HDB++

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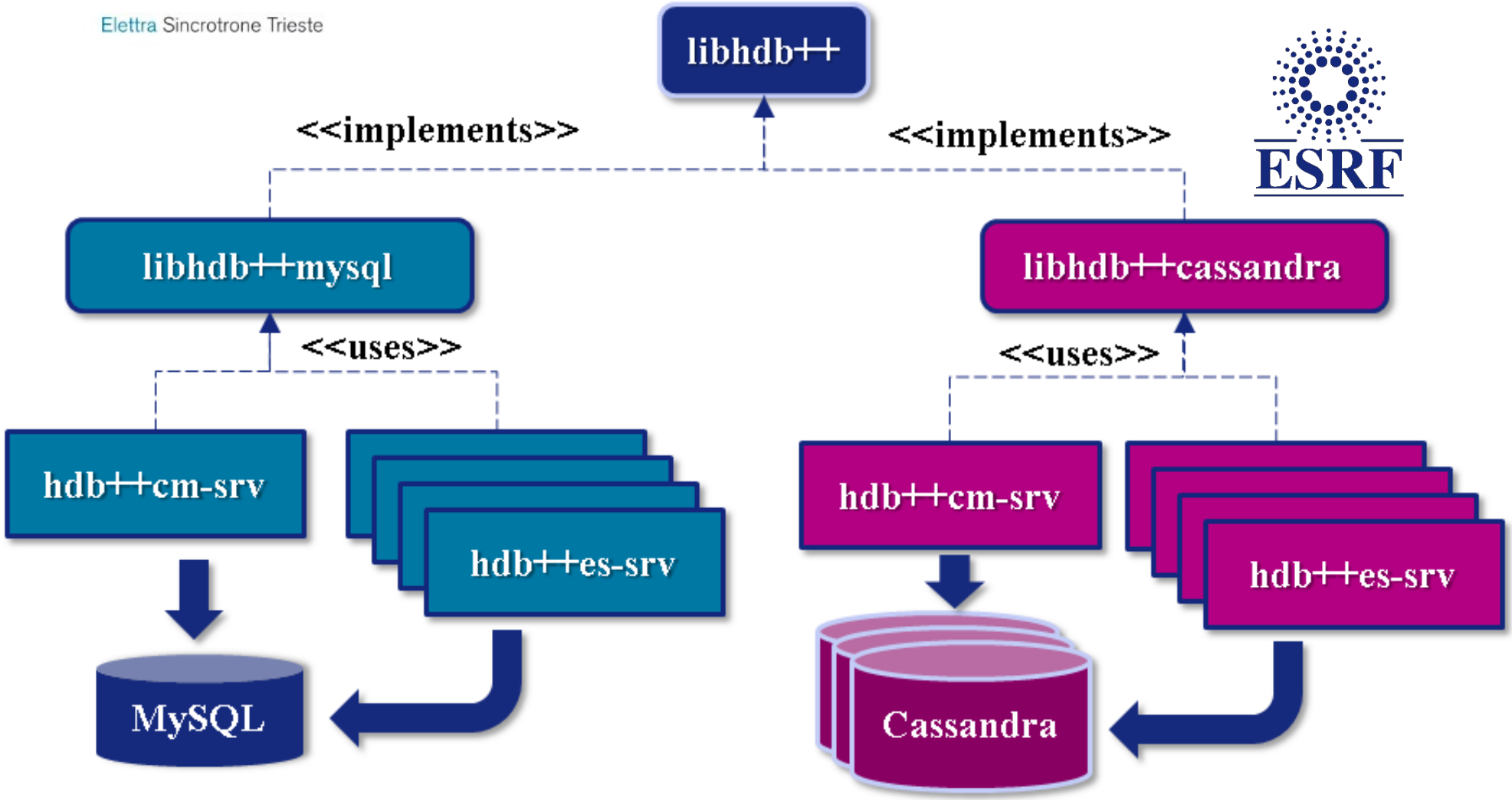
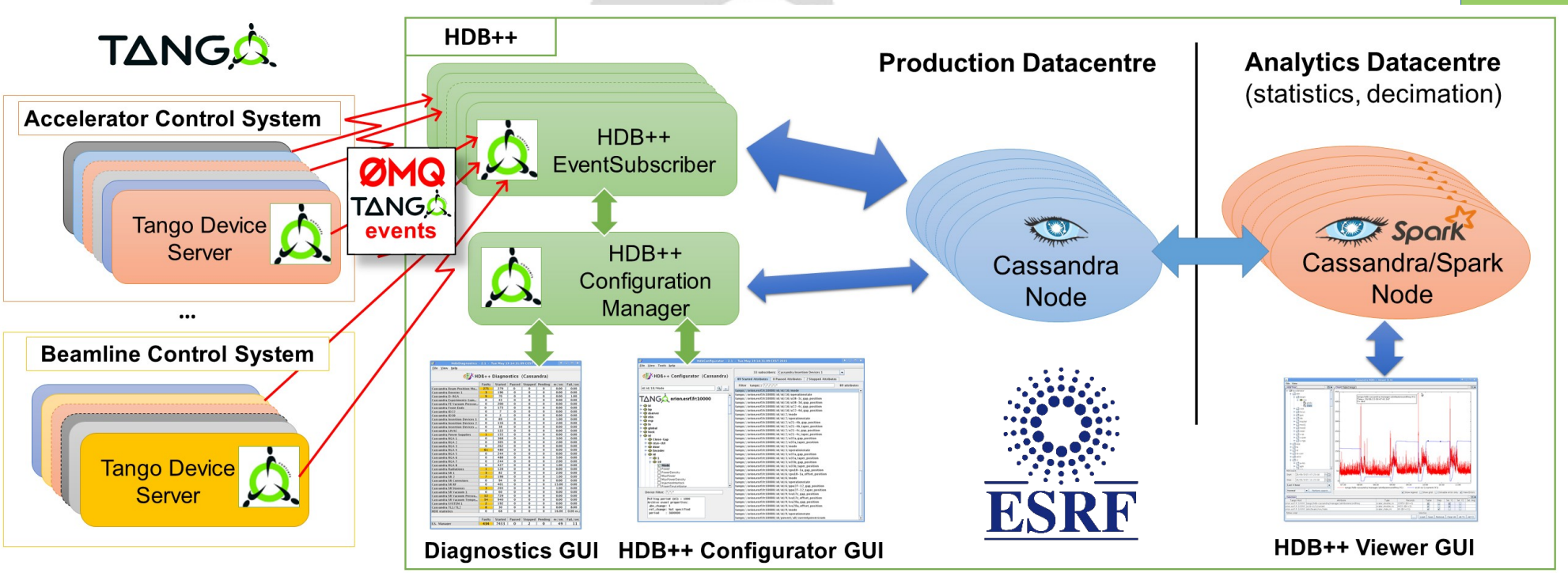
HDB++ Architecture

Elettra Sincrotrone Trieste

ESRF



HDB++ @ ESRF overview



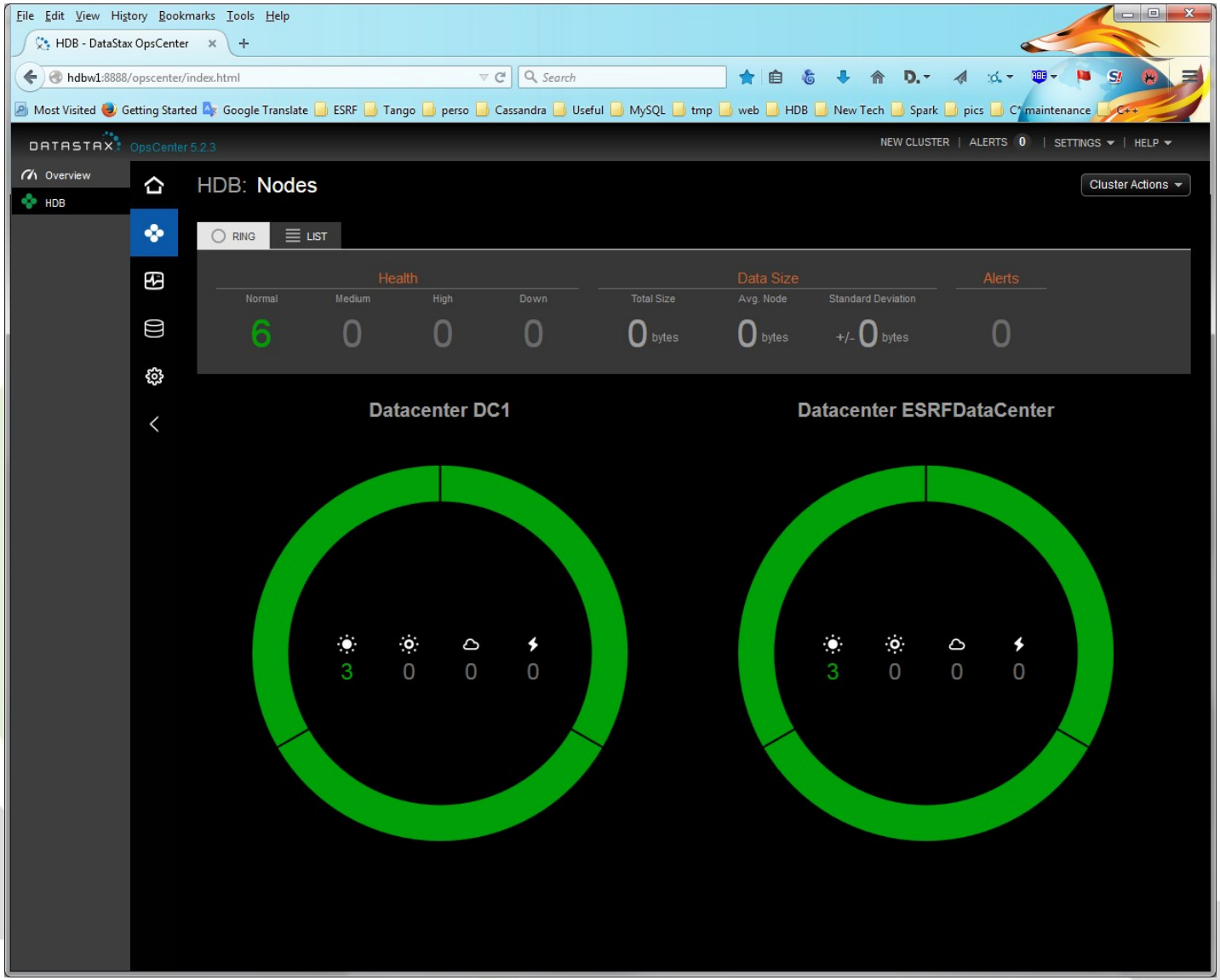
Cassandra main advantages

- Continuous availability with no SPOF
- Linear Scalability
  (Need more performances?
  more storage? => Add new nodes!)
- Multi Datacenter replication
- Statistics computation on the archived data

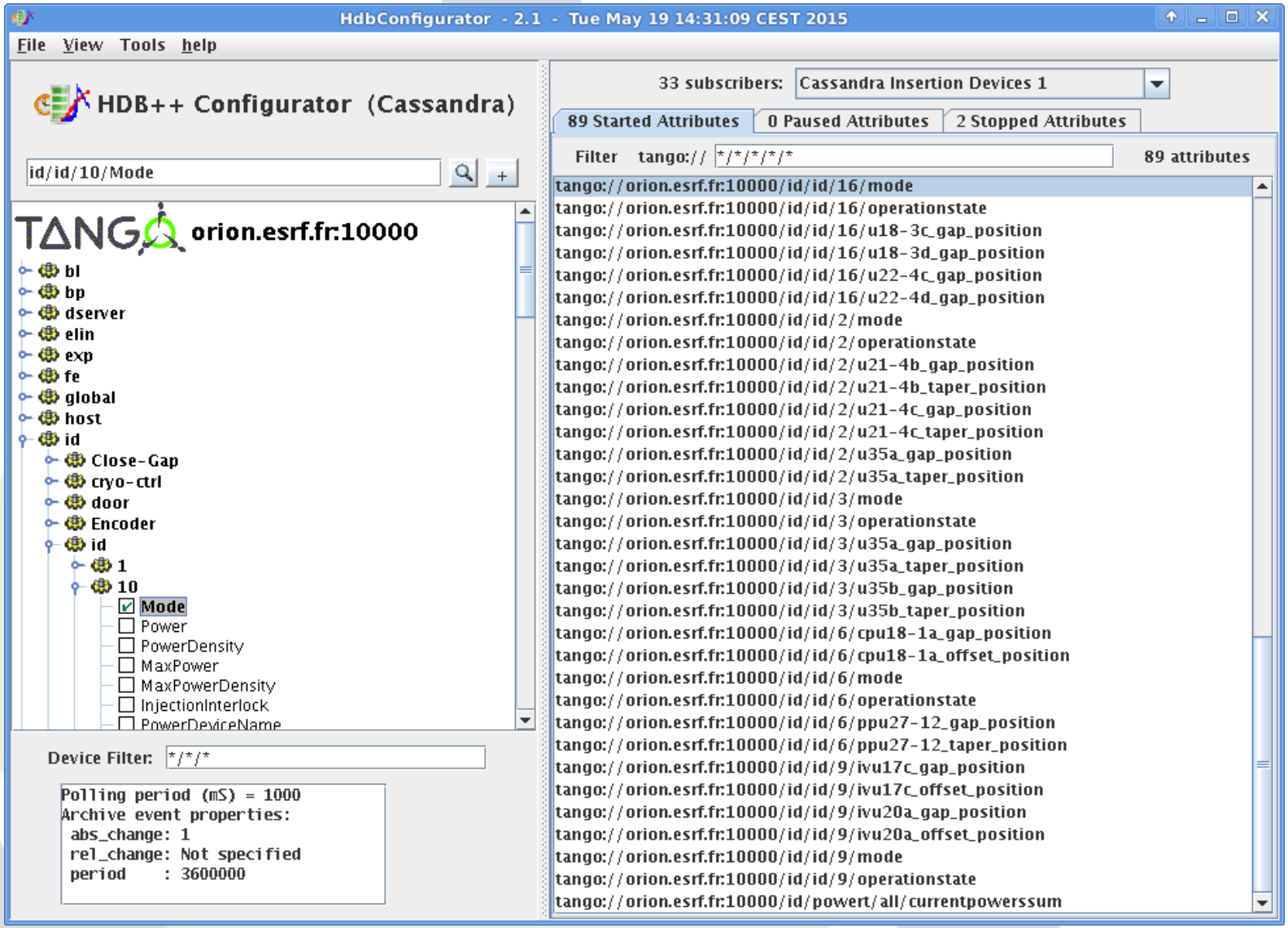
  thanks to Apache Spark

HDB++ @ ESRF overview

6 nodes, 2 datacenters, RF = 3



HDB++ Configuration GUI



Doc:
http://www.tango-controls.org/community/project-docs/hdbplusplus/hdbplusplus-doc/configuration-gui

http://www.tango-controls.org

HDB++ Diagnostics GUI

HdbDiagnostics - 1.3 - Mon Jun 06 08:13:41 CEST 2016

File View help

HDB++ Diagnostics (Cassandra)

	Faulty	Started	Paused	Stopped	Pending	ev/sec	Fail./sec
Cassandra Beam Position Monitors	0	268	0	0	0	4.00	0.00
Cassandra Booster 1	0	188	0	0	0	5.00	0.00
Cassandra D-RGA	1	63	0	0	0	0.00	0.00
Cassandra Experiments Gamma Monitors	1	43	0	0	0	0.00	1.00
Cassandra FE Vacuum Pressures	0	200	0	0	0	0.00	0.00
Cassandra Front Ends	0	181	0	0	0	0.00	0.00
Cassandra ID22	0	7	0	0	0	0.00	0.00
Cassandra Injext	2	29	0	0	0	2.00	0.00
Cassandra Insertion Devices 1	0	81	0	0	0	0.00	0.00
Cassandra Insertion Devices 2	0	111	0	0	0	0.00	0.00
Cassandra Insertion Devices Corrections	0	29	0	0	0	0.00	0.00
Cassandra LINAC	0	120	0	0	0	0.00	0.00
Cassandra Power Supplies	0	173	0	0	0	1.00	0.00
Cassandra RGA 1	0	368	0	0	0	0.00	0.00
Cassandra RGA 2	0	305	0	0	0	1.00	0.00
Cassandra RGA 3	0	323	0	0	0	2.00	0.00
Cassandra RGA 4	0	489	0	0	0	1.00	0.00
Cassandra RGA 5	0	244	0	0	0	0.00	0.00
Cassandra RGA 6	0	488	0	0	0	1.00	0.00
Cassandra RGA 7	0	244	0	0	0	2.00	0.00
Cassandra RGA 8	0	366	0	0	0	0.00	0.00
Cassandra Radiations	0	193	0	0	0	0.00	0.00
Cassandra SR 1	1	83	0	0	0	8.00	0.00
Cassandra SR 2	0	197	0	0	0	0.00	0.00
Cassandra SR Correctors	0	94	0	0	0	0.00	0.00
Cassandra SR RF	3	430	0	0	0	20.00	1.00
Cassandra SR Steerers	0	201	0	0	0	0.00	0.00
Cassandra SR Vacuum 1	1	61	0	0	0	0.00	0.00
Cassandra SR Vacuum Pressures	0	697	0	0	0	0.00	0.00
Cassandra SR Vacuum Temperatures	0	924	0	0	0	0.00	0.00
Cassandra SY RF	0	102	0	0	0	1.00	0.00
Cassandra SYSTEM 1	1	194	0	0	0	0.00	0.00
Cassandra TL1/TL2	1	40	0	0	0	2.00	0.00
Cassandra Timing Tests	0	0	0	7	0	0.00	0.00
Cassandra fast BPM	0	4	0	0	0	0.00	0.00
HDB statistics	0	68	0	0	0	15.00	0.00
test labs	0	0	0	69	0	0.00	0.00

	Faulty	Started	Paused	Stopped	Pending	ev/sec	Fail./sec
E.S. Manager	10	7608	0	76	0	62	1

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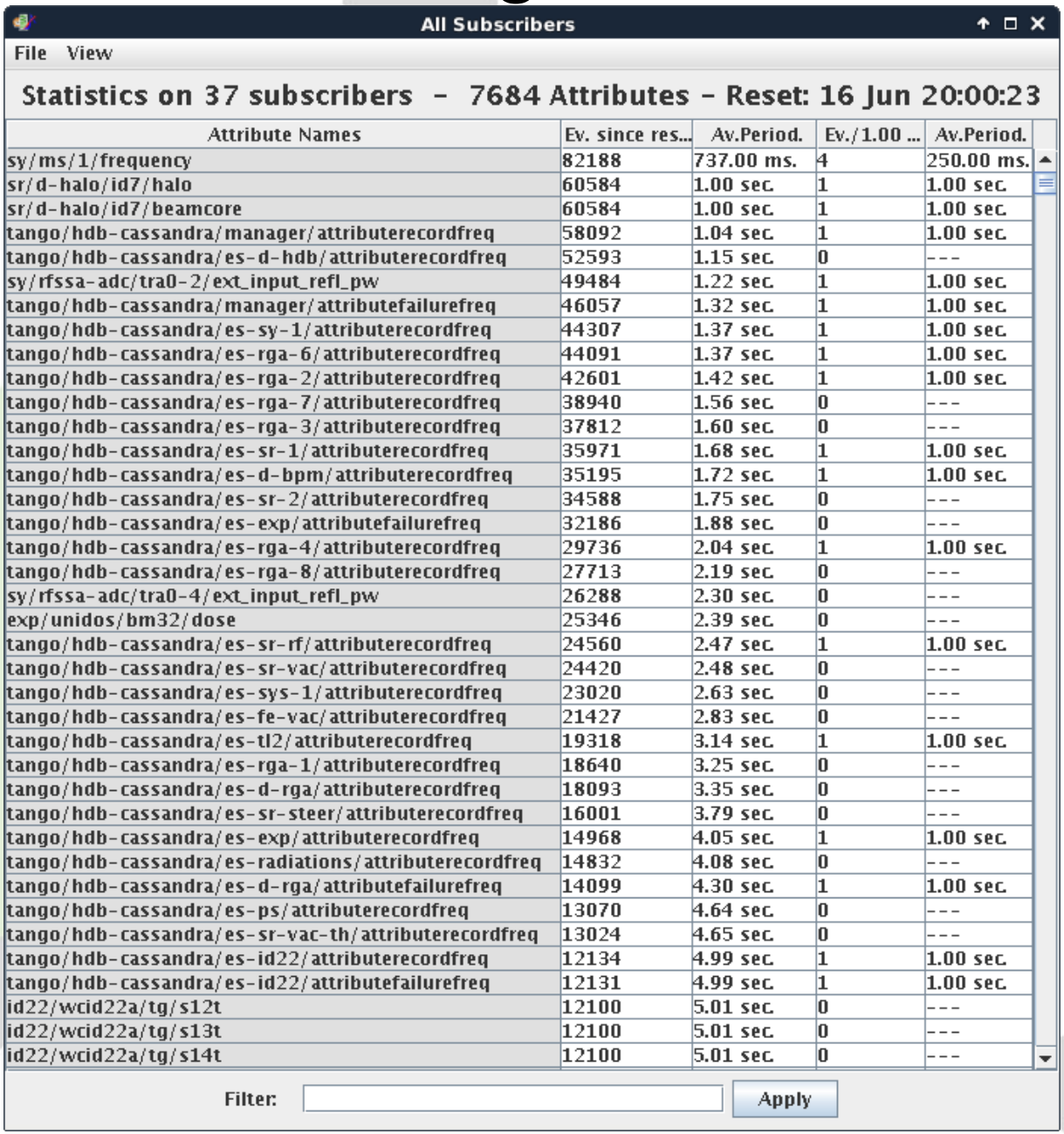
HDB++ Diagnostics GUI



Attribute Names	Ev. since res...	Av.Period.	Ev./1.00 ...	Av.Period.
sy/ms/1/frequency	82188	737.00 ms.	4	250.00 ms.
sr/d-halo/id7/halo	60584	1.00 sec.	1	1.00 sec.
sr/d-halo/id7/beamcore	60584	1.00 sec.	1	1.00 sec.
tango/hdb-cassandra/manager/attributerecordfreq	58092	1.04 sec.	1	1.00 sec.
tango/hdb-cassandra/es-d-hdb/attributerecordfreq	52593	1.15 sec.	0	---
sy/rfssa-adc/tra0-2/ext_input_refl_pw	49484	1.22 sec.	1	1.00 sec.
tango/hdb-cassandra/manager/attributefailurefreq	46057	1.32 sec.	1	1.00 sec.
tango/hdb-cassandra/es-sy-1/attributerecordfreq	44307	1.37 sec.	1	1.00 sec.
tango/hdb-cassandra/es-rga-6/attributerecordfreq	44091	1.37 sec.	1	1.00 sec.
tango/hdb-cassandra/es-rga-2/attributerecordfreq	42601	1.42 sec.	1	1.00 sec.
tango/hdb-cassandra/es-rga-7/attributerecordfreq	38940	1.56 sec.	0	---
tango/hdb-cassandra/es-rga-3/attributerecordfreq	37812	1.60 sec.	0	---
tango/hdb-cassandra/es-sr-1/attributerecordfreq	35971	1.68 sec.	1	1.00 sec.
tango/hdb-cassandra/es-d-bpm/attributerecordfreq	35195	1.72 sec.	1	1.00 sec.
tango/hdb-cassandra/es-sr-2/attributerecordfreq	34588	1.75 sec.	0	---
tango/hdb-cassandra/es-exp/attributefailurefreq	32186	1.88 sec.	0	---
tango/hdb-cassandra/es-rga-4/attributerecordfreq	29736	2.04 sec.	1	1.00 sec.
tango/hdb-cassandra/es-rga-8/attributerecordfreq	27713	2.19 sec.	0	---
sy/rfssa-adc/tra0-4/ext_input_refl_pw	26288	2.30 sec.	0	---
exp/unidos/bm32/dose	25346	2.39 sec.	0	---
tango/hdb-cassandra/es-sr-rf/attributerecordfreq	24560	2.47 sec.	1	1.00 sec.
tango/hdb-cassandra/es-sr-vac/attributerecordfreq	24420	2.48 sec.	0	---
tango/hdb-cassandra/es-sys-1/attributerecordfreq	23020	2.63 sec.	0	---
tango/hdb-cassandra/es-fe-vac/attributerecordfreq	21427	2.83 sec.	0	---
tango/hdb-cassandra/es-tl2/attributerecordfreq	19318	3.14 sec.	1	1.00 sec.
tango/hdb-cassandra/es-rga-1/attributerecordfreq	18640	3.25 sec.	0	---
tango/hdb-cassandra/es-d-rga/attributerecordfreq	18093	3.35 sec.	0	---
tango/hdb-cassandra/es-sr-steer/attributerecordfreq	16001	3.79 sec.	0	---
tango/hdb-cassandra/es-exp/attributerecordfreq	14968	4.05 sec.	1	1.00 sec.
tango/hdb-cassandra/es-radiations/attributerecordfreq	14832	4.08 sec.	0	---
tango/hdb-cassandra/es-d-rga/attributefailurefreq	14099	4.30 sec.	1	1.00 sec.
tango/hdb-cassandra/es-ps/attributerecordfreq	13070	4.64 sec.	0	---
tango/hdb-cassandra/es-sr-vac-th/attributerecordfreq	13024	4.65 sec.	0	---
tango/hdb-cassandra/es-id22/attributerecordfreq	12134	4.99 sec.	1	1.00 sec.
tango/hdb-cassandra/es-id22/attributefailurefreq	12131	4.99 sec.	1	1.00 sec.
id22/wcid22a/tg/s12t	12100	5.01 sec.	0	---
id22/wcid22a/tg/s13t	12100	5.01 sec.	0	---
id22/wcid22a/tg/s14t	12100	5.01 sec.	0	---

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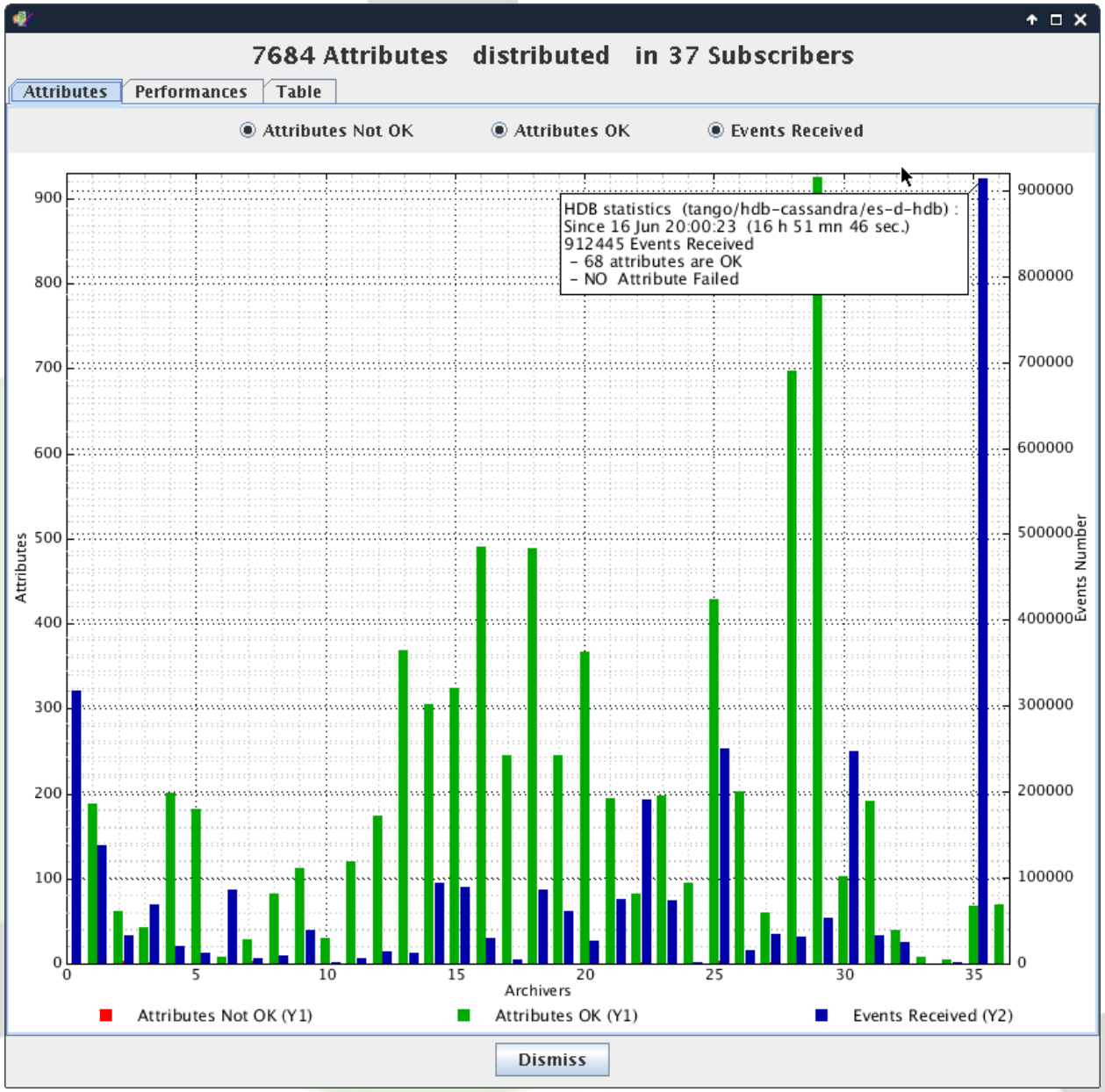
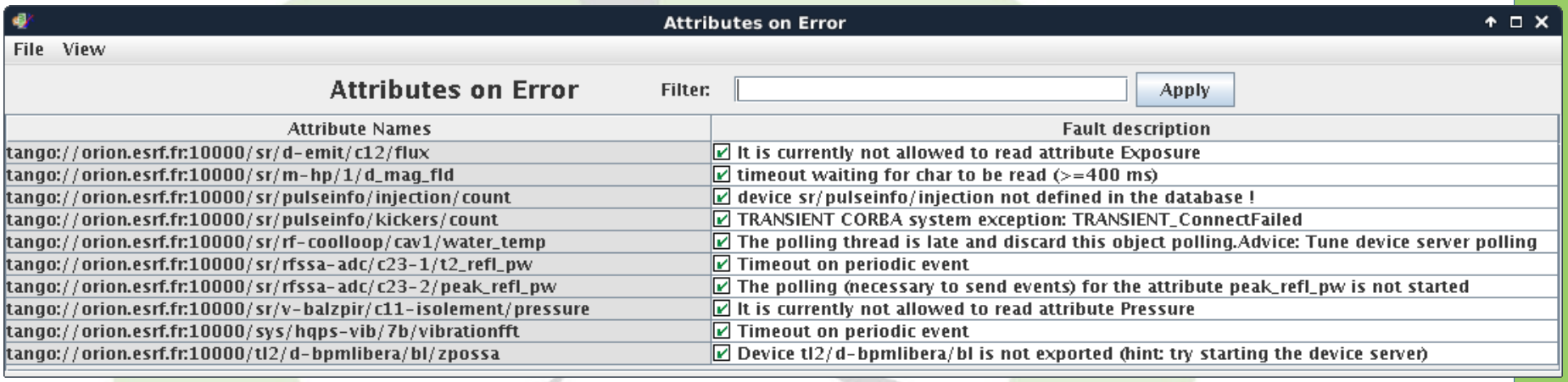
HDB++ Diagnostics GUI



HDB++ Diagnostics GUI



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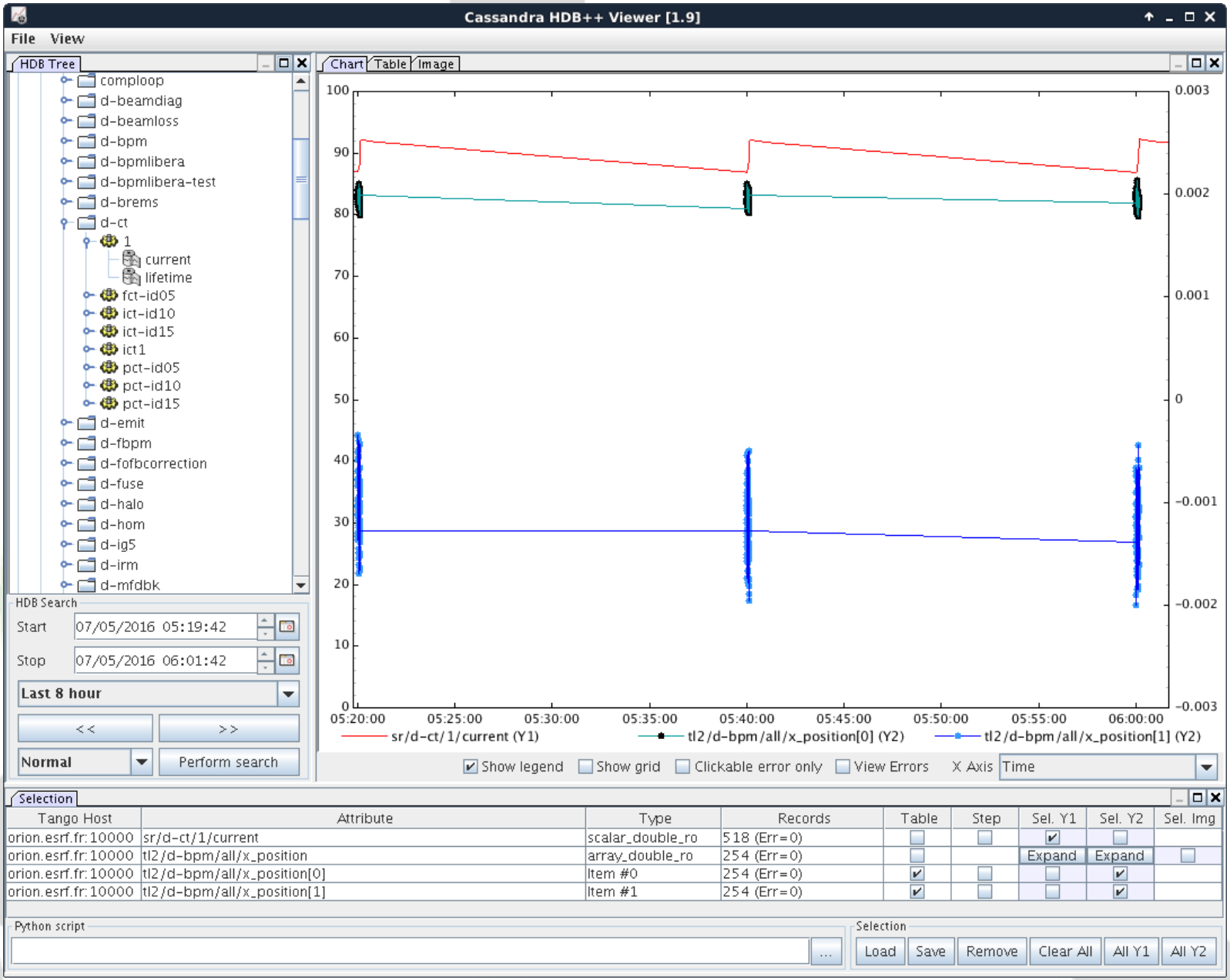
HDB++ Viewer



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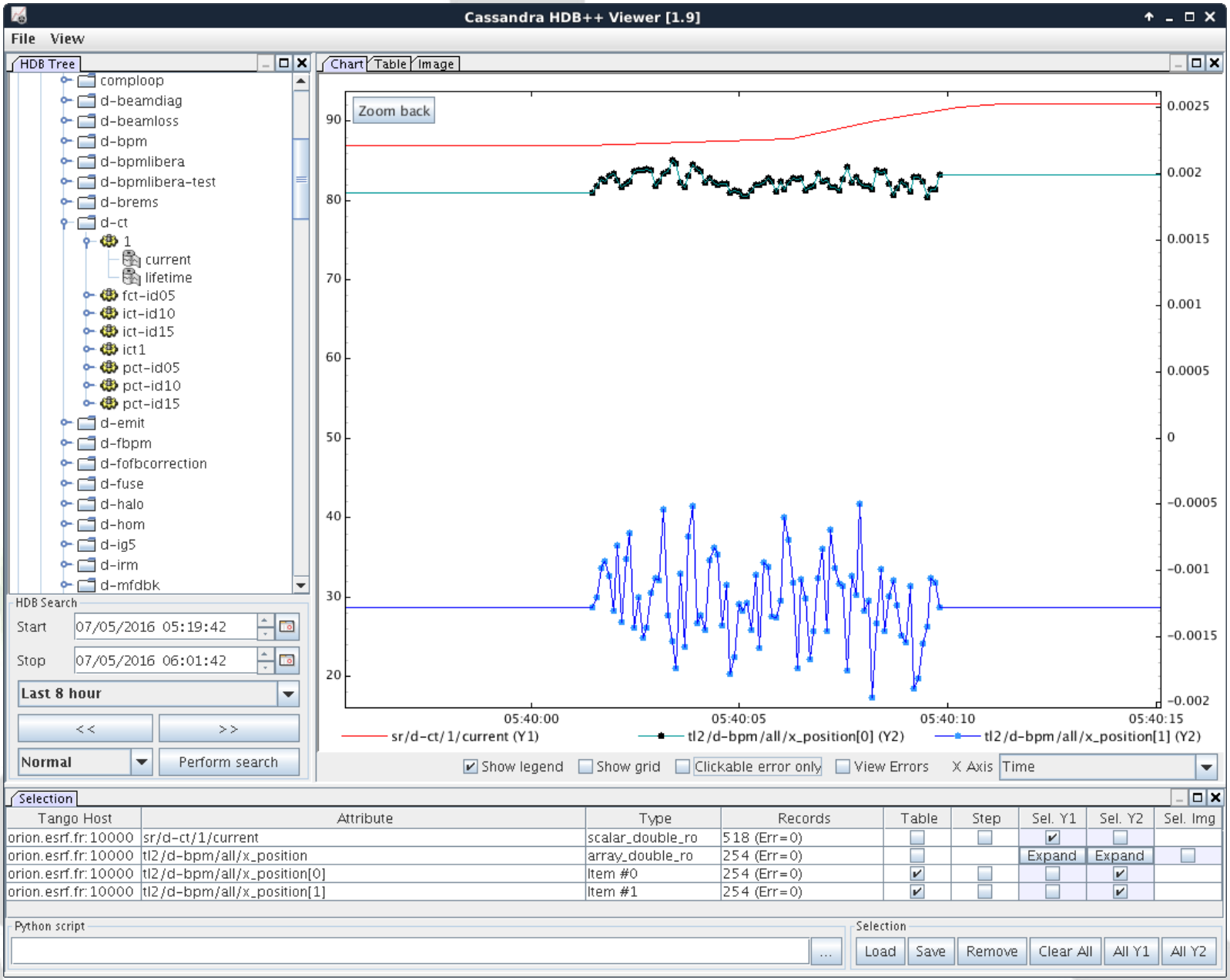
HDB++ Viewer



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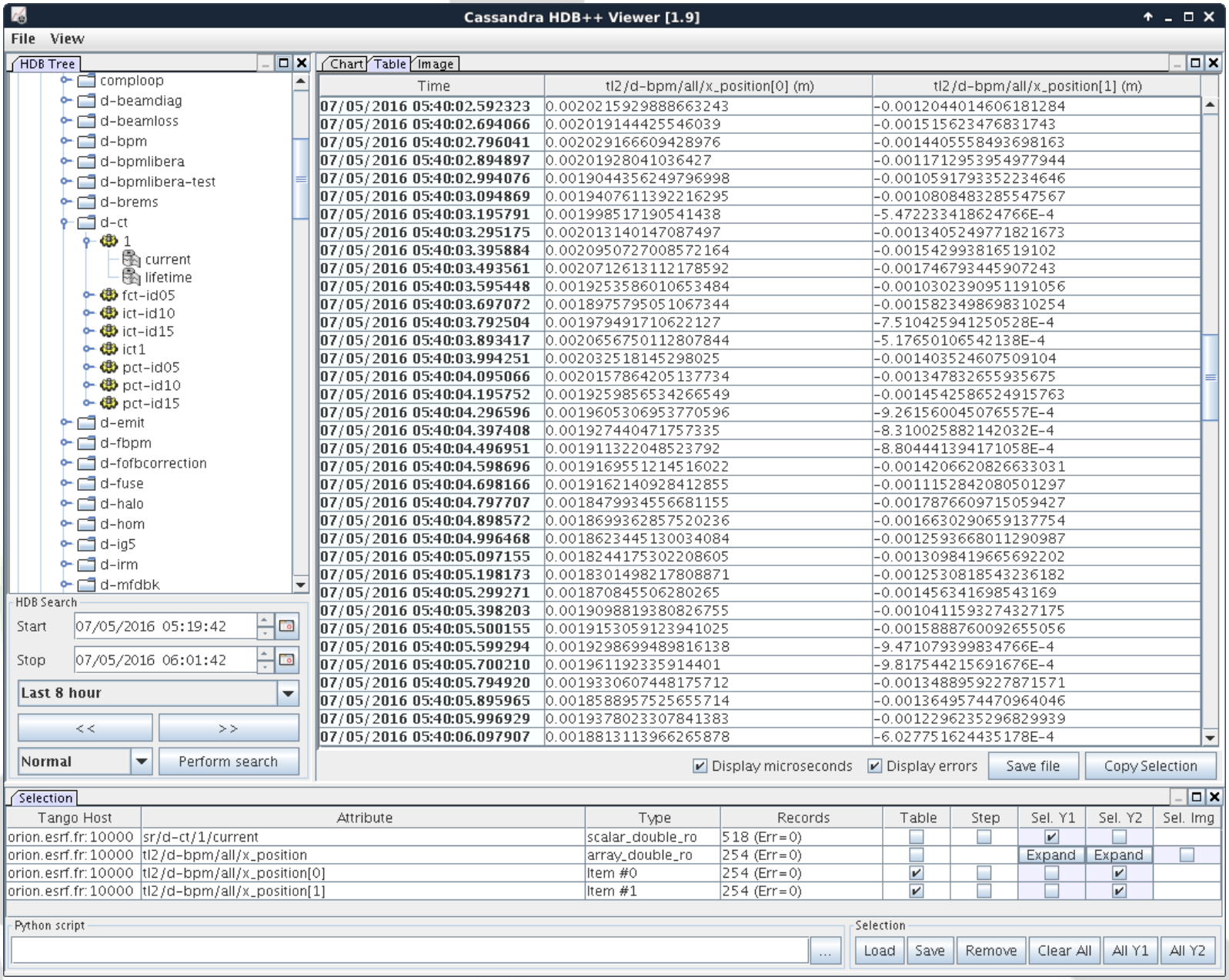
HDB++ Viewer



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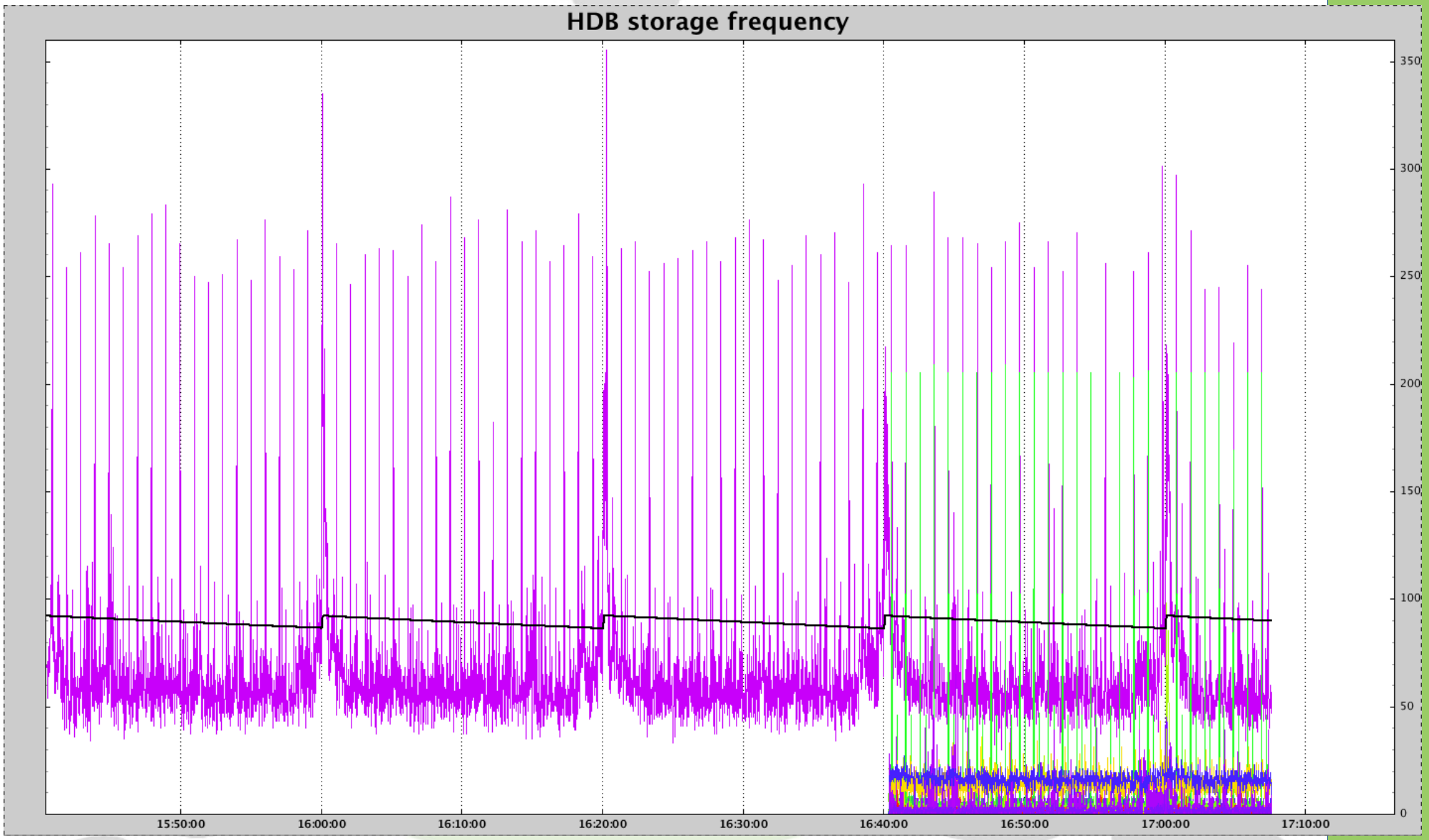
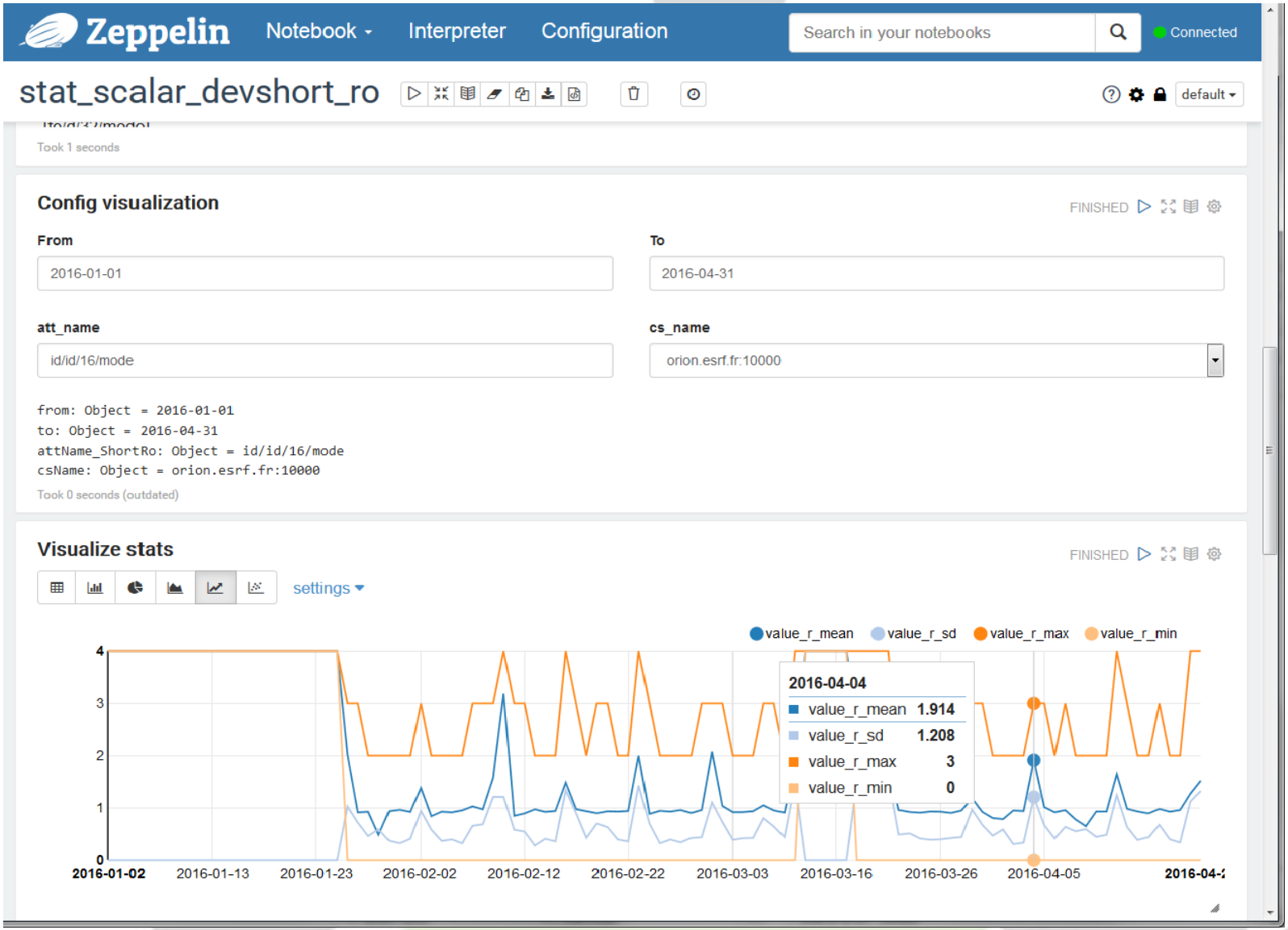
HDB++ Viewer


HDB storage frequency
350
300
250
200
150
100
50
0
15:50:00
16:00:00
16:10:00
16:20:00
16:30:00
16:40:00
16:50:00
17:00:00
17:10:00

HDB++ Java extraction API

```
Hdb hdb = new Hdb();

  try {

   // Connect to HDB ++ using system variables
   hdb.connect();

   // Get list of archived attributes
   String[] attList = hdb.getReader().getAttributeList();

   // Fetch data
   HdbDataSet data = hdb.getReader().getData(attList[0],"09/07/2015
12:00:00","10/07/2015 12:00:00");

   // Display data
   for(int i=0;i<data.size();i++) {
     HdbData d = data.get(i);
     long ms = d.getDataTime()/1000;
     System.out.println("  Rec #"+i+" :"+Hdb.hdbDateFormat.format(ms)+"
"+d.getValueAsDouble());
   }


  } catch (HdbFailed e) {
    System.out.println(e.getMessage());
  }
```

Analytics & Decimation



Samuel working on this subject until September

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HDB++ @ ESRF

- MySQL with HDB++ schema no longer in operation but could be used for tests
- The old ESRF HDB is still the official one due to some servers needing HDB++ auto-configuration
  => HdbConfiguratorServer (java DS) was created
- Some attributes are stored only in HDB++
- HDB++ Cassandra in “operation” since October 2014
- Cassandra disk usage: ~325 GB per node
- Cluster running with new machines since January 2016:
  - 1 with 8 CPU cores - 64 GB RAM – rotational drives (~3.3 TB)
  - 2 with 16 CPU cores - 64 GB RAM – rotational drives (~1.8 TB)
  - 3 with 32 CPU cores - 128 GB RAM – SSD drives (~3 TB)
- Cluster running Cassandra 2.2.4.

HDB++ on FERMI

1 virtual host for HDB++
Ubuntu 10.04.4 LTS x86_64
MySQL backend, HDB++ schema

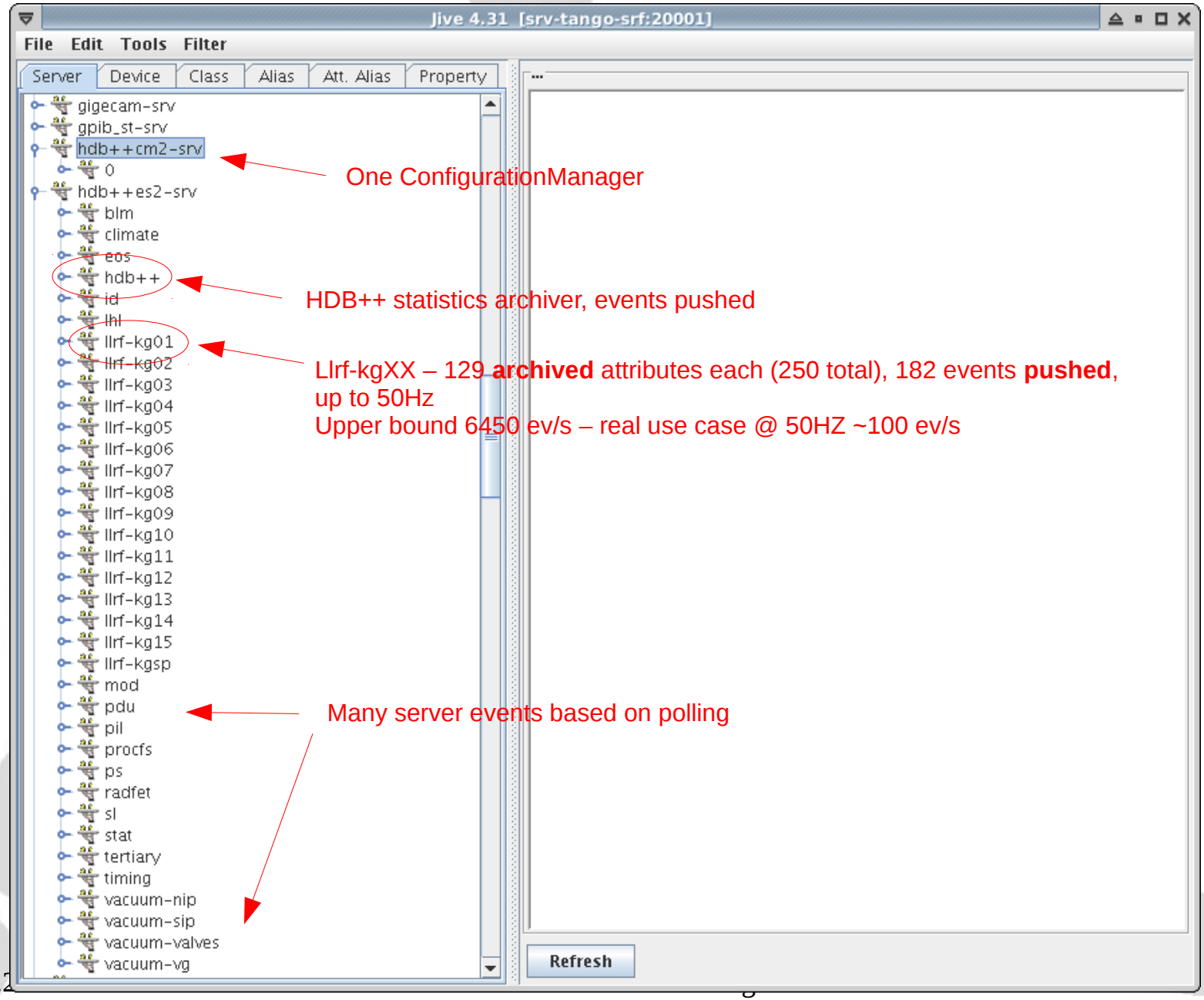
TANGO 9.2.2
36 archiver instances (EventSubscriber)
1 ConfigurationManager
7582 attributes archiving
~7600 events/min mean archiving frequency

HDB++ on Elettra

1 host for HDB++ and HDB
Uduntu 10.04.4 LTS x86_64
MySQL backend, legacy HDB schema

TANGO 8.1.2.c
8 archiver instances (EventSubscriber)
1 ConfigurationManager
1269 attributes archiving
~800 events/min mean archiving frequency

HDB++ on FERMI



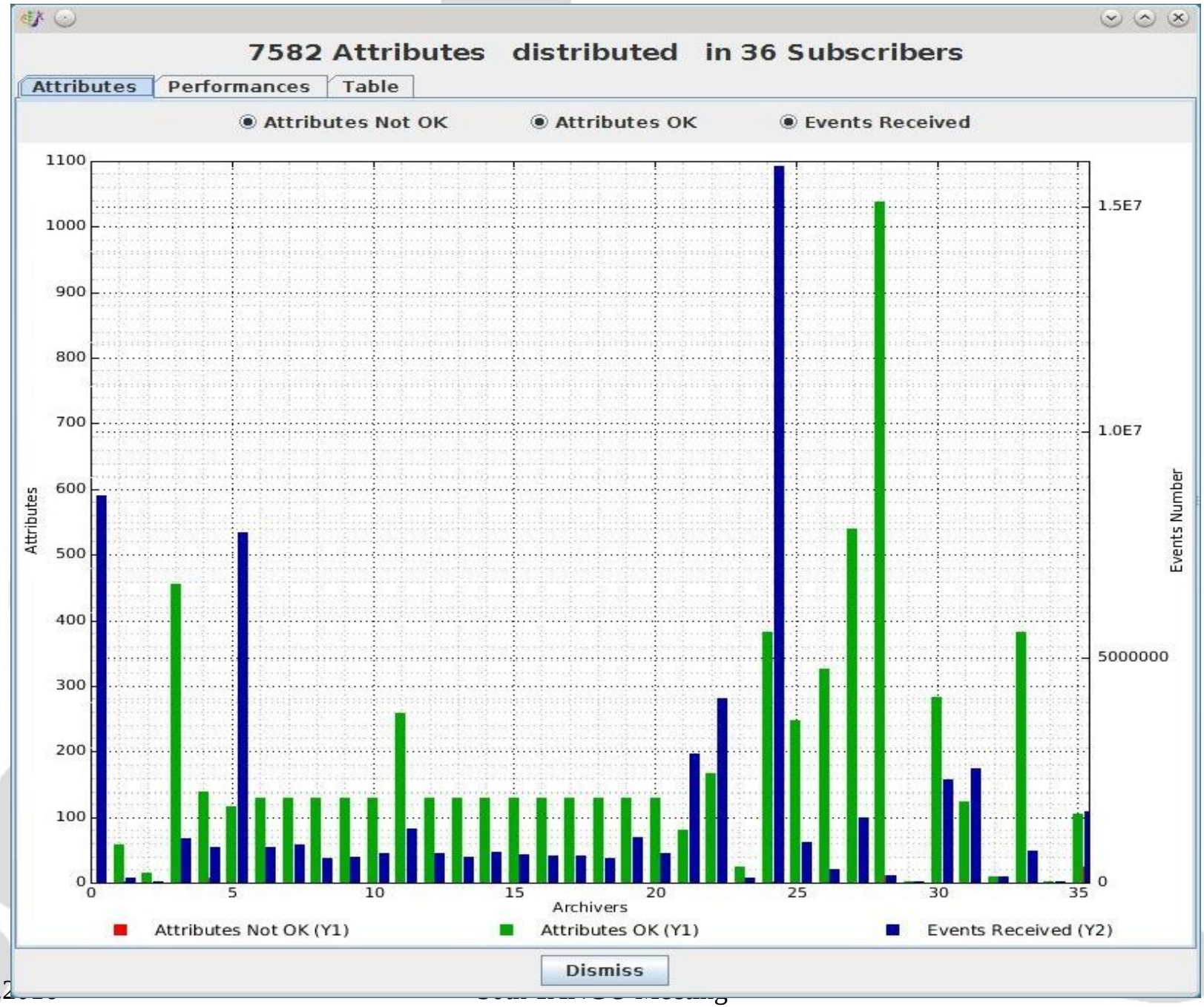
One ConfigurationManager

HDB++ statistics archiver, events pushed

Llrf-kgXX – 129 **archived** attributes each (250 total), 182 events **pushed**, up to 50Hz
Upper bound 6450 ev/s – real use case @ 50HZ ~100 ev/s

Many server events based on polling

HDB++ distribution



HDB++ distribution table

Subscriber	Attributes	Nb Events	Max Store	Max Pen...	Reset Time	Duration
tango://srv-tango-srf.fcs....	995	8584393	4.83 sec.	995	08 Jun 19:18:25	7 days 16 h 32 mn 27 sec.
tango://srv-tango-srf.fcs....	58	91051	1.21 sec.	58	08 Jun 19:21:12	7 days 16 h 29 mn 40 sec.
tango://srv-tango-srf.fcs....	14	17139	2.18 sec.	14	08 Jun 19:21:20	7 days 16 h 29 mn 32 sec.
tango://srv-tango-srf.fcs....	455	957520	5.20 sec.	455	08 Jun 19:57:42	7 days 15 h 53 mn 10 sec.
tango://srv-tango-srf.fcs....	144	786167	4.40 sec.	144	08 Jun 19:25:50	7 days 16 h 25 mn 02 sec.
tango://srv-tango-srf.fcs....	115	7779145	5.30 sec.	150	08 Jun 19:27:26	7 days 16 h 23 mn 26 sec.
tango://srv-tango-srf.fcs....	129	790091	12.68 sec.	129	08 Jun 19:27:36	7 days 16 h 23 mn 16 sec.
tango://srv-tango-srf.fcs....	129	841516	3.94 sec.	129	08 Jun 19:27:47	7 days 16 h 23 mn 05 sec.
tango://srv-tango-srf.fcs....	129	542084	4.98 sec.	129	08 Jun 19:27:57	7 days 16 h 22 mn 55 sec.
tango://srv-tango-srf.fcs....	129	560001	6.57 sec.	129	08 Jun 19:28:08	7 days 16 h 22 mn 44 sec.
tango://srv-tango-srf.fcs....	129	640751	4.82 sec.	129	08 Jun 19:28:18	7 days 16 h 22 mn 34 sec.
tango://srv-tango-srf.fcs....	258	1202865	4.04 sec.	258	08 Jun 19:28:38	7 days 16 h 22 mn 14 sec.
tango://srv-tango-srf.fcs....	129	644561	4.77 sec.	129	08 Jun 19:28:48	7 days 16 h 22 mn 04 sec.
tango://srv-tango-srf.fcs....	129	566933	4.82 sec.	129	08 Jun 19:28:59	7 days 16 h 21 mn 53 sec.
tango://srv-tango-srf.fcs....	129	681722	10.04 sec.	129	08 Jun 19:29:09	7 days 16 h 21 mn 43 sec.
tango://srv-tango-srf.fcs....	129	625934	4.96 sec.	129	08 Jun 19:29:20	7 days 16 h 21 mn 32 sec.
tango://srv-tango-srf.fcs....	129	592567	4.36 sec.	129	08 Jun 19:29:31	7 days 16 h 21 mn 21 sec.
tango://srv-tango-srf.fcs....	129	600339	4.38 sec.	129	08 Jun 19:29:41	7 days 16 h 21 mn 11 sec.
tango://srv-tango-srf.fcs....	129	545756	3.89 sec.	129	08 Jun 19:29:52	7 days 16 h 21 mn 00 sec.
tango://srv-tango-srf.fcs....	129	985070	11.31 sec.	129	08 Jun 19:30:02	7 days 16 h 20 mn 50 sec.
tango://srv-tango-srf.fcs....	129	634609	10.27 sec.	129	08 Jun 19:30:13	7 days 16 h 20 mn 39 sec.
tango://srv-tango-srf.fcs....	80	2838126	5.17 sec.	80	08 Jun 19:30:20	7 days 16 h 20 mn 32 sec.
tango://srv-tango-srf.fcs....	166	4087398	4.40 sec.	166	08 Jun 19:30:34	7 days 16 h 20 mn 18 sec.
tango://srv-tango-srf.fcs....	24	103119	3.93 sec.	24	08 Jun 19:30:38	7 days 16 h 20 mn 14 sec.
tango://srv-tango-srf.fcs....	383	15923830	9.04 sec.	383	08 Jun 19:31:09	7 days 16 h 19 mn 43 sec.
tango://srv-tango-srf.fcs....	246	901390	5.41 sec.	246	08 Jun 19:31:28	7 days 16 h 19 mn 24 sec.
tango://srv-tango-srf.fcs....	328	294534	196.54 ms.	328	08 Jun 19:31:55	7 days 16 h 18 mn 57 sec.
tango://srv-tango-srf.fcs....	539	1431816	4.36 sec.	535	08 Jun 19:22:08	7 days 16 h 28 mn 44 sec.
tango://srv-tango-srf.fcs....	1048	239622	79.35 ms.	1048	16 Jun 10:36:24	1 h 14 mn 28 sec.
tango://srv-tango-srf.fcs....	1	1	633.96 us	1	08 Jun 19:32:02	7 days 16 h 18 mn 50 sec.
tango://srv-tango-srf.fcs....	282	2283112	4.90 sec.	282	08 Jun 19:32:25	7 days 16 h 18 mn 27 sec.
tango://srv-tango-srf.fcs....	122	2530483	5.31 sec.	122	08 Jun 19:32:36	7 days 16 h 18 mn 16 sec.
tango://srv-tango-srf.fcs....	8	110056	3.57 sec.	8	08 Jun 19:32:38	7 days 16 h 18 mn 14 sec.
tango://srv-tango-srf.fcs....	381	700100	4.80 sec.	381	08 Jun 19:33:10	7 days 16 h 17 mn 42 sec.
tango://srv-tango-srf.fcs....	1	186	1240.97 us	1	08 Jun 19:33:12	7 days 16 h 17 mn 40 sec.
tango://srv-tango-srf.fcs....	128	1584411	5.12 sec.	128	08 Jun 19:33:25	7 days 16 h 17 mn 27 sec.

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HDB++ diagnostics

HdbDiagnostics - 1.0 - Thu May 12 16:12:18 CEST 2016

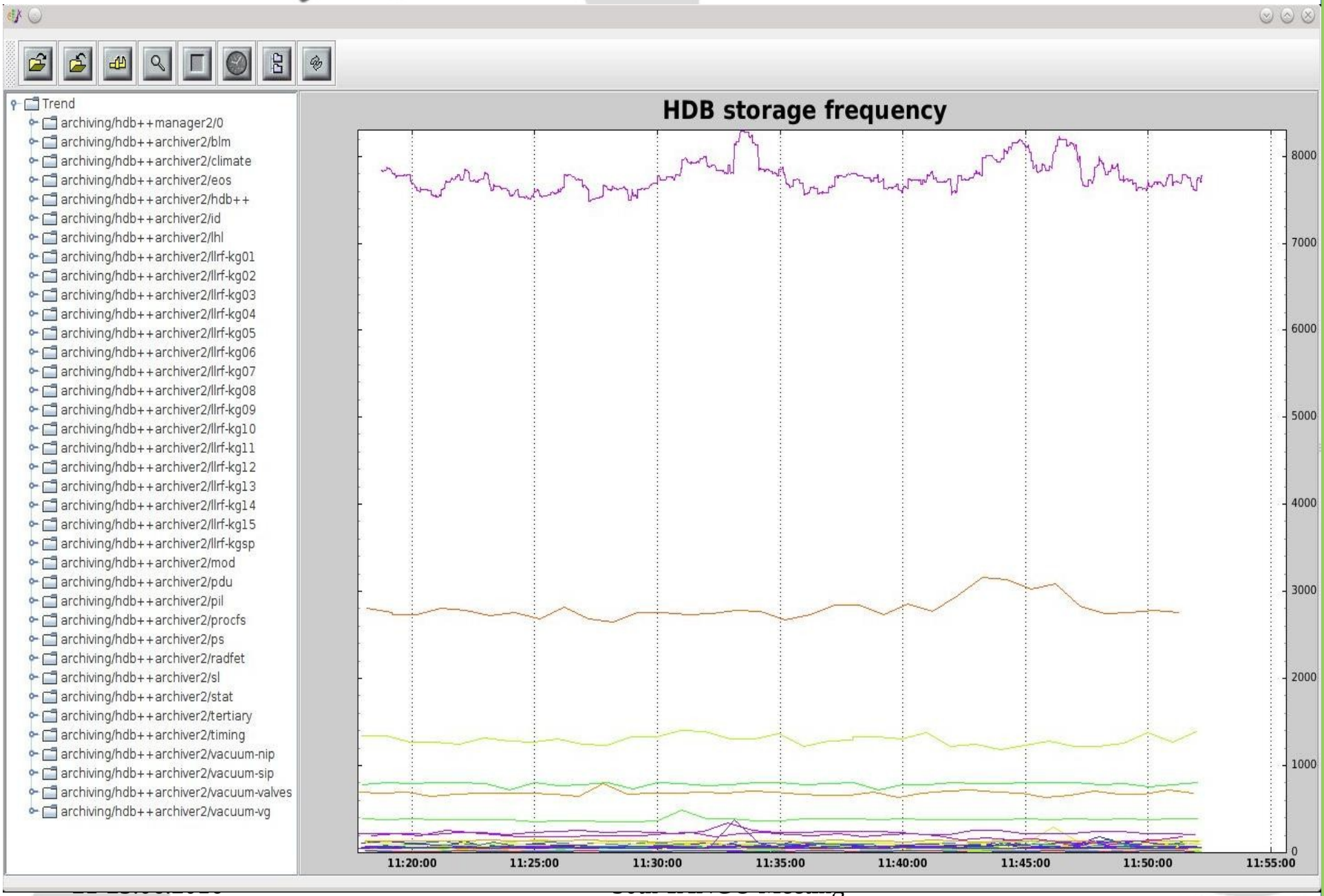
File View help

HDB++ Diagnostics

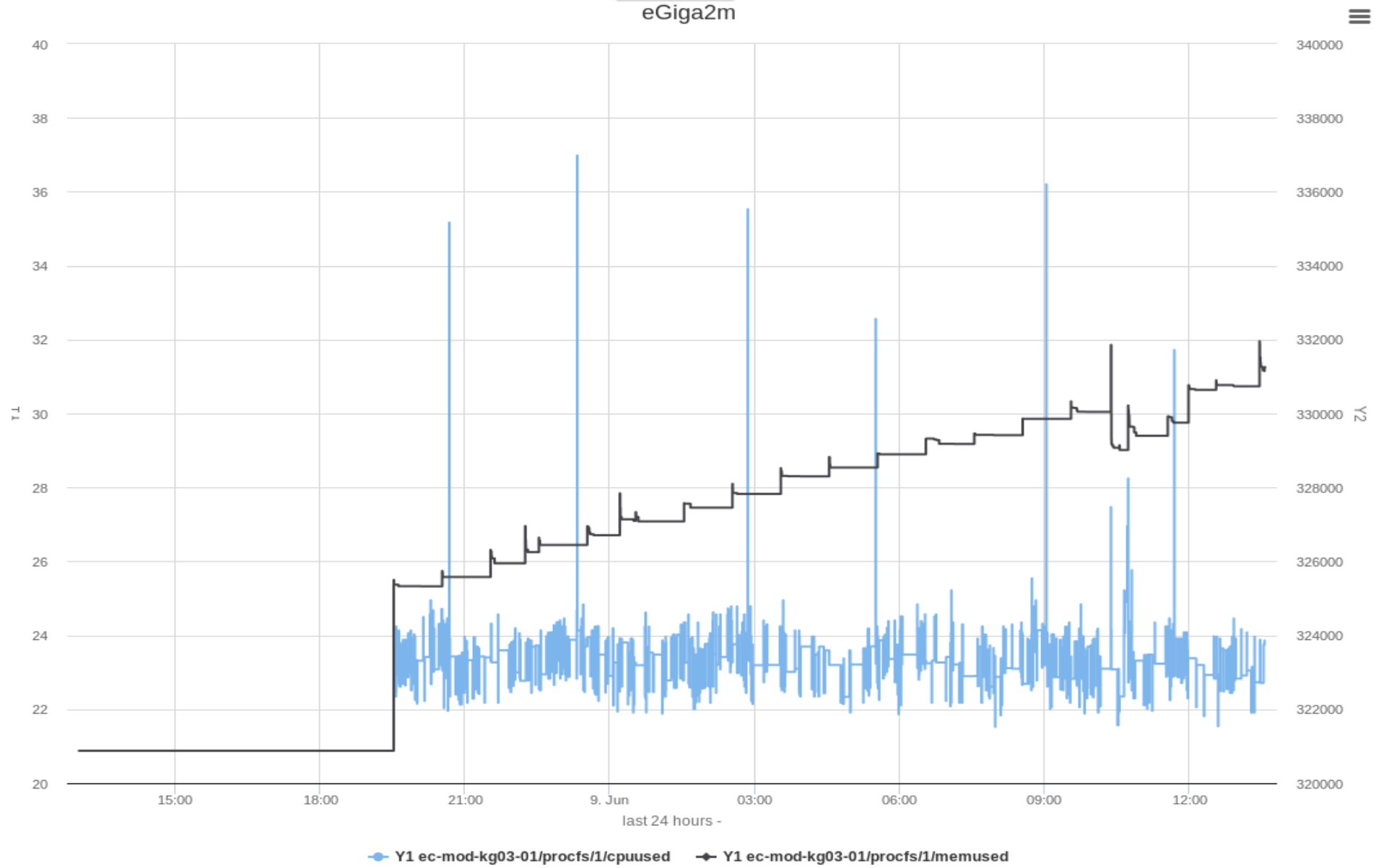
	Faulty	Started	Paused	Stopp...	Pendi...	ev/1 m...	Fail./1 ...
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/blm	0	995	0	0	0	743.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/climate	1	58	0	0	0	8.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/eos	0	14	0	0	0	1.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/hdb++	0	455	0	0	0	82.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/id	6	144	0	0	0	0.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/lhl	0	115	0	0	0	662.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq01	0	129	0	0	0	56.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq02	0	129	0	0	0	68.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq03	0	129	0	0	0	46.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq04	0	129	0	0	0	46.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq05	0	129	0	0	0	54.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq06	0	258	0	0	0	109.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq07	0	129	0	0	0	47.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq08	0	129	0	0	0	53.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq09	0	129	0	0	0	57.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq10	0	129	0	0	0	53.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq11	0	129	0	0	0	44.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq12	0	129	0	0	0	94.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq13	0	129	0	0	0	46.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq14	0	129	0	0	0	66.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kq15	0	129	0	0	0	48.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/llrf-kqsp	0	80	0	0	0	16.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/mod	0	166	0	0	0	379.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/pdu	0	24	0	0	0	12.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/pil	1	383	0	0	0	1303.00	1.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/procfs	0	246	0	0	0	103.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/ps	2	328	0	0	0	10.00	1.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/radfet	0	456	0	83	0	135.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/sl	11	962	0	86	0	2755.00	43.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/stat	0	1	0	0	0	0.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/tertiary	0	282	0	0	0	161.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/timing	0	122	0	0	0	241.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/vacuum-nip	0	8	0	0	0	16.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/vacuum-sip	0	381	0	0	0	51.00	1.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/vacuum-valves	0	1	0	0	0	0.00	0.00
tango://srv-tango-srf.fcs.elettra.trieste.it:20000/archiving/hdb++archiver2/vacuum-vg	20	128	0	0	0	48.00	78.00

	Faulty	Started	Paused	Stopped	Pending	ev/1 mn 00 sec.	Fail./1 mn 00 sec.
E.S. Manager	41	7413	0	169	0	7613.00	124.00

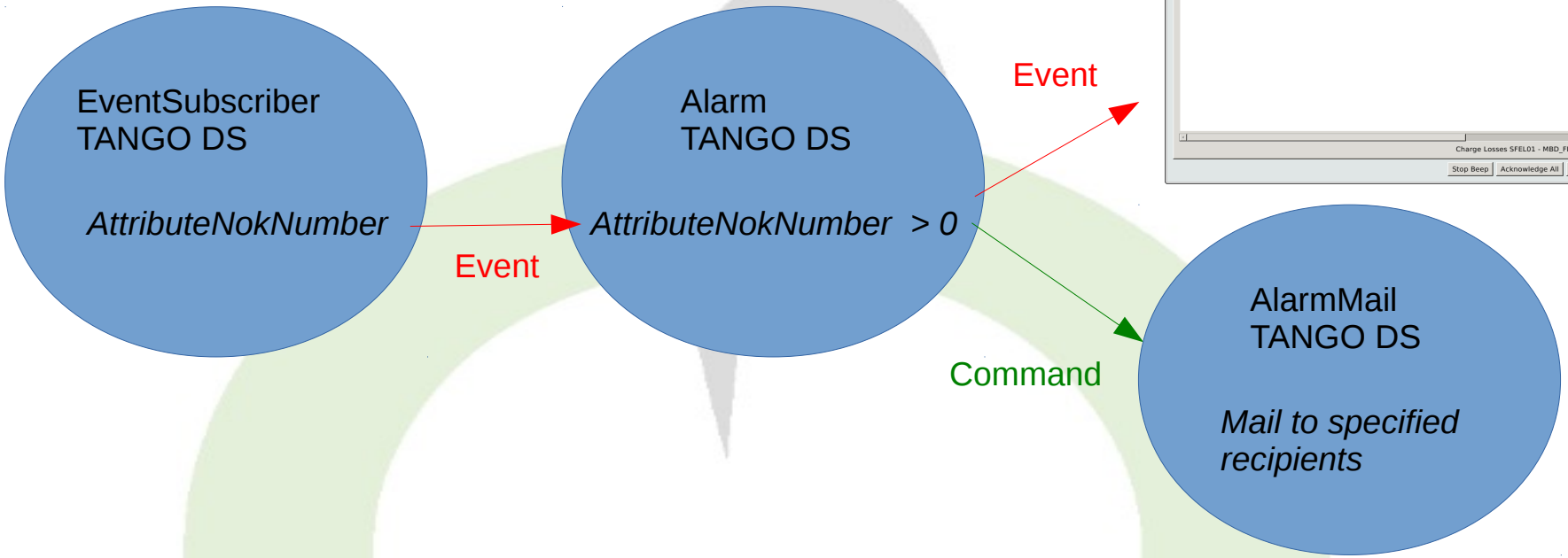
Storage rate [ev/m]

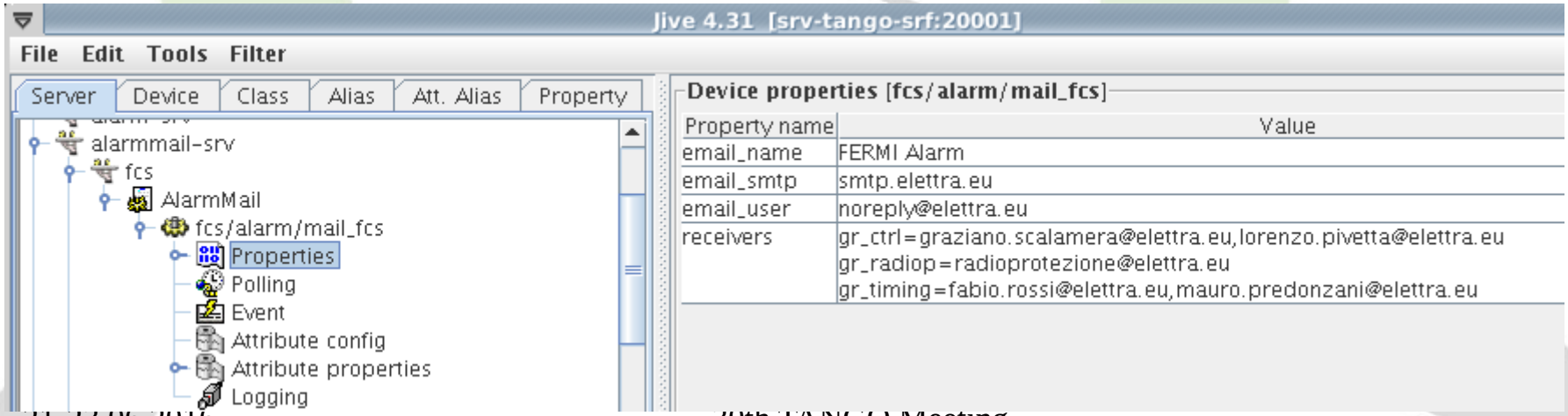


eGiga2m



Alarm handling and notification





http://www.tango-controls.org

Alarm handling and notification

From: "FERMI Alarm"<noreply@elettra.eu>
To: graziano.scalamera@elettra.eu,lorenzo.pivetta@elettra.eu
Subject: ALARMED archiving/hdb++archiver2/id/attributenoknumber - Errore archiviazione di almeno un attributo
Date: Thu, 5 May 2016 07:58:12 +0000 (GMT)

```
NEW ALARM DETECTED:
Name:    archiving/hdb++archiver2/id/attributenoknumber
Message: Errore archiviazione di almeno un attributo
Values:  archiving/hdb++archiver2/id/attributenoknumber[0]=5,
Formula: (archiving/hdb++archiver2/id/attributenoknumber > 0)

HDB++ Errors:

tango://srv-tango-srf.fcs.elettra.trieste.it:20000/fel02/insertion_device/id_fel02.03/gap
Timeout on periodic event

tango://srv-tango-srf.fcs.elettra.trieste.it:20000/fel02/insertion_device/id_fel02.03/phase
Timeout on periodic event

tango://srv-tango-srf.fcs.elettra.trieste.it:20000/fel02/insertion_device/id_fel02.03/tapering
Timeout on periodic event

tango://srv-tango-srf.fcs.elettra.trieste.it:20000/fel02/insertion_device/id_fel02.03/tiltmeterlowerval
Timeout on periodic event

tango://srv-tango-srf.fcs.elettra.trieste.it:20000/fel02/insertion_device/id_fel02.03/tiltmeterupperval
Timeout on periodic event
```

ALARM

NORMAL

From: "FERMI Alarm"<noreply@elettra.eu>
To: graziano.scalamera@elettra.eu,lorenzo.pivetta@elettra.eu
Subject: RESTORED archiving/hdb++archiver2/id/attributenoknumber - Errore archiviazione di almeno un attributo
Date: Thu, 5 May 2016 08:04:34 +0000 (GMT)

```
RESTORED TO NORMAL CONDITION:
Name:    archiving/hdb++archiver2/id/attributenoknumber
Message: Errore archiviazione di almeno un attributo
Values:  archiving/hdb++archiver2/id/attributenoknumber[0]=0,
Formula: (archiving/hdb++archiver2/id/attributenoknumber > 0)
```

HDB++ meeting

Last HDB++ meeting at Elettra, 10-11.05.2016

4 institutes represented: Alba, Elettra, ESRF, Soleil + SKA South Africa via teleconf

ALBA tests with HDB++: worried about:

- Larger attribute tables size (→ larger disk usage)
  - → Diagnostic timestamps moved on a separate table and made optional
  - → Error description moved on a separate table
- Rules for partitioning still to be defined
- Not compatible with Mambo
- HDB++ dedicated archiving approach, not suitable for dynamic data

HDB++ meeting

Run/Shutdown management

Need to support several operating modes, or strategies, in the archiving engine on a per-attribute basis.

→ Modify AttributeList device property to support a name=value approach for the Context

*tango://srv-tango-srf.fcs.elettra.trieste.it:20000/eos/climate/18b20_eos.01/state; *
context=RUN|SHUTDOWN
*tango://srv-tango-srf.fcs.elettra.trieste.it:20000/eos/climate/18b20_eos.01/temperature; *
context=RUN|SHUTDOWN

The labels for the strategy, implemented as enum, are defined in a free property, and/or in the class property and/or in the device property, with increasing priority. The defaults values, as well as the default context, are pre-defined but can be modified by the user. The default values are:

ALWAYS	0
RUN	1
SHUTDOWN	2
SERVICE	3

A Context r/w memorized attribute, set by higher layer logic, tells the archiver the required Context transition

HDB++ meeting

Different polling periods for cache and event subsystems

The polling period affects several aspects of TANGO device server behaviour; relevant to clients and archiving system are:

- the rate at which the cache is updated
- the time at which change/archive/periodic event[s] are checked and possibly sent

Sometimes a *fast* rate for updating the cache is needed (short polling period) but on the opposite checking and sending change/archive/periodic events at that rate is unconvenient; event thresholds may help but not always solve.

One idea is to add *scale factors*, with default value equal 1, to define change/archive/periodic event check time with respect to the attribute polling period on a per-attribute basis; in pseudocode:

*change_event_check_period = attribute_polling_period * change_event_polling_factor*
*archive_event_check_period = attribute_polling_period * archive_event_polling_factor*
*periodic_event_check_period = attribute_polling_period * periodic_event_polling_factor*

HDB++ meeting

Temporary storage of historical data

To support temporary storage of historical data one new column has to be added to the att_conf table:

```
CREATE TABLE IF NOT EXISTS att_conf(
att_conf_id INT UNSIGNED NOT NULL AUTO_INCREMENT PRIMARY KEY,
att_name VARCHAR(255) UNIQUE NOT NULL,
att_conf_data_type_id INT UNSIGNED NOT NULL,
ttl INT UNSIGNED NULL DEFAULT 0,
facility VARCHAR(255) NOT NULL DEFAULT '',
domain VARCHAR(255) NOT NULL DEFAULT '',
family VARCHAR(255) NOT NULL DEFAULT '',
member VARCHAR(255) NOT NULL DEFAULT '',
name VARCHAR(255) NOT NULL DEFAULT '',
INDEX(att_conf_data_type_id)
) ENGINE=MyISAM COMMENT='Attribute Configuration Table';
```

The ttl column defines the time-to-live in hours on a per-attribute basis. Furtermore, to support configuration of this new field from the Configuration Manager interface should be updated:

```
int configure_Attr(
  string name,
  int type,             /* DEV_DOUBLE, DEV_STRING,... */
  int format,           /* SCALAR, SPECTRUM,... */
  int write_type,       /* READ, READ_WRITE,... */
  unsigned int ttl      /* hours, 0 = forever */
);
```

Deleting expired data is delegated to the SQL backend.