

Run II Software Applications Support

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For CEPA Department

Run II Computing Review

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Overview

- ROOT
- D0 Reco Taskforce
- Visualization
- Library Package Management, C++ support
- PATRIOT
- Database Applications

ROOT Support

- 1 FTE – Philippe Canal and Jeff Kallenbach
- Current deliverables include:
 - Update to the ROOT I/O to support STL container more natively and completely,
 - Update to TTreeFormula to allow the users to provide a simple fully C++ compliant script to be executed and drawn for the events in the tree,
 - Interface between TTree and SQL databases
- Regular releases on all the platforms needed by the experiments.
- Ongoing deliverable is the resolution of user request and bug report.

D0 Reconstruction Performance Improvement Task Force

- 2 to 3 FTE for 2 months (Aggregate from Computing Division and DZero) Philippe Canal, Jim Kowalkowski.
- The goal of this taskforce is to
 - Understand the limitation and complexity of the current algorithm
 - Propose changes to improve the performance of the algorithm
 - Implement local code performance improvements by late October 2004.

Visualization

- 0.4 FTE – Jeff Kallenbach
- "Publicity" pics. Close to having a d0 cookbook for generating high-grade pictures. d0scan uses Coin3D (a free version of open inventor) and has vector postscript output available, which is basically all we need. CDF is a little trickier, and the inventor backend to evd has encountered some difficult bugs. CDF uses sgi-open inventor (free).
- Upgrade to root visualization. Working on root geometry viewer in the open inventor niche. This will likely have Coin3D and sgi-oiv bindings when completed.
- It is felt there is no need to continue TGS inventor licensing support.

Library/Package Management, C++ support

- Library and package maintenance (zoom, clhep, rcp, ...) .6 FTE (mostly Mark Fischler, Walter Brown, John Marrifino-- with just a bit of Marc Paterno's time).
 - Maintenance and feature additions to error logger package
 - Most of the work is result of compiler and system evolution.
- C++ consulting, reviews, and support other than the D0 reco task force (.3 FTE)
- Direct CDF software management and support (Liz Sexton-Kennedy) - .8 FTE, should be "terminating" down to .2 in a half year.

PATRIOT

- **Physics Analysis & Tools Required to Investigate Our Theories**
- 1.0 FTE – Steve Mrenna + student
- PATRIOT is a project that aims to provide better predictions of physics events for the high-Pt physics program of Run2.
- Central to Patriot is a repository for files describing the high-Pt physics predictions in ENSTORE.
 - These are typically stored as StdHep files which can be handled by CDF and D0 and run through detector and triggering simulations.
 - The definition of these datasets in the CDF and D0 data handling system SAM is under way.
- Patriot relies heavily on a new generation of Monte Carlo tools to calculate the hard structure of high-Pt events and the more venerable event generators to make particle level predictions.
- An early informational database, describing the types of data files stored in Patriot, is available and a new database is under development.

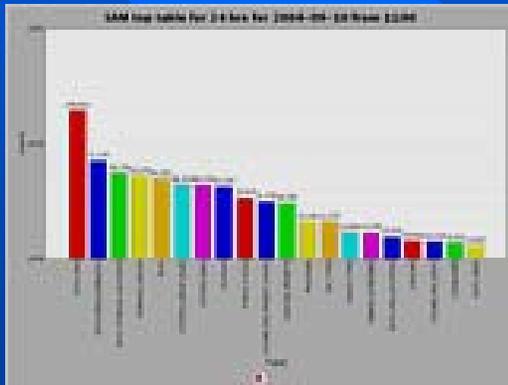
Database Applications

- Monitoring tools and support for Run II database operations. – (0.5 FTE)
- Support for existing DB applications including D0 Calibration server (a.k.a. DAN), and CDF codegen and DB interface, and SAM. - (0.5 - 1.0 FTE)
- Beginning work with D0 on new features need in Trigger DB application. - (0.5 – 1.0 FTE)
- New CDF Database access mechanism through Frontier project. (1.0 FTE)

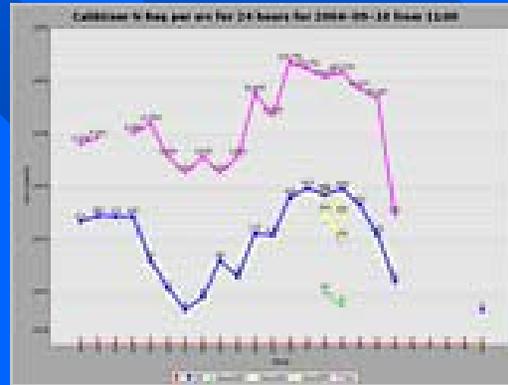
DB Monitoring

SAM

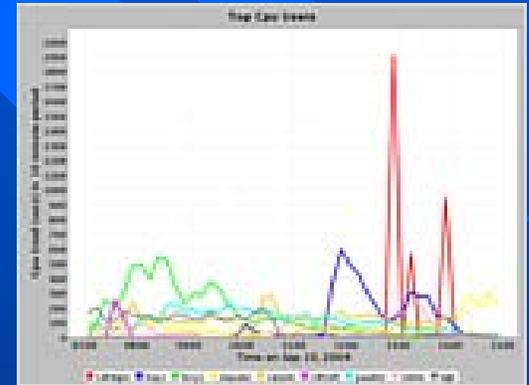
D0 Calibration CDF DB Access



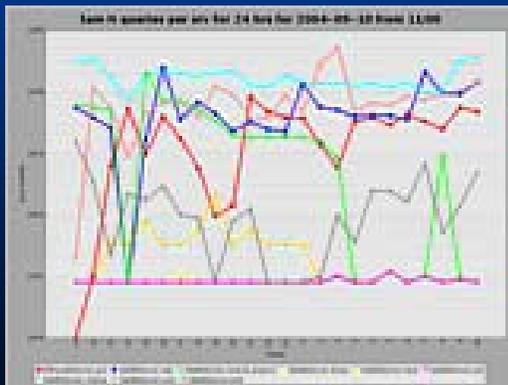
Tables accessed



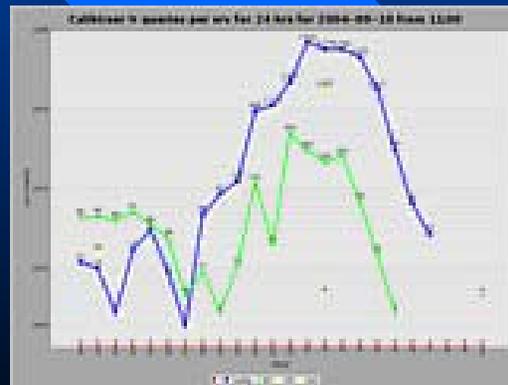
Object Requests



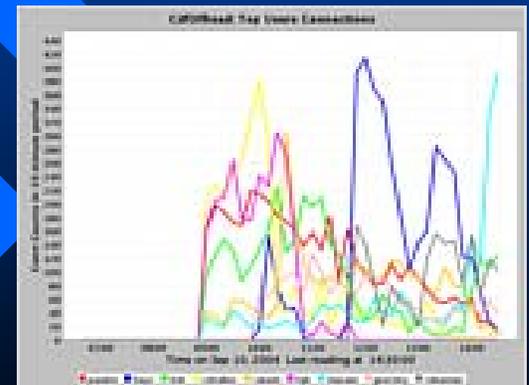
Top CPU Users



Queries by Server

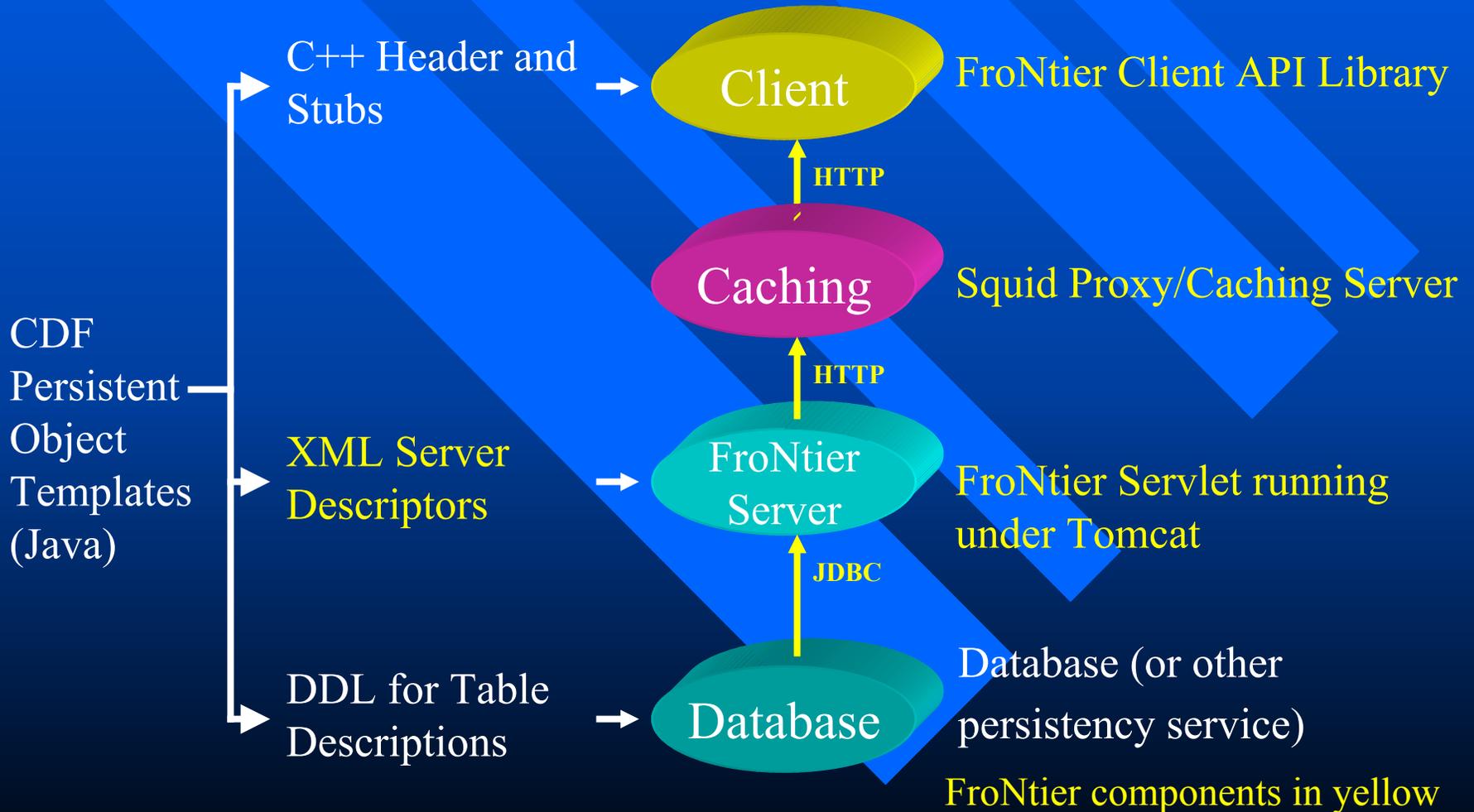


Queries to Database



Top Connection Users

FroNtier Overview



Summary

- Run II Software Application support is an important part of our Mission
- This includes a broad range of ongoing maintenance and improvements for existing products, as well as
- New development of tools to meet the needs of CDF and D0.