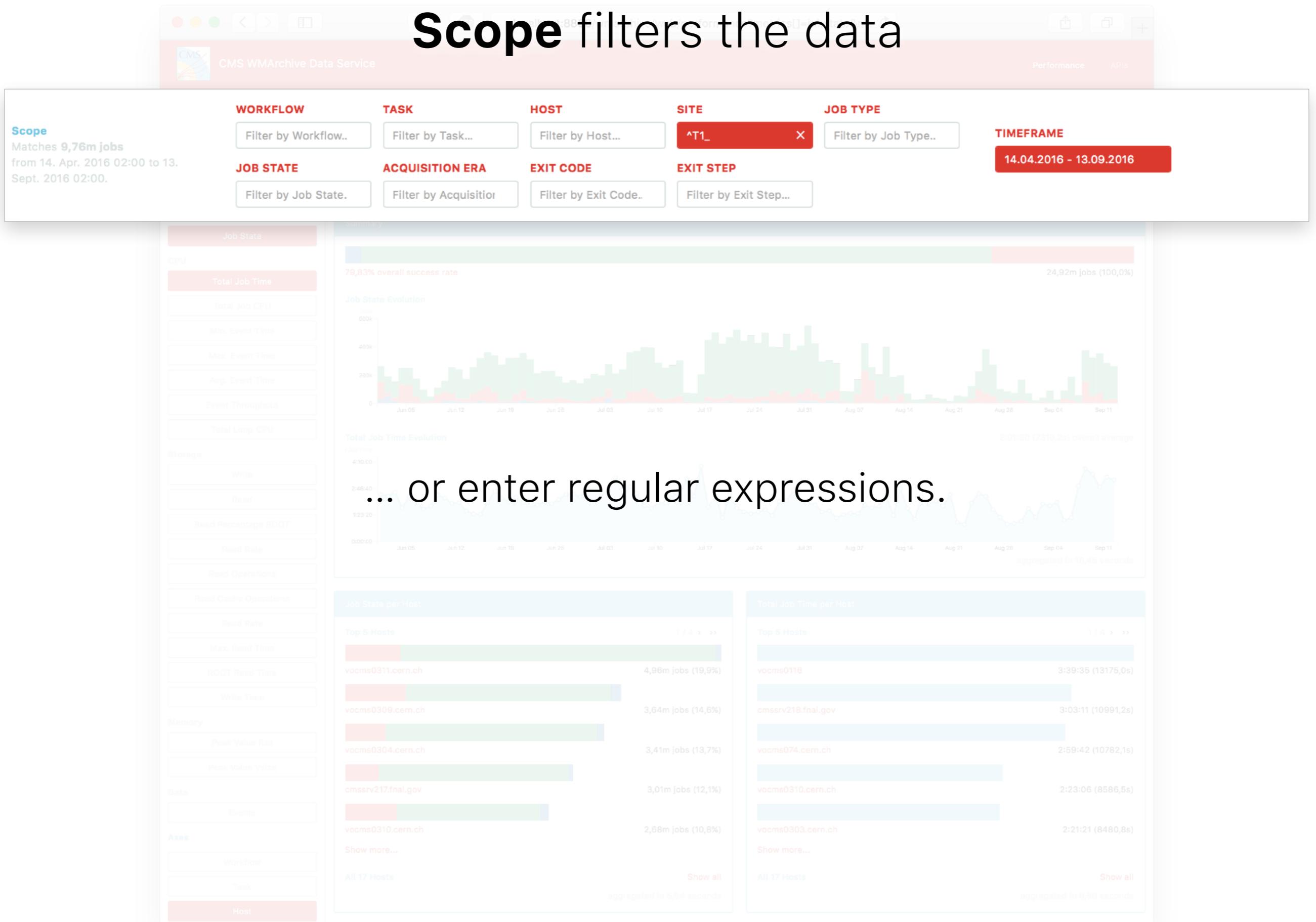
**Total Job Time Evolution**  
0:00:00-4:10:00  
Jun 05 Jun 12 Jun 19 Jun 26 Jul 03 Jul 10 Jul 17 Jul 24 Jul 31 Aug 07 Aug 14 Aug 21 Aug 28 Sep 04 Sep 11  
201:50 (7310,2s) overall average  
aggregated in 10,45 seconds

**Job State per Host**  
Top 5 Hosts  
vocms0311.cern.ch 4,96m jobs (19,9%)  
vocms0309.cern.ch 3,64m jobs (14,6%)  
vocms0304.cern.ch 3,41m jobs (13,7%)  
cmssrv217.fnal.gov 3,01m jobs (12,1%)  
vocms0310.cern.ch 2,68m jobs (10,8%)  
Show more...  
All 17 Hosts Show all aggregated in 0,04 seconds

**Total Job Time per Host**  
Top 5 Hosts  
vocms0116 3:39:35 (13175,0s)  
cmssrv218.fnal.gov 3:03:11 (10991,2s)  
vocms074.cern.ch 2:59:42 (10782,1s)  
vocms0310.cern.ch 2:23:06 (8586,5s)  
vocms0303.cern.ch 2:21:21 (8480,8s)  
Show more...  
All 17 Hosts Show all aggregated in 0,09 seconds

Pick from available values

# Scope filters the data



# Scope filters the dataset

CMS WMArchive Data Service

Performance APIs

Scope  
Minutes 24,92m jobs  
From 1. Jun. 2016 02:00 to 13. Sept. 2016 22:00.

WORKFLOW    TASK    HOST

JOB STATE    ACQUISITION ERA    EXIT CODE

Metrics

Job State

CPU

Total Job Time

Total Job CPU

Min. Event Time

Max. Event Time

Avg. Event Time

Event Throughput

Total Loop CPU

Storage

Write

Read

Read Percentage ROOT

Read Rate

Read Operations

Read Cache Operations

Read Rate

Max. Read Time

ROOT Read Time

Write Time

Memory

Peak Value Rate

Peak Value Value

Data

Events

Axes

Workflow

Task

Host

Summary  
79,83% overall success rate

Job State Evolution

Total Job Time Evolution

Job State per Host

Top 5 Hosts

- vocms0311.cern.ch: 4,96m jobs (19,9%)
- vocms0309.cern.ch: 3,64m jobs (14,6%)
- vocms0304.cern.ch: 3,41m jobs (13,7%)
- cmssrv217.fnal.gov: 3,01m jobs (12,1%)
- vocms0310.cern.ch: 2,68m jobs (10,8%)

Show more... All 17 Hosts Show all aggregated in 0,04 seconds

Total Job Time per Host

Top 5 Hosts

- vocms0116: 3:39:35 (13175,0s)
- cmssrv218.fnal.gov: 3:03:11 (10991,2s)
- vocms074.cern.ch: 2:59:42 (10782,1s)
- vocms0310.cern.ch: 2:23:06 (8586,5s)
- vocms0303.cern.ch: 2:21:21 (8480,8s)

Show more... All 17 Hosts Show all aggregated in 0,09 seconds

TIMEFRAME

01.08.2016 - 31.08.2016

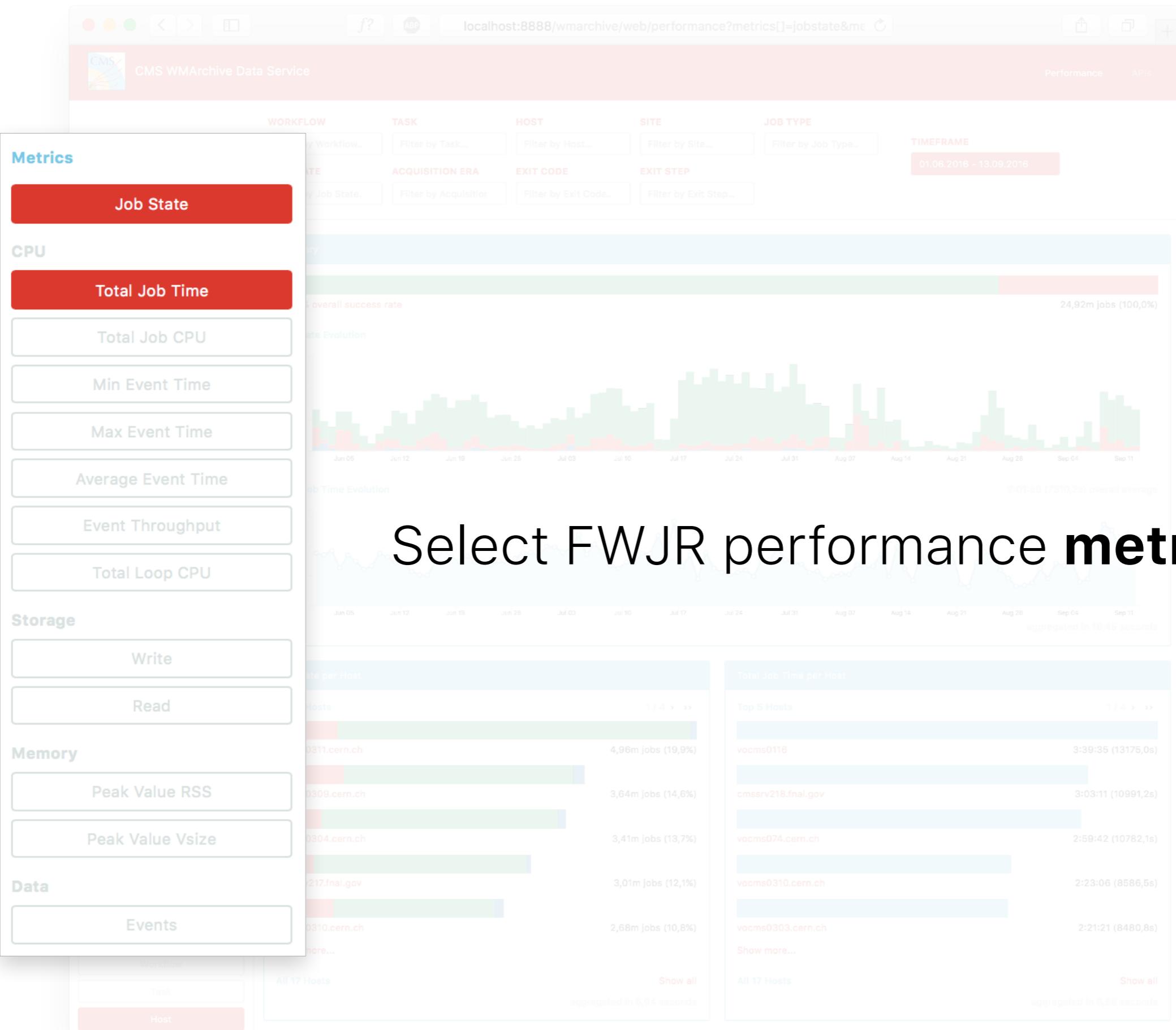
01.08.2016    31.08.2016    Today    Yesterday    Last 7 Days    Last 30 Days    This Month    Last Month    Custom Timeframe

Aug. 2016    Sept. 2016

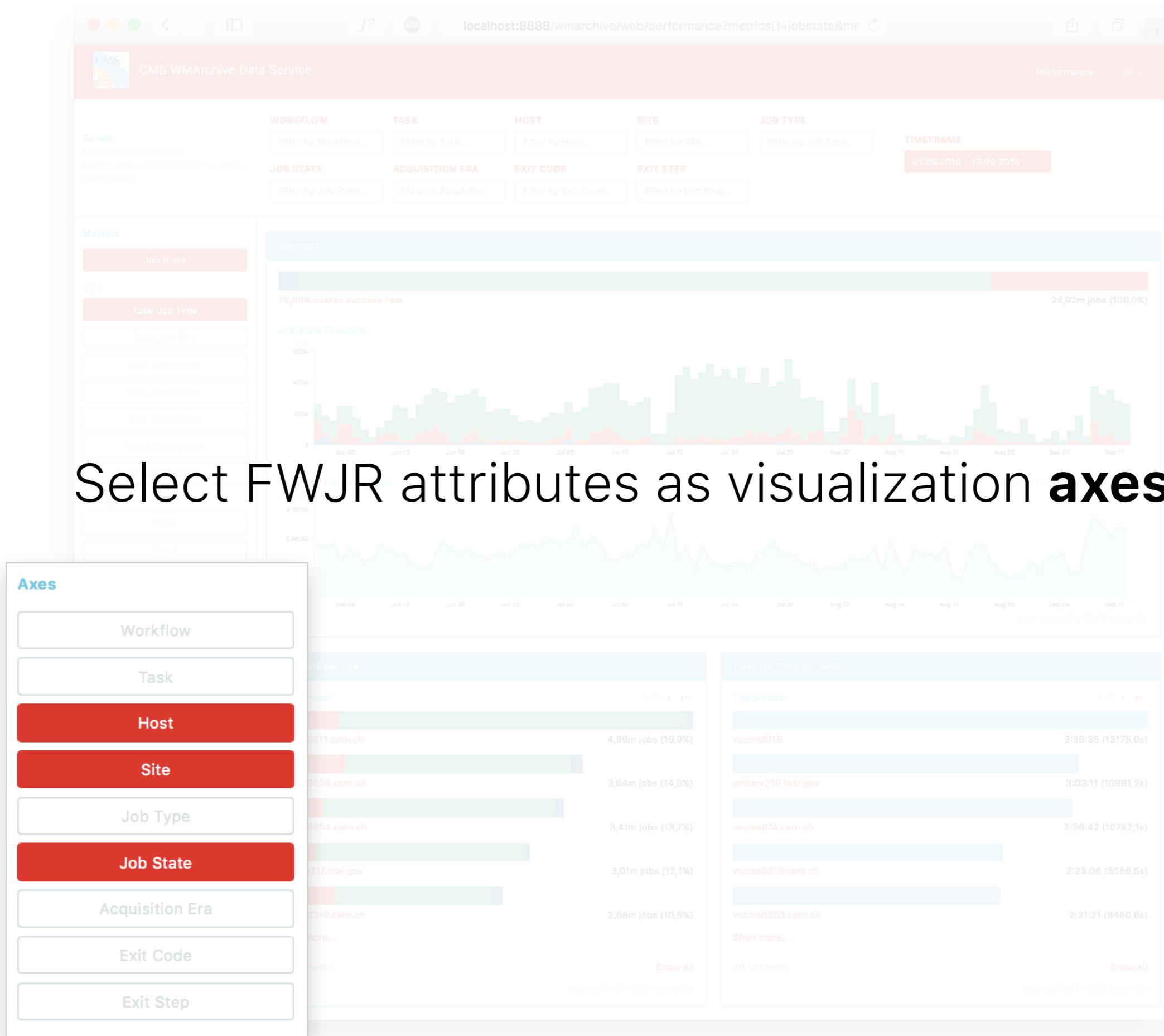
Mo	Di	Mi	Do	Fr	Sa	So	Mo	Di	Mi	Do	Fr	Sa	So
25	26	27	28	29	30	31	29	30	31	1	2	3	4
1	2	3	4	5	6	7	5	6	7	8	9	10	11
8	9	10	11	12	13	14	12	13	14	15	16	17	18
15	16	17	18	19	20	21	19	20	21	22	23	24	25
22	23	24	25	26	27	28	26	27	28	29	30	1	2
29	30	31	1	2	3	4	3	4	5	6	7	8	9

Apply    Cancel

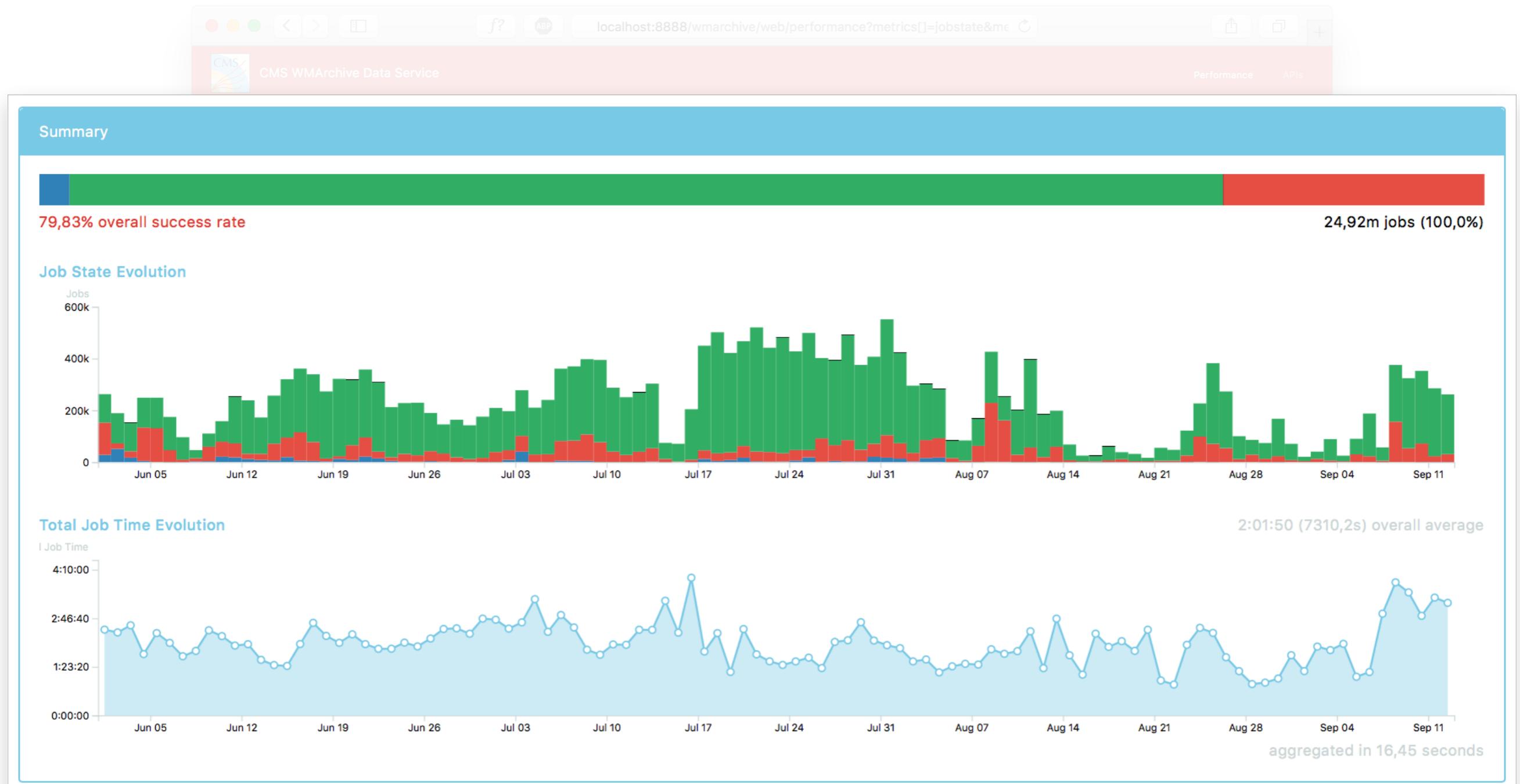
Pick a timeframe



# Select FWJR performance metrics

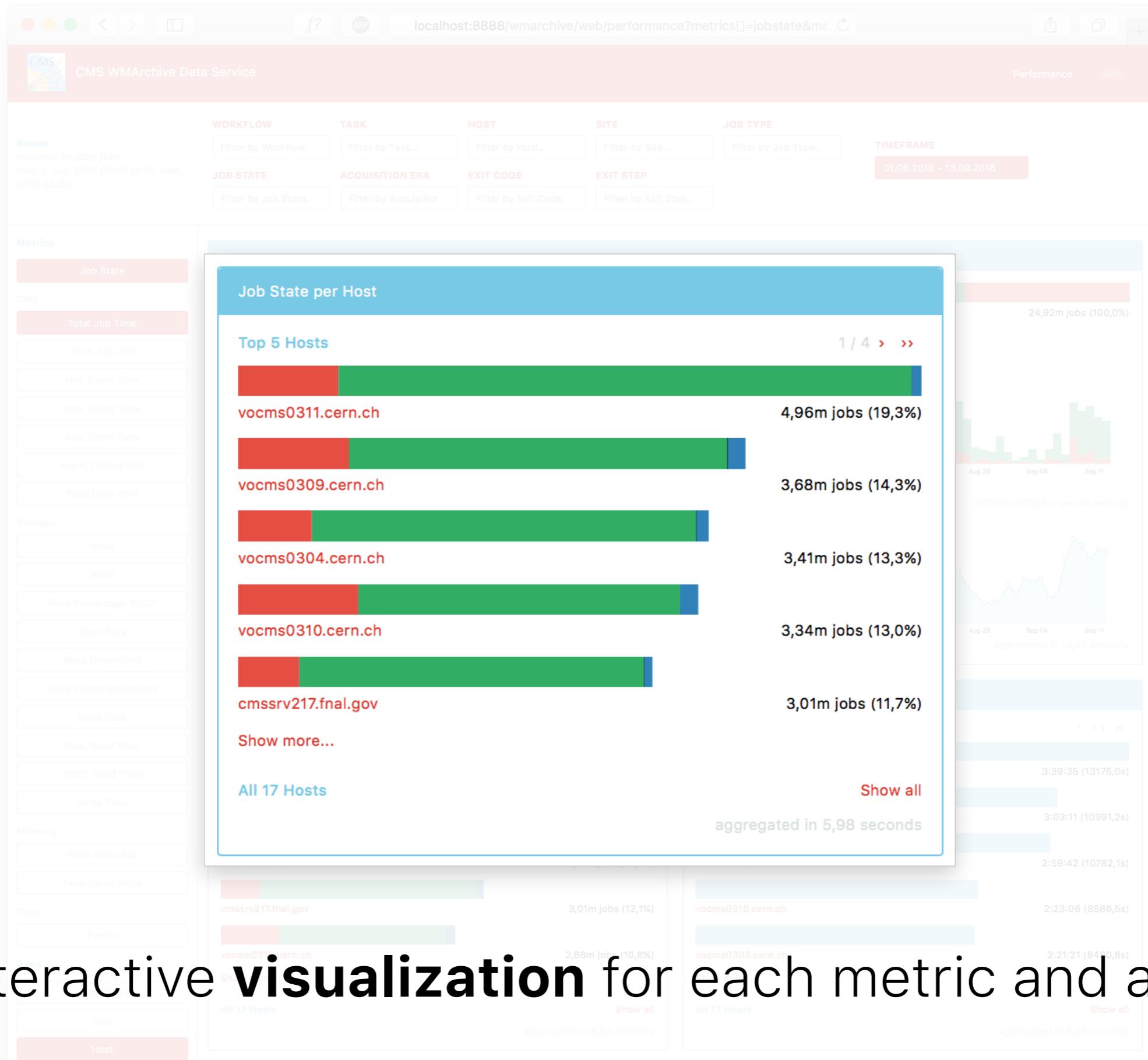


# Select FWJR attributes as visualization axes



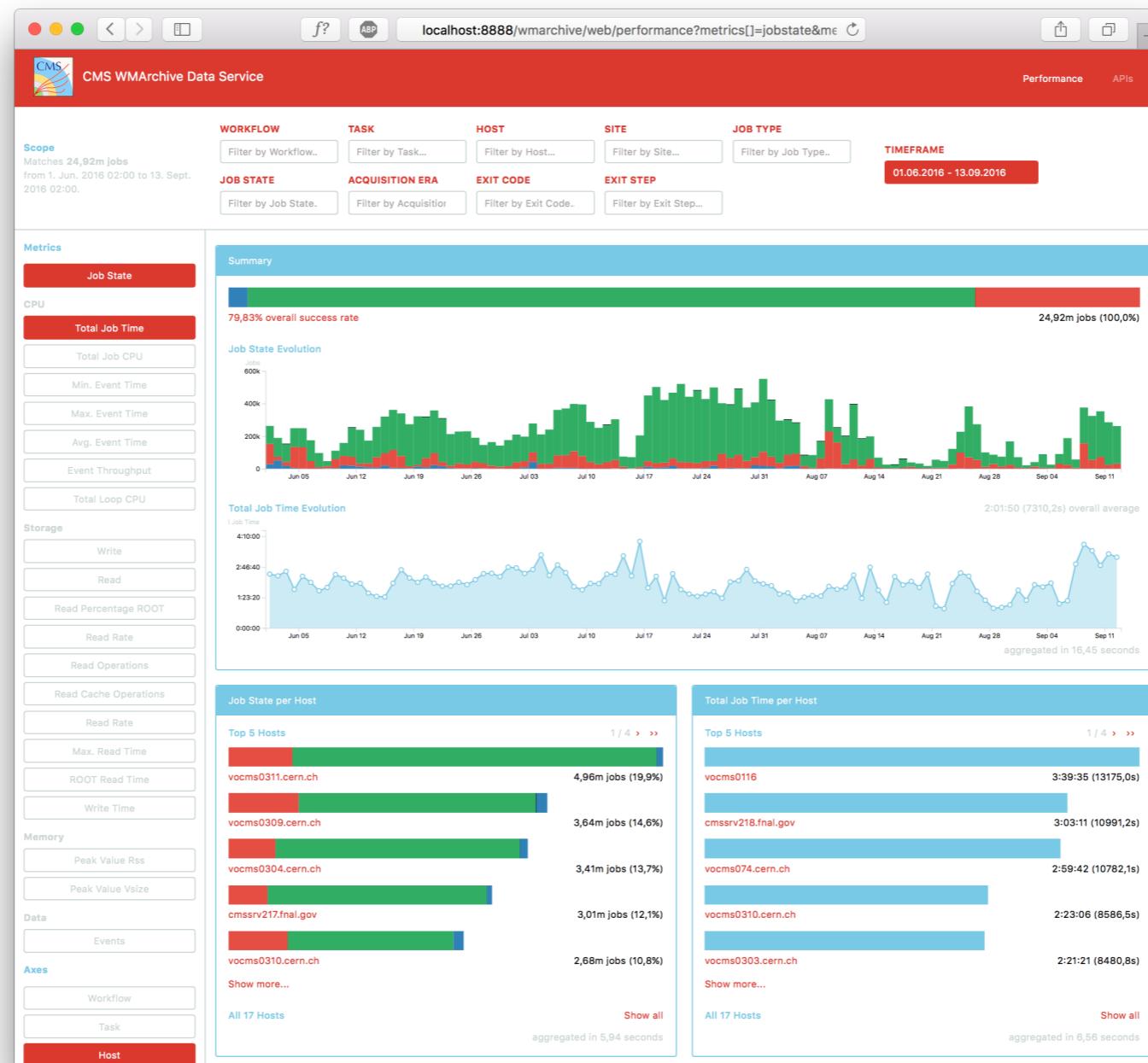
**Summary** shows time evolution and overall average

successful      failed      submitfailed



Interactive **visualization** for each metric and axis

# Use case: Correlate failures with sites

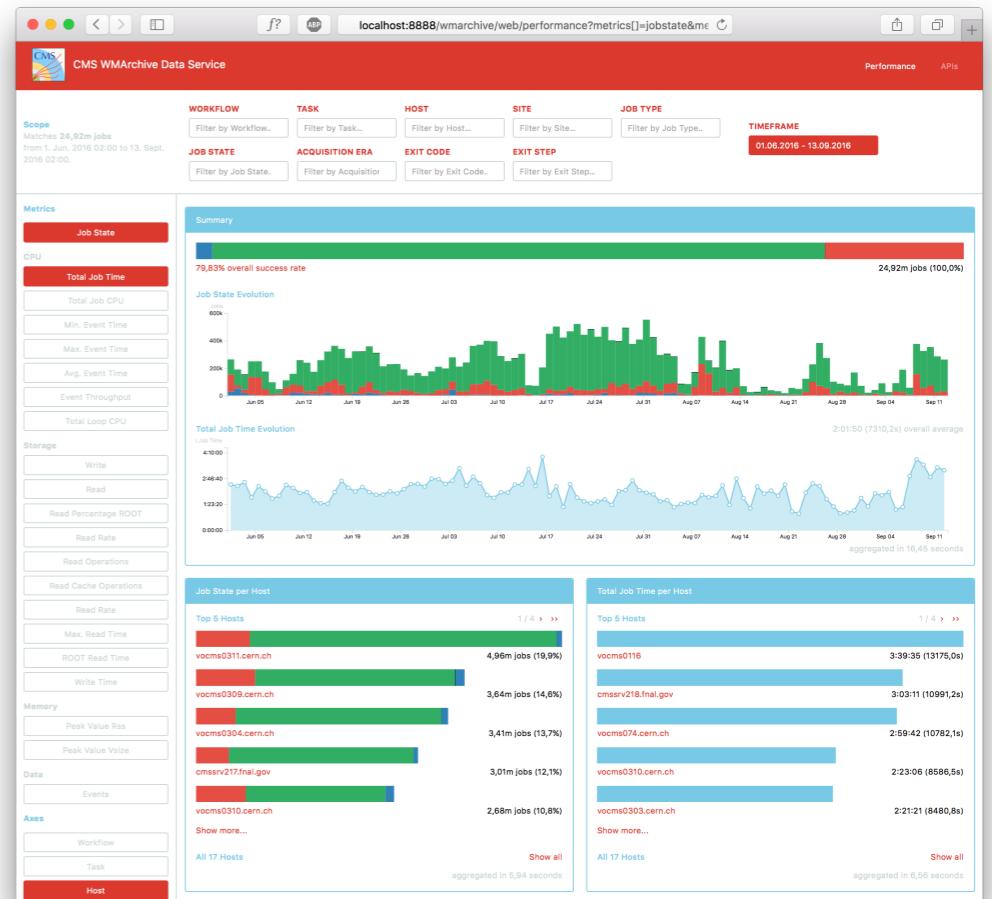


<https://cmsweb-testbed.cern.ch/wmarchive/web/performance>

# Outlook

- Explore viable long-term data granularity
- Share/save individual visualizations
- Refreshing with latest data in realtime

Your **feedback** is valuable!



- Use our service:  
<http://cmsweb-testbed.cern.ch/wmarchive/web/performance>
- Open an issue:  
<https://github.com/dmwm/WMArchive/issues/new>
- Ask for help on [wmarchive-dev@cern.ch](mailto:wmarchive-dev@cern.ch)