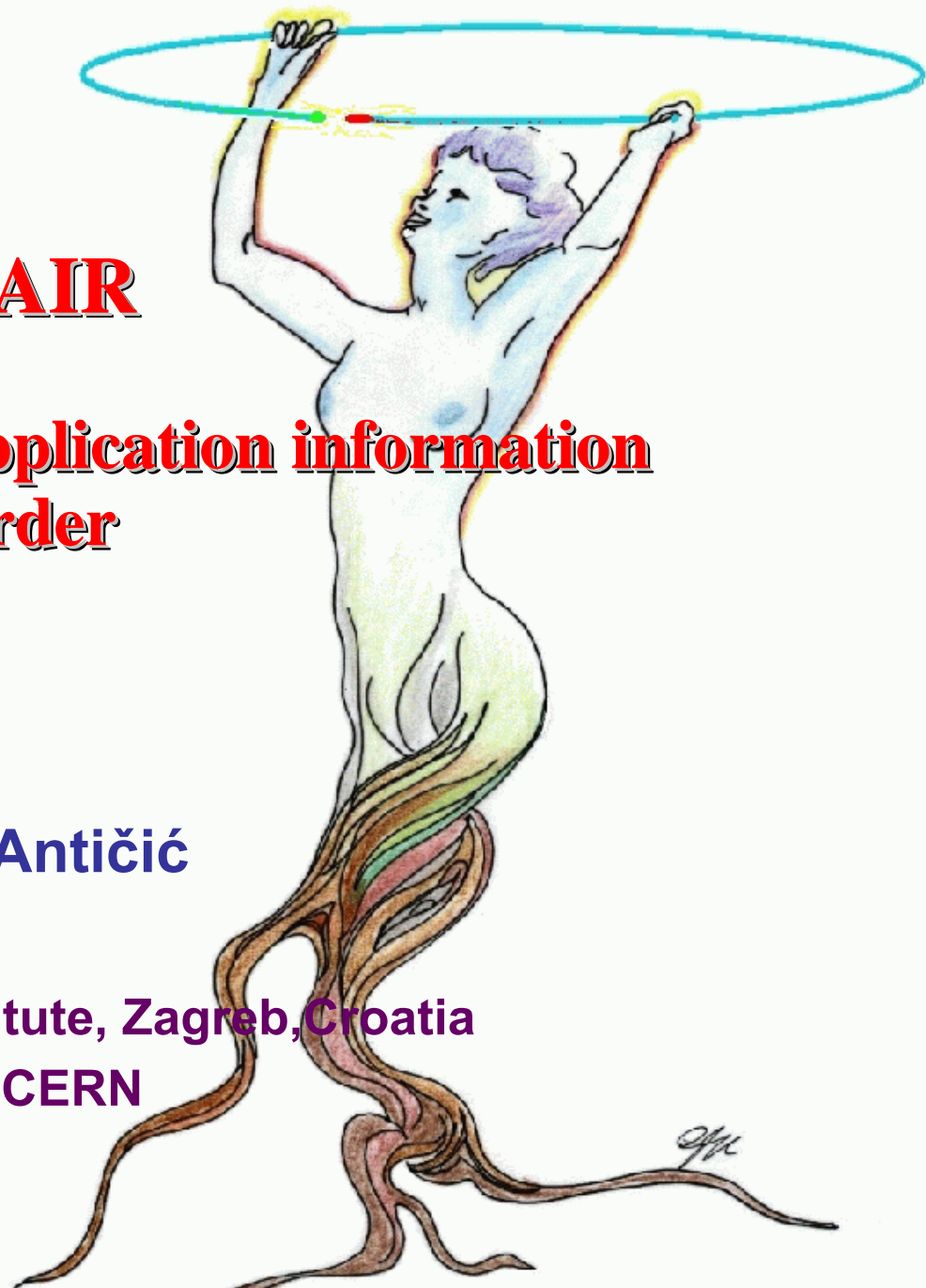# AFFAIR

a flexible fabric and application information recorder

Tome Antičić

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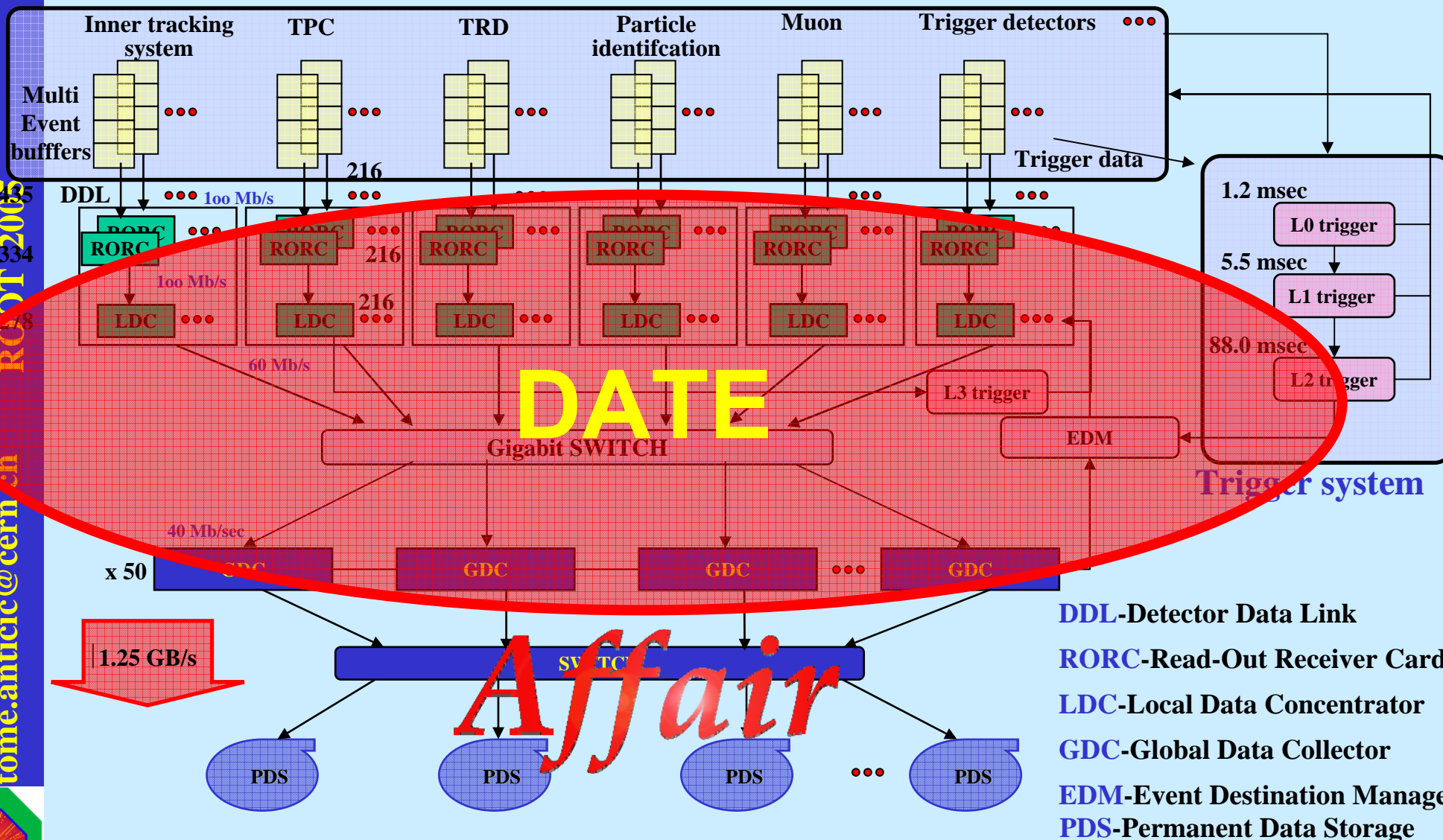**ALICE,CERN**

Why/What is AFFAIR?

DDL-Detector Data Link

RORC-Read-Out Receiver Card

LDC-Local Data Concentrator

GDC-Global Data Collector

EDM-Event Destination Manager
PDS-Permanent Data Storage

But, Affair is also able to run in stand alone mode (no DATE)

Requirements

- **Monitor system performance (bandwidth, CPU, disk usage, …)**
- **Monitor DATE performance (LDC/GDC/DDL bandwidth, events recorded,…)**

- **Need down to 10 (or even less) sec updates**

- **Should be as "invisible" as possible**
  - **No growing (or better yet none) logfiles on monitored nodes**
  - **Not cpu intensive**
  - **Not network intensive**

- **Web access to processed, real time data in the form of graphs, histograms,..**

- **Scalable – should work equally well for 10 as for 1000 computers**

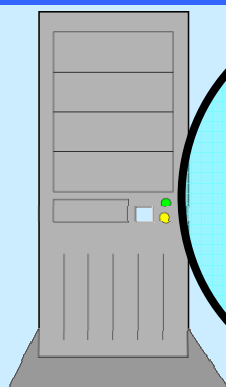- **All monitored data should be permanently stored for offline analysis**

Has to work, with no lost data, crashes, etc, no maintainance
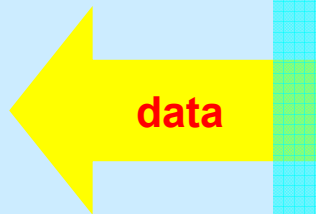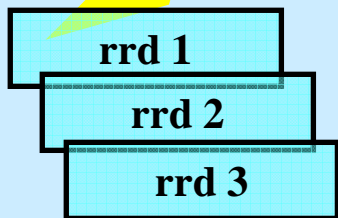**So some choices made, wich may not be optimal, but gets the job done**

ALICE

AFFAIR structure

AFFAIR Monitor

data

System collector

/proc

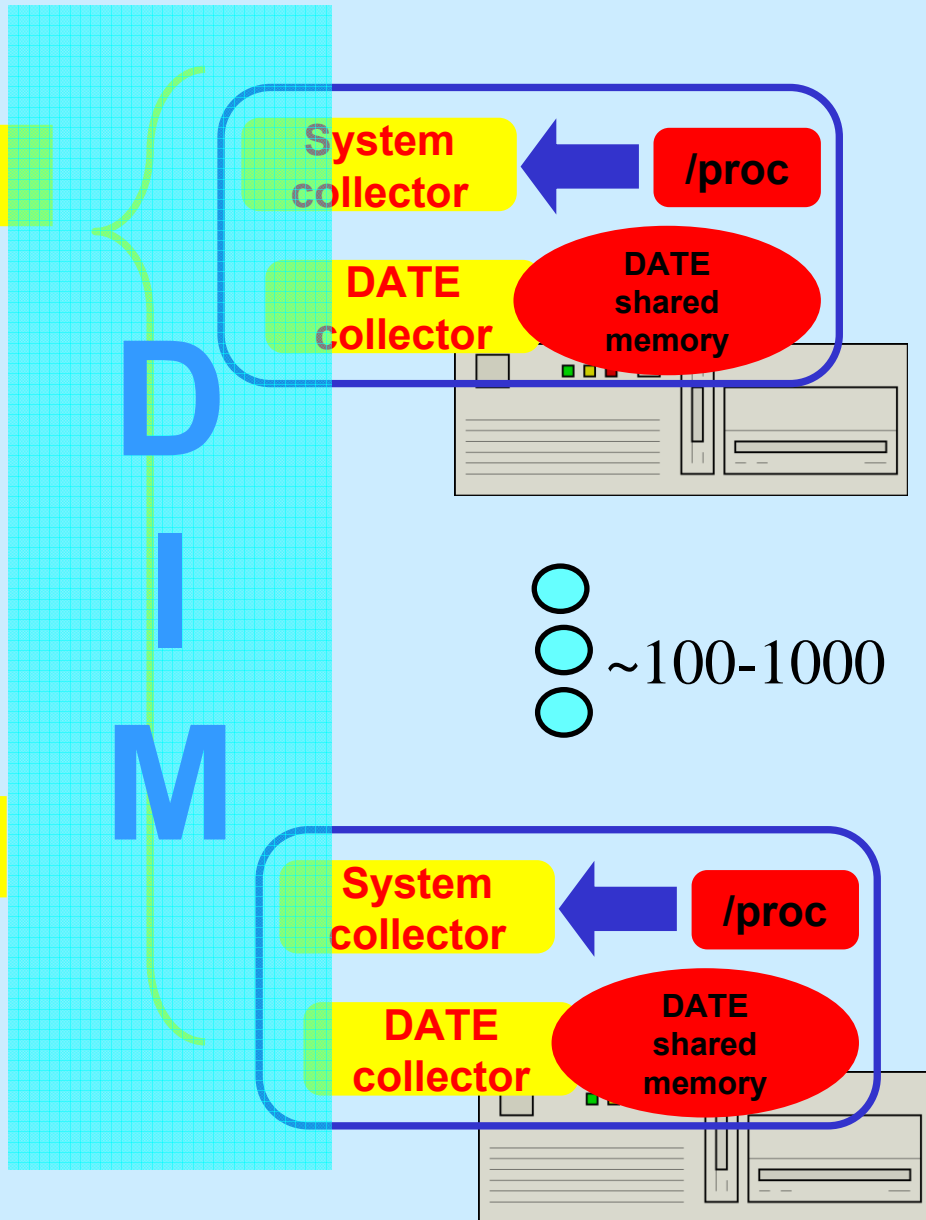**DATE collector**

DATE shared memory

▪**Round robin excellent way to write/read file fast and easy, with no performance loss**

▪**Works with fixed amount of data (fixed time depth), so unchanging size**

rrd 1

rrd 2

rrd 3

D I M

~100-1000

Root program that reads files and creates plots

System collector

/proc

DATE collector

DATE shared memory

Web/apache/php

ALICE

AFFAIR – fabric monitoring   ROOT 2005
tome.anticic@cern.ch
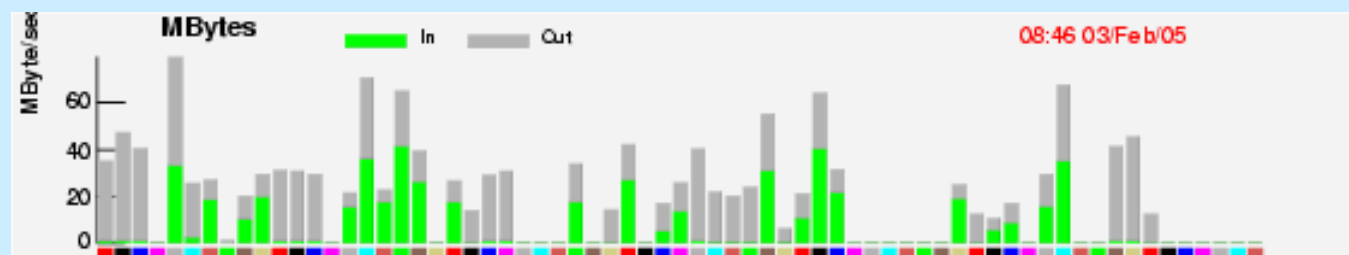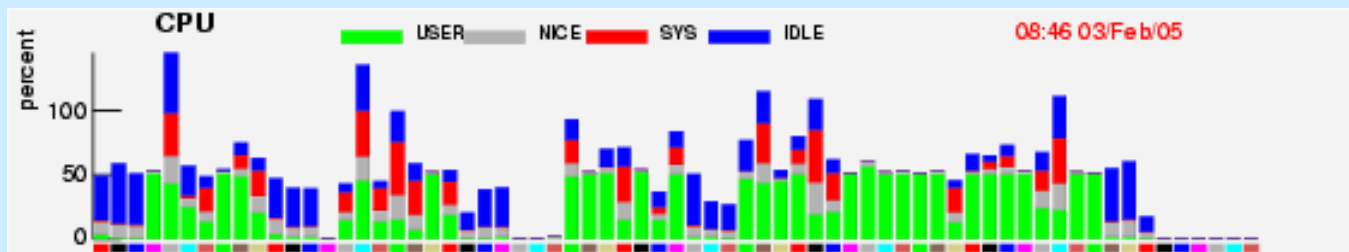
Time dependent plots

Rates (kB/sec) for last 24 hours for some GDC nodes
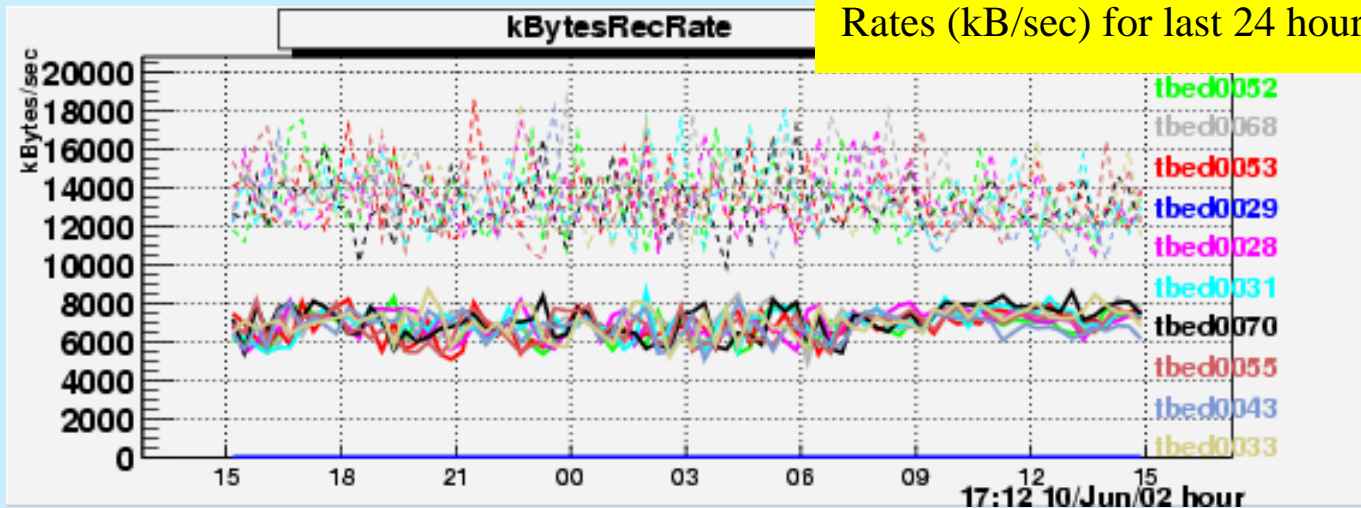
- Full lines average
- Dashed lines max values
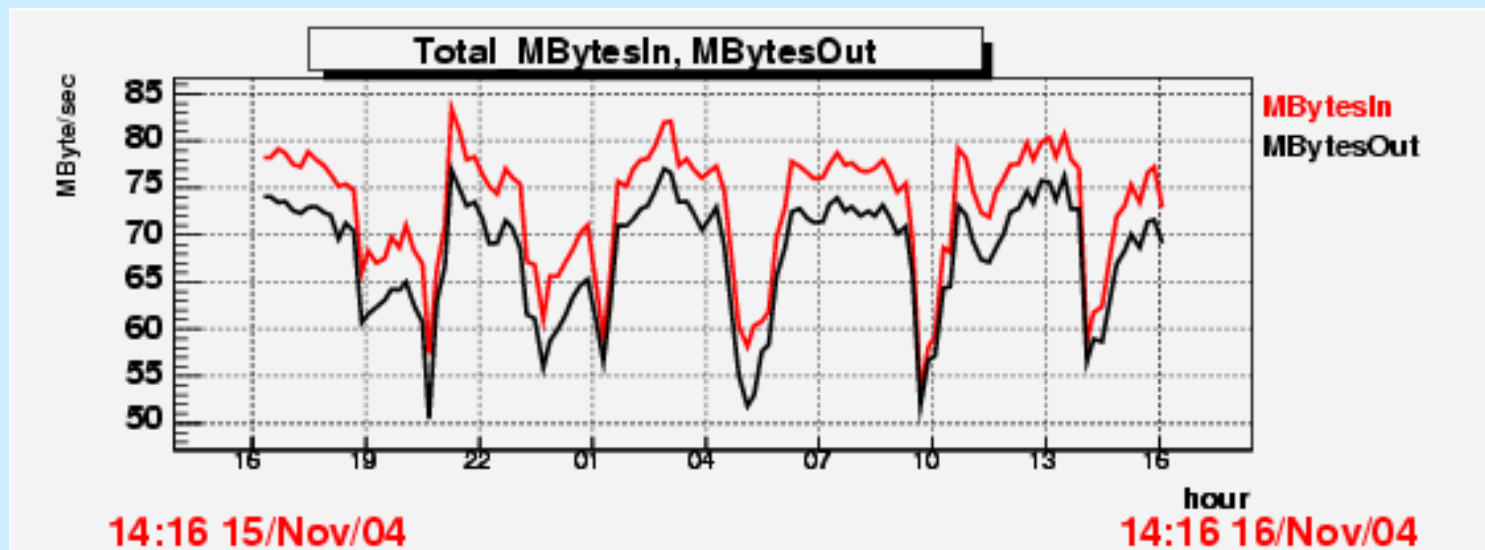
Rates (kB/sec) for last 7 days for some GDC nodes
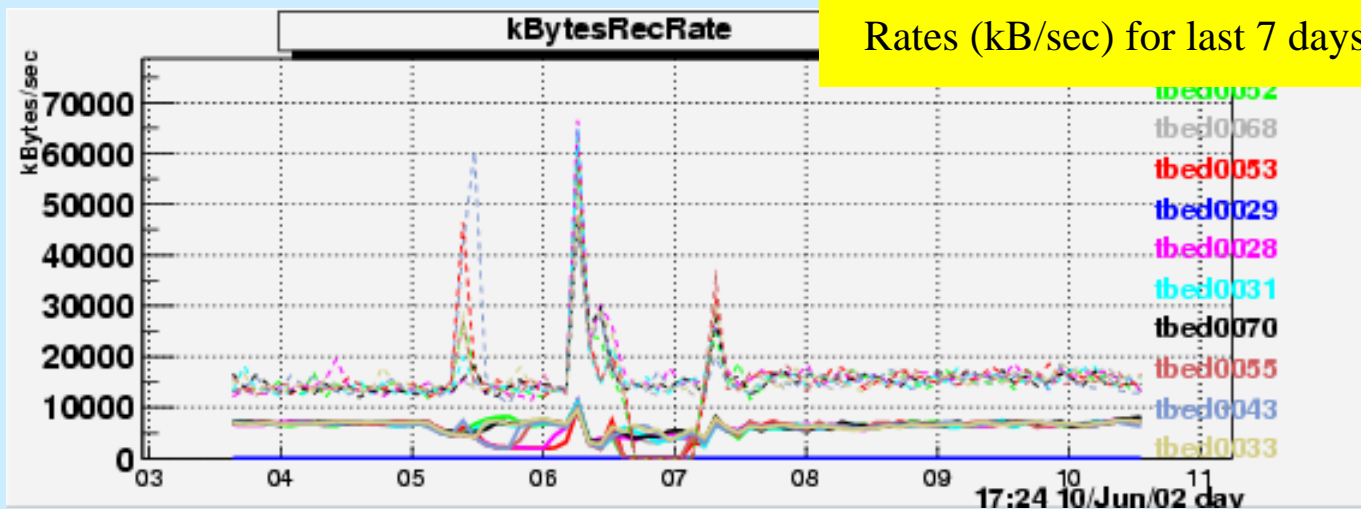
AFFAIR – fabric monitoring ROOT 2005
tome.anticic@cern.ch
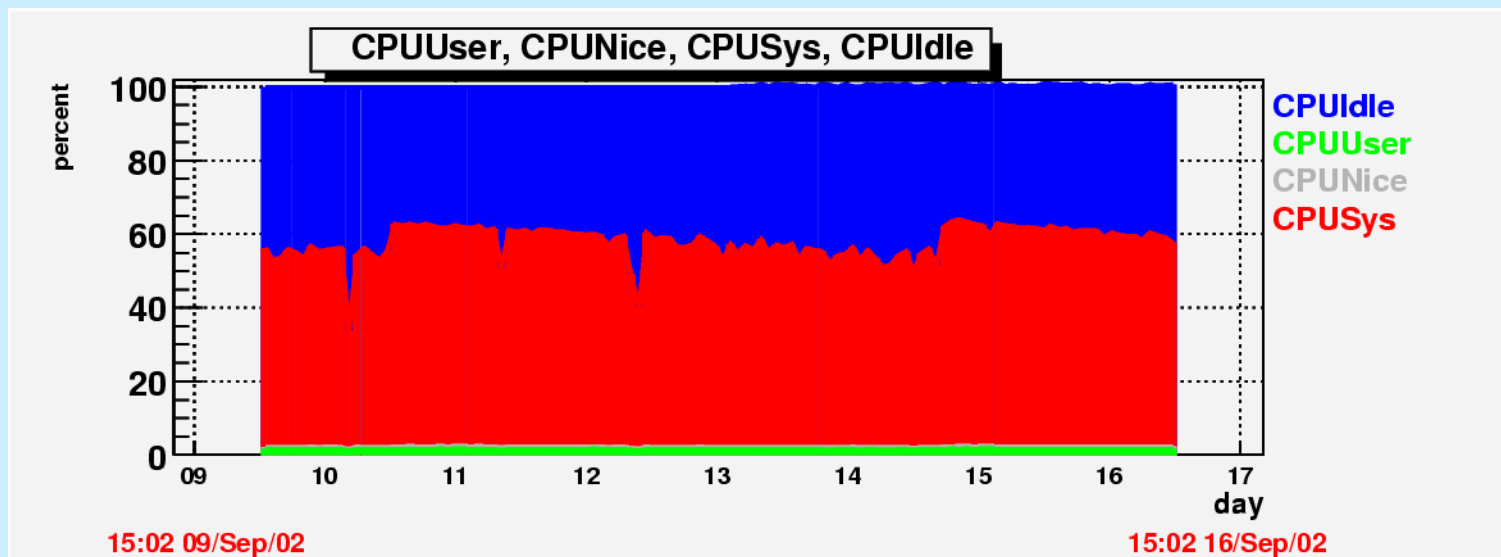
Web interface

- **Web interface written using php/java script**
  - **Completely automatically generated**
  - **New variables, monitored sets automatically reflected in plots**

Web interface II

AFFAIR structure

AFFAIR Monitor

data →

System collector ← /proc

DATE collector — LDC/GDC shared memory

root 1
root 2
root 3

▪ As have hundreds asynchronous storage calls every few seconds, have one root file per node

D I M

~100-1000

Root program that reads files and creates plots from root files

Web/apache/php

System collector ← /proc

DATE collector — LDC/GDC shared memory

ALICE

Offline analysis

- **Detailed histograms (aggregate and individual) can now also be created**

ROOT GUI for configuration/operation

AFFAIR – fabric monitoring   ROOT 2005
tome.anticic@cern.ch

Graph configuration

- **All graphs created using one configuration file**
  - **Completely defines units/ labels/ if graphs aggregate / if graphs superimposed**
  - **Thus no code intervention needed to create the plots**
    - **New monitored variables can be added and configured easily**

GUI in

But n

Conclusion

- **AFFAIR successfully monitors hundreds of nodes**
  - **Field tested in ALICE Data Challenges**
- **ROOT huge part of it**

- **It is a work in progress:**
  - **Much more detailed offline analysis**
  - **Add feature to see performance data/plots on mobiles/palm pilots**
  - **A lot more work on the GUI**
  - **Add high/low warnings**
  - **…**

http://www.cern.ch/affair

Affair A flexible fabric and application information recorder

Changelog
Roadmap to do list
Screenshots
Manual in pdf
The Team
Architecture
Download

Affair is a package which monitors the ALICE DAQ system and software (DATE) performance. It is also used as a general performance gathering and analysis tool of computer clusters.

The latest stable version of AFFAIR is 2.4.1

Currently Affair is being used/tested at:

- Cluster of the experiemental particle physics group at the Rudjer Boskovic Institute
- Alice Data Challenge reference system (only available from CERN sites)

ALICE experiment
DATE site
Group home

Maintained by Tome Anticic, Last update 30/03/2005