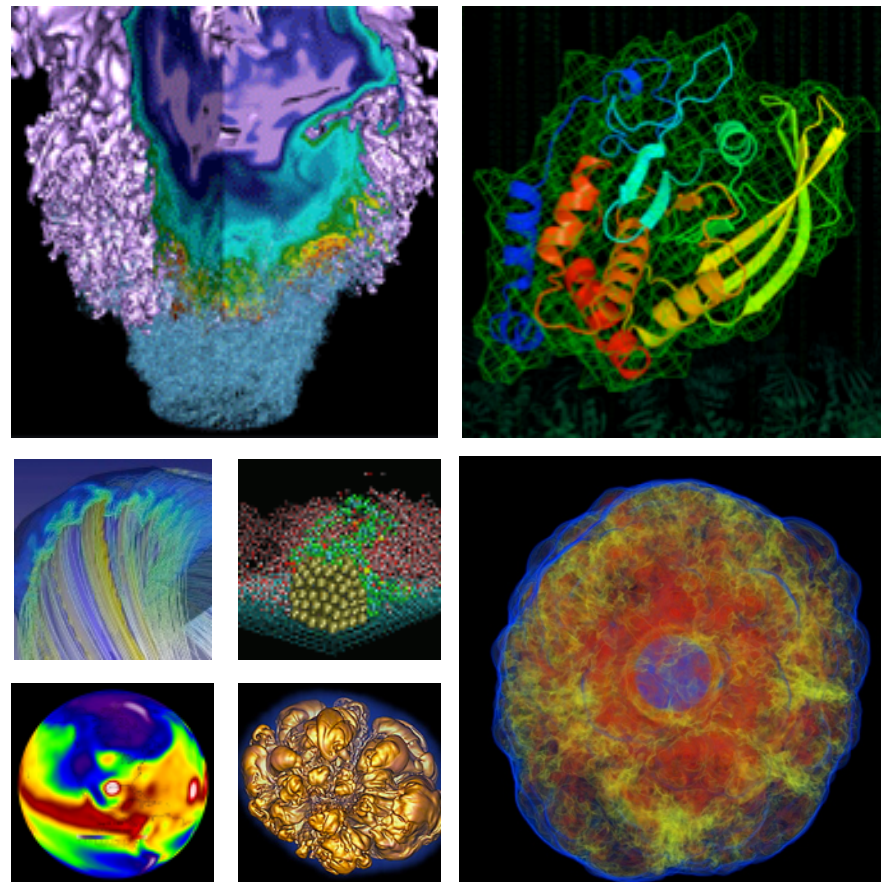


# NERSC Data Collect

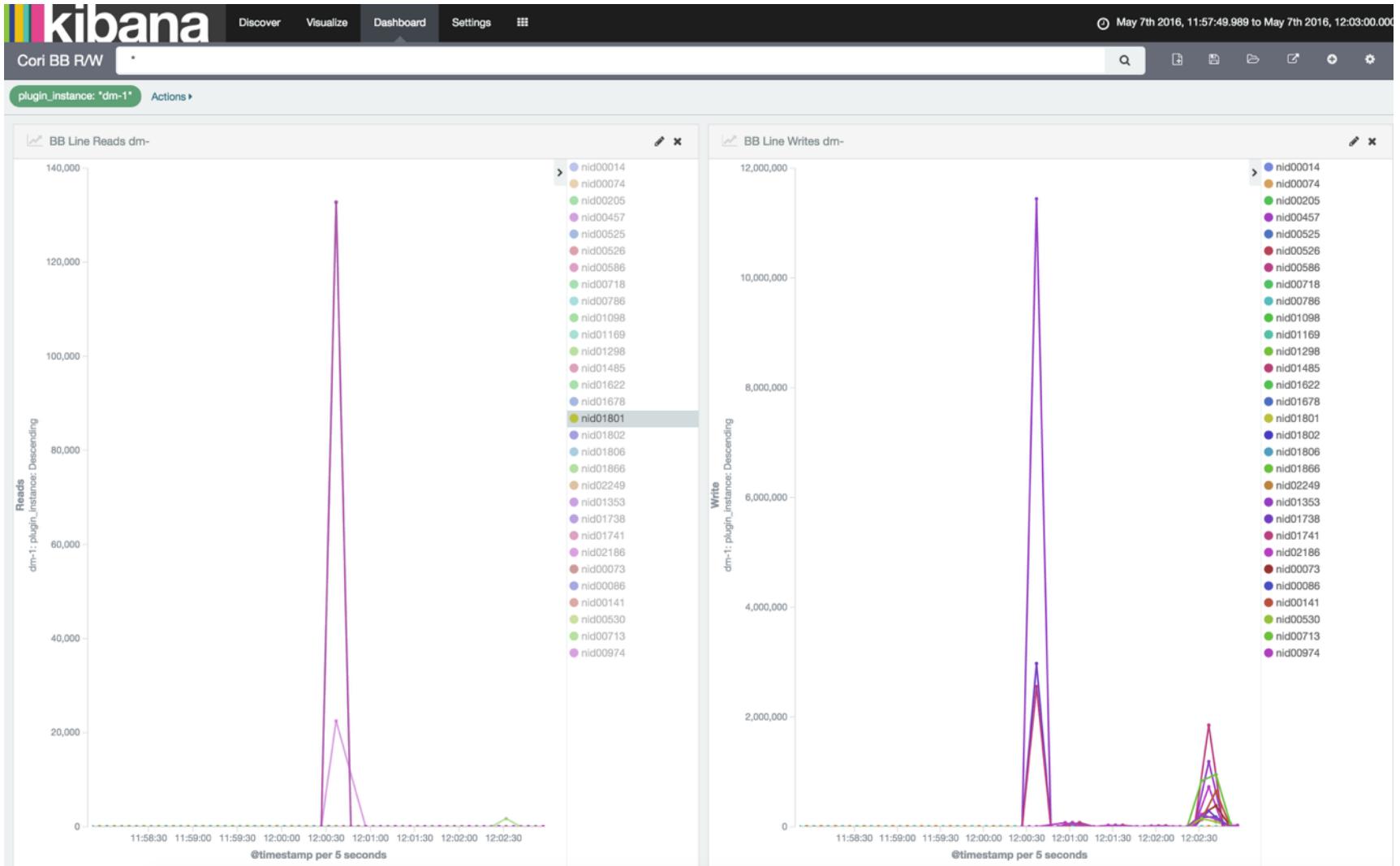


**Cary Whitney, Tom Davis &  
Elizabeth Bautista**  
**NERSC/Lawrence Berkeley Lab**

Cray User Group 2016

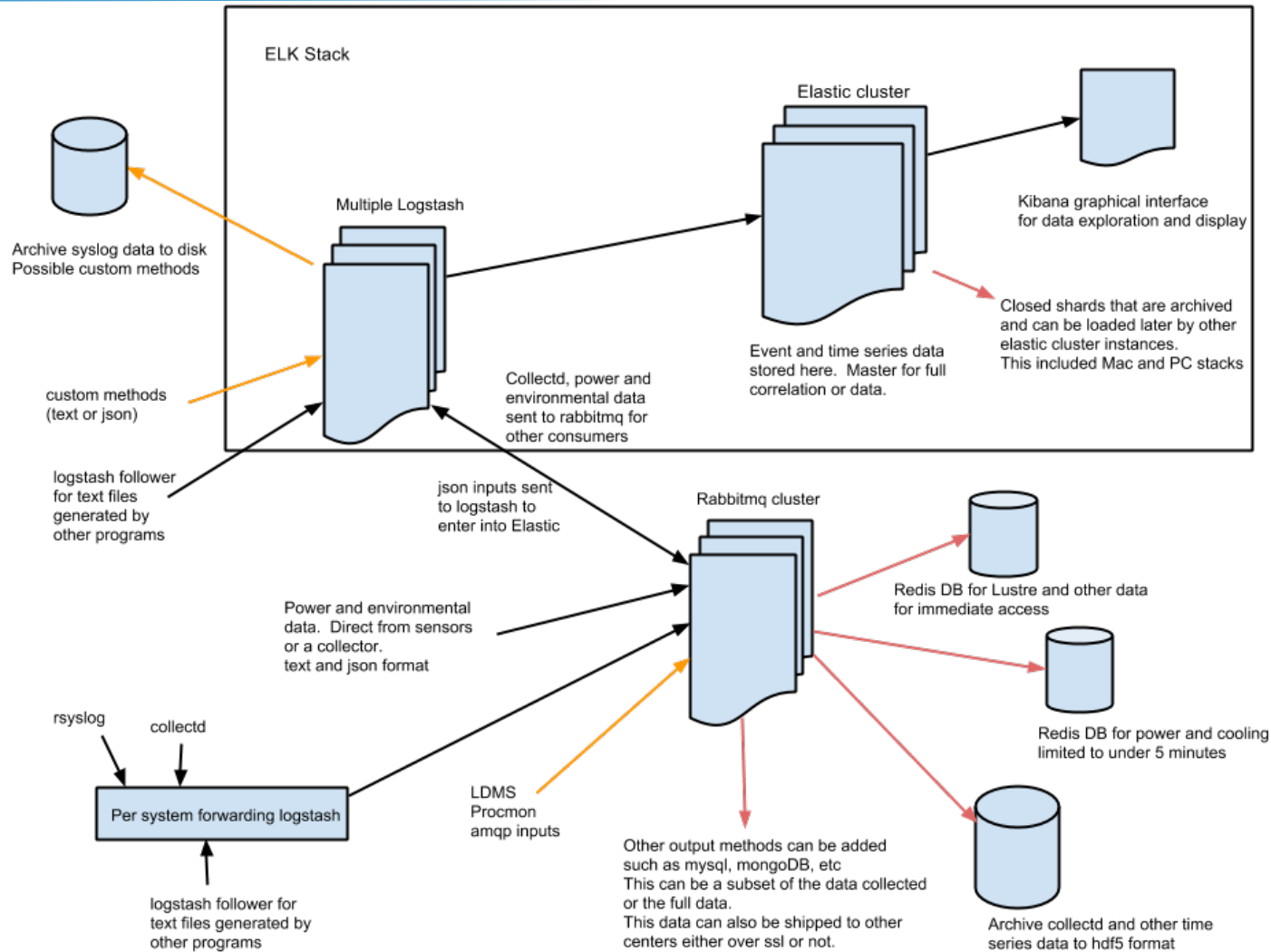
May 10, 2016

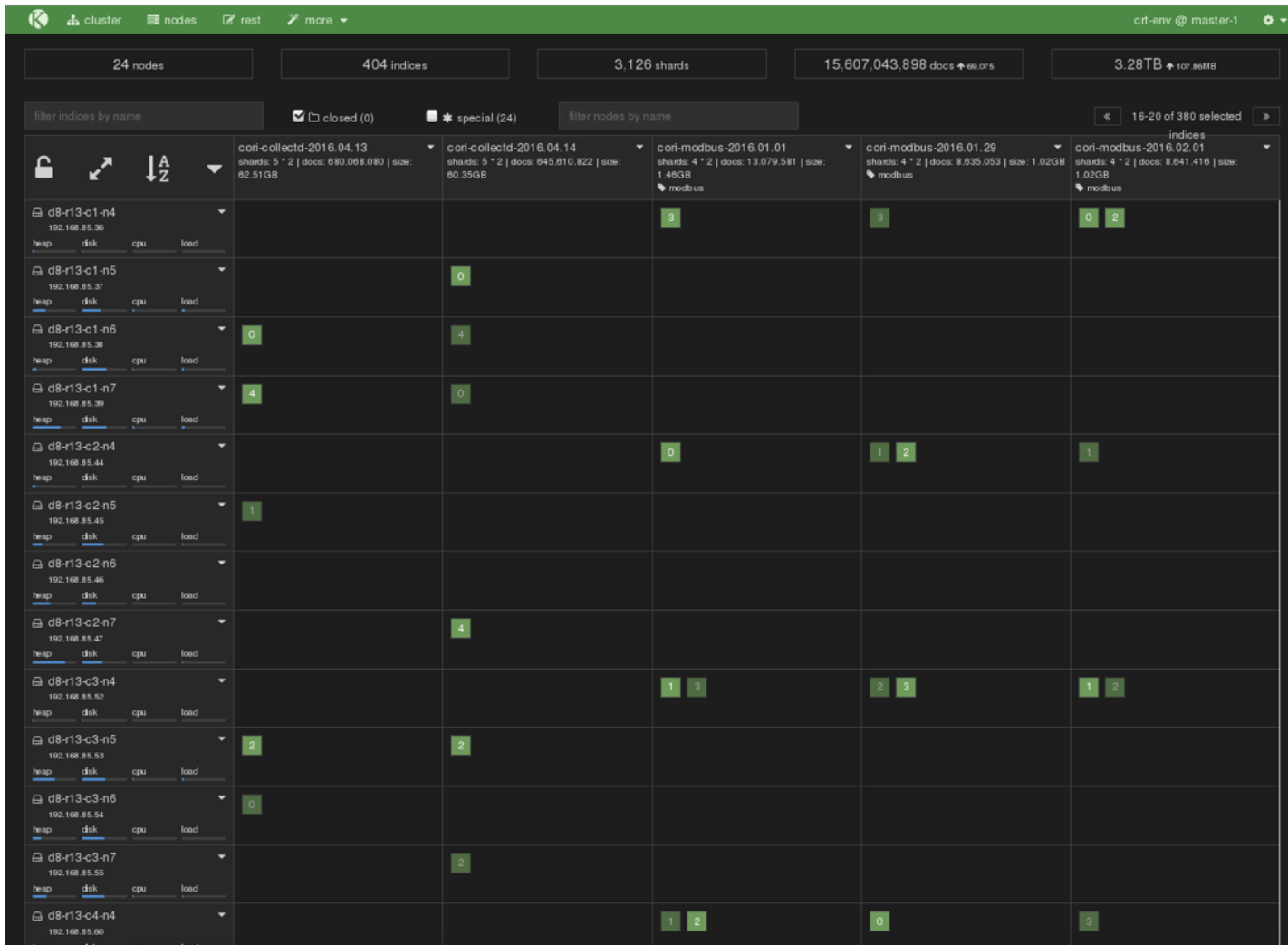
# First Look



- Meh
- Just a glorified Garglia
- This is just like the old method
  - Ask a question or two that we want answers.
  - Collect the data to answer those questions. Very directed.

# Diagram





# Freeboard



- **df hanging. Nodes hanging. Communication issue and filesystem is unmounting or failing to mount. Node rebooting. An event happened, what is the fallout?**
- **Data needs: High resolution, real time and mostly short term retention. Cross system data desired.**

- **What happening now? What happen during my job run? Why did my job run slow? Why did it my job stop producing output? df is hanging. ...**
- **Data Needs: High resolution to see conflicts and mostly medium term storage, real time.**



- Asking questions like, can I find a better way to schedule the job workload. (Taking all the job log files and running new algorithms against them.) How much energy did the job consume while running? Is running at a slower clock speed more energy efficient than at a faster clock speed?
- Data Needs: High resolution and long retention in the months range. Also a wider variety of data needed.

- They are asking about what is the computing trend for the last system or three? Are jobs getting larger in nodes, memory, communications, all and to what extent? Are key system components scaling or improving with time?
- Data Needs: Some high resolution but years for retention. Some cross system data but growing as systems rely upon each other.

# Overall Data Goal

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- Collect all data needed
- Save full resolution forever
- Provide intelligent routing and use of data
- Support multiple users, groups, use cases
- Adaptable to data changes
- Adaptable to software and organizational changes

- **Move from:**
  - **Problem define -> Gather data**
    - **Prewriting the story**
  - **Gather data -> Solve problems**
    - **Help data tell its story**

# Back to Meh, Why? Solve?



- **One. We need to work together about getting vendors to give us, their users, access to the data. This has to be in a usable format. Meaning an API or method that can allow the data to be accessed in a high frequency manner, aka 1-5 seconds or less. (Exporting from a DB is not this type of solution.)**

# Progress on 1

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- Talking with DDN, first suggestion came during HEPiX at BNL.
- Cray/Sonexion data gather, CUG has proved to be a good working site.
- DDN has a collectd module for GPFS, checking on availability.
- CSCS Lugano helping write gmond collection module for GPFS.
- LDMS gathers data within a Cray system from Sandia.
- High Energy Physics community and labs starting to band together.

- **Two. A common data definition so we all know what is meant by clock cycle. Load average. Percent vs actual number. Is a filesystem 90% full bad? May still have 100's TB's left? What is meant by slow? How can we define some of these things as we go? We do not want this to limit progress.**

# Goal 2 progress

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- **Metrics 2.0 data definition.**
- **IN2P3 lab initiating data enrichment.**



- **Three. Visualizations, dashboards, machine learning, deep analytics. These are probably the toughest and the most desired.**
- **If we as a community build viz with a common API and definition, we would not be dependent upon a single data collect or a single solution. I could use what you build and you could use things that I build.**

- **Monitoring mail list**

Send email to: [LISTSERV@IN2P3.FR](mailto:LISTSERV@IN2P3.FR)

Body of message: sub hepix-sig-monitoring Your Name

- **Portal (To be setup.)**

- **Projects coordination**

- **Wishlist's**

- **Best practices**

- **Partners**

- **Will need some, this started 3 weeks ago.**

- [clwhitney@lbl.gov](mailto:clwhitney@lbl.gov)