



LDAS 101: Software and Searches

LIGO Scientific Collaboration

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Introduction

- LDAS is a standardized infrastructure for
 - » Accessing and manipulating LIGO data.
 - » Keeping detailed records of analyses using its logging facilities.
 - » Executing parallel search algorithms written to the LAL standard.
- LDAS is designed as a system to
 - » Provide building blocks of data analysis pipelines.
 - » Provide accurate logging and efficient job control.
 - » Allow access by users at remote locations.
 - A job can be submitted to an LDAS system from any computer with internet access (and an LDAS user/password).
- The system is also intended to
 - » Execute multiple scientific searches with very different needs.
 - » Operate continuously during LIGO scientific data runs.



Contains frame format data.

Statistical summary, windowing, decimation, power spectra, linear filters.

Parallel analysis search code executed on the Beowulf



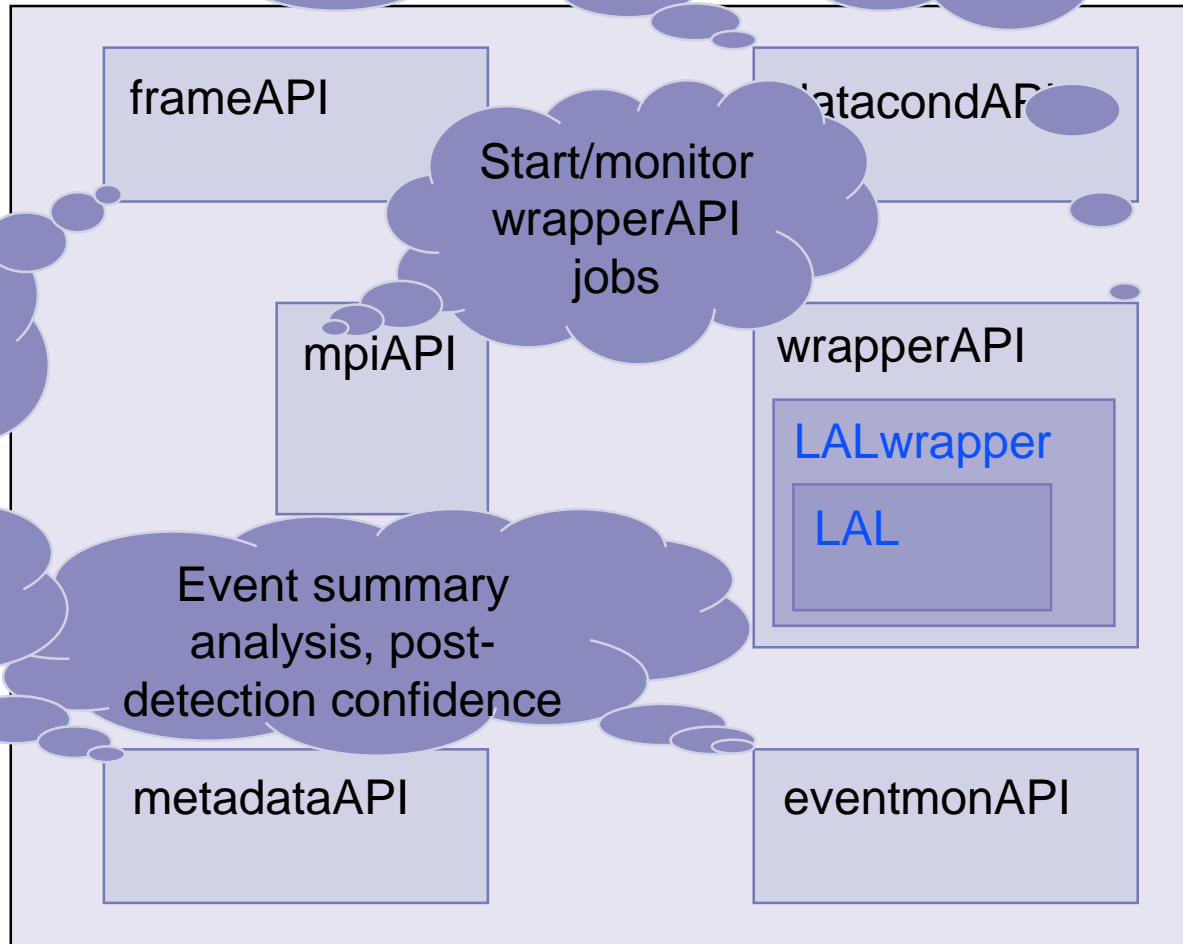
Data Archive

Down select channels and concatenate series

Insertion, querying of LIGO database tables



Database





Real Life View of LDAS Components

- LDAS makes extensive use of the web to provide logging information
- Status page lists
 - » API
 - » Uptime
 - » Memory usage
 - » Pending and active processes
- Status page provides links to the log files

```
LDAS API Status at databserver.ldas-dev.caltech.edu
666003318 03/13/01 - 12:18:03 PST 03/13/01 - 01:18:03 GMT

1 database API is running on address:port :BASEPORT-01
  • uptime: 0 days + 00:00:02
  • maximum virtual memory allocated by this API: 4096 Kb
    (current reserved mem size: 4096 Kb)
    (heap size change rate: 0.00 Kb/sec)
  • current api usage: 5.1%
    - number of open sockets: 0
    - number of open files: 1
    - number of running threads: 0
    - number of pending events: 11
    - number of objects registered: 0
    - total: 11

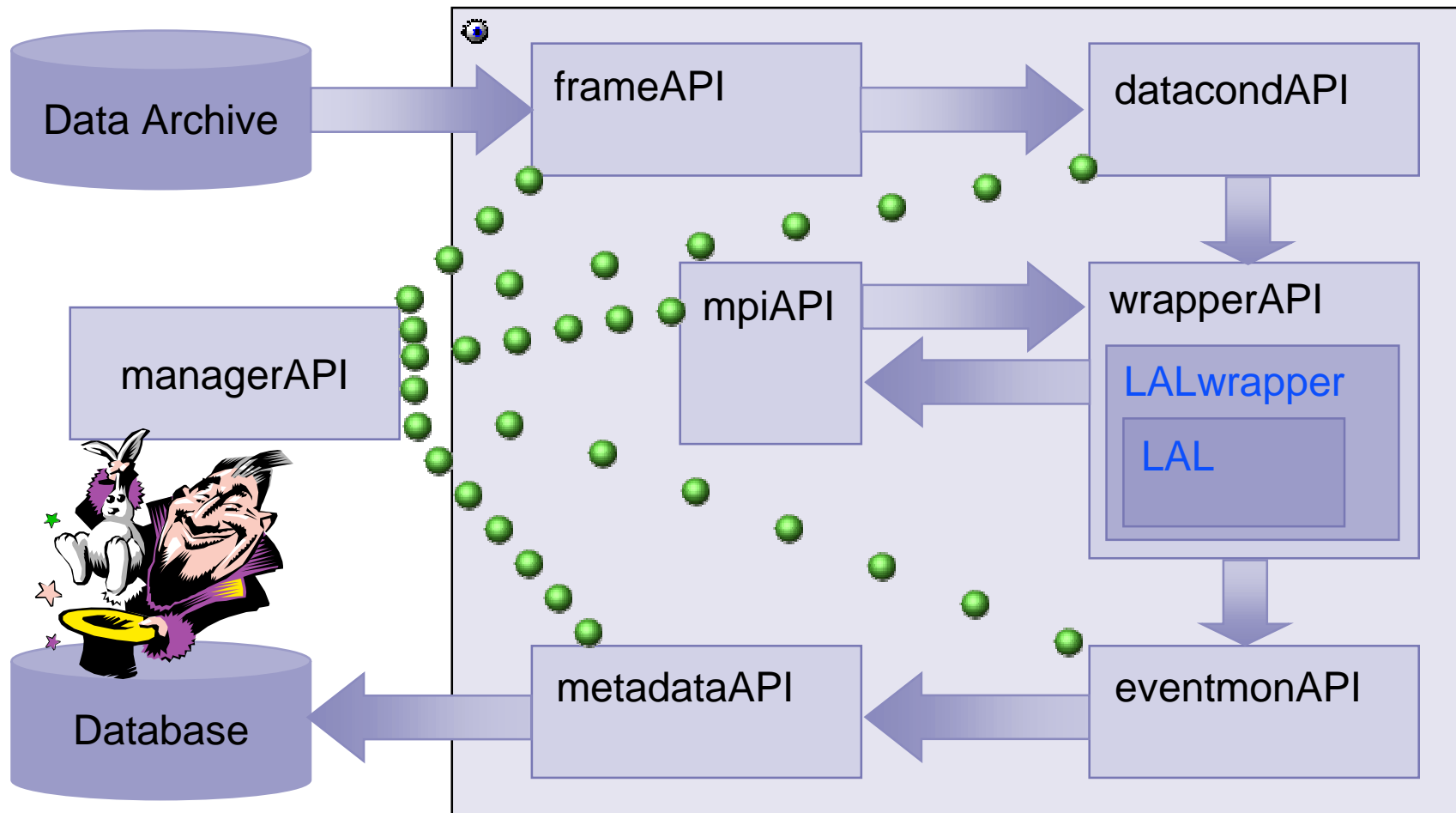
2 database API is running on address:port :BASEPORT-04
  • uptime: 0 days + 00:00:02
  • maximum virtual memory allocated by this API: 4096 Kb
    (current reserved mem size: 4096 Kb)
    (heap size change rate: 0.00 Kb/sec)
  • current api usage: 5.1%
    - number of open sockets: 0
    - number of open files: 1
    - number of running threads: 1
    - number of pending events: 0
    - number of objects registered: 0
    - total: 1

3 database API is running on address:port :BASEPORT-07
  • uptime: 0 days + 00:00:02
  • maximum virtual memory allocated by this API: 4096 Kb
    (current reserved mem size: 4096 Kb)
    (heap size change rate: 0.00 Kb/sec)
  • current api usage: 1.0%
    - number of open sockets: 0
    - number of open files: 1
    - number of running threads: 1
    - number of pending events: 0
    - number of objects registered: 0
    - total: 1

4 database API is running on address:port :BASEPORT-10
  • uptime: 0 days + 00:00:02
  • maximum virtual memory allocated by this API: 4096 Kb
    (current reserved mem size: 4096 Kb)
    (heap size change rate: 0.00 Kb/sec)
  • current api usage: 5.1%
    - number of open sockets: 0
    - number of open files: 1
    - number of running threads: 1
    - number of pending events: 0
    - number of objects registered: 0
    - total: 1

5 database API is running on address:port :BASEPORT-13
```

Example Analysis Pipeline



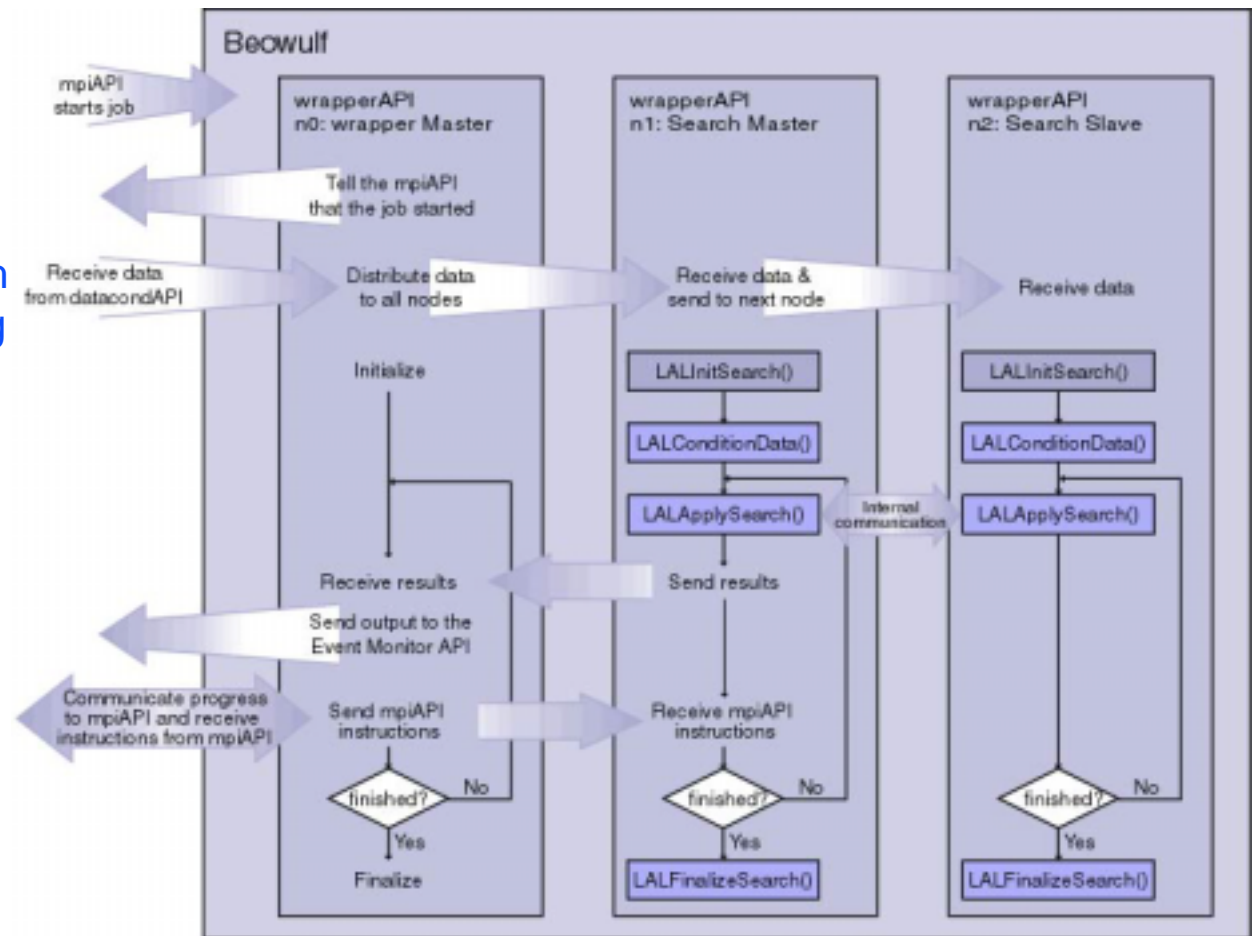
User Commands



- User commands are
 - » Tcl scripts with associated API specific macros
- Previous slide showed
 - » Schematic execution of a user command sent to managerAPI
- Tcl script contains
 - » user/password
 - » So, it can be executed from any computer with internet access.

The WrapperAPI

- Where LAL meets LDAS.
- **wrapperAPI**
 - » Executes parallel search code on a Beowulf using LDAS infrastructure.
 - » Each search code has four LAL compliant functions.
- **LALwrapper** package
 - » Provides search independent interface.
 - » **Currently contains:**
 - Inspirial example
 - Burst example
 - Trivial example





To be continued.....



- Thursday 10:45-12:00
 - » The datacondAPI: functionality and use in E3 (Sam Finn and Anthony Searle).
 - » Design of inspiral search code to run under wrapperAPI (Duncan Brown)
 - » How to get, build and modify LALwrapper
- Friday 20:00
 - » LDAS demo at LIGO Livingston (Kent Blackburn et al.)