The LIGOtools Software Project

Peter Shawhan
LIGO / Caltech

```
pshawhan@sheratan> ligotools_list
LIGOTOOLS is /ligoapps/ligotools
  Package       Active      Other versions
 ---------     --------    ----------------
  Fr            v4r30       v4r22a, v4r11
  dataflow      1.4         1.3, 1.2
  dataviewer    3.5         3.4, 3.3, 3.2
  dtt           1.0
  fftw          2.1.3
  guild         3.4.3       3.3
  lal           0.6         0.5
  ltadmin       1.2         1.1, 1.0
  mininds       3.2         3.1
  root          2.25.03
  tclexe        8.3.2a      8.3.2
pshawhan@sheratan> ligotools_update
All of your LIGOtools packages are up-to-date.
pshawhan@sheratan>
```

LIGO Scientific Collaboration Meeting
March 16, 2001

LIGO-G010055-00-E

Overview of LIGOtools

Purposes:

- Share useful software tools among LIGO / LSC institutions
- Make it as simple as possible to install and use the tools

LIGOtools is ...

- A software distribution system
- A collection of software packages

The LIGOtools Software Distribution System

All software and documentation is distributed from a web site:

http://www.ldas-sw.ligo.caltech.edu/ligotools

LIGOtools can be installed by anyone — no special privileges needed (However, groups should generally have one shared installation)

Installation is simple

- Minimal software prerequisites
- Step-by-step instructions are available from the web page
- Entire process (including all software packages) takes less than 15 minutes on Sun Solaris and Intel Linux, for which software tools have been pre-compiled

Downloading and installing new versions or new packages is simple — just type ligotools_update to automatically get anything new

LIGOtools Software Packages

LIGOtools software is organized in packages, which may contain:

- Shell scripts
- Command-line utilities
- Graphical user interfaces
- Libraries
- Matlab scripts and MEX-files
- ROOT macros

All executables appear in a single “bin” directory, all libraries appear in a single “lib” directory (with include files in a single “include” directory), etc.
$\Longrightarrow$ one-time setup of PATH, etc., gives you access to all packages

LIGOtools web page has links to documentation and examples

Current LIGOtools Packages (1)

guild — Graphical user interface to LDAS metadata database, etc.

Constructs query, submits job, retrieves results, and displays them

Also can be used to:

- Submit LDAS jobs of any type
- Retrieve recent frame data from the observatory sites
- Convert between GPS, UTC and local time

dataflow — Data access utilities built around a “data flow manager”

Includes command-line utilities to:

- Retrieve raw and trend data from the HPSS archive
- Retrieve metadata from the LDAS database

Includes a C library to parse metadata files, and to execute LDAS commands from within a C program [more functionality to be added]

Current LIGOtools Packages (2)

Fr — The “libFrame” C library for reading/writing data in frame format

Besides the library, includes:

- Command-line utilities for copying, selecting channels, dumping
- Matlab MEX-files for reading/writing frame files
- A shared-object library for use within ROOT

lal — The complete LIGO/LSC Algorithm Library

“Binary” distributions include source code and full documentation

fftw — Fast Fourier Transform package

Used by LAL

Current LIGOtools Packages (3)

root — Object-oriented data analysis/display environment from CERN

This version automatically executes “Logon” scripts from other LIGOtools packages

(Will be installed automatically only for Sun Solaris and Intel Linux; other platforms require a few manual steps, as described on the LIGOtools web site)

dtt (Diagnostic Test Tools) and **dataviewer** — The “online” tools

Available for Sun Solaris only (at least for now)

At the observatory sites, can be used on general-computing machines to view data as if one were in the control room

Offsite, can be used to view data stored on disk
[currently a multi-step process, but will be streamlined in the future]

Notes and Summary

An LDAS username/password is required for data access. Many groups already have these; others should contact ldas_admin@ligo.caltech.edu

LIGOtools is designed to be used by everyone! Get it from:

http://www.ldas-sw.ligo.caltech.edu/ligotools

LIGOtools is designed to be expanded!

Contributions are very welcome; I can help package them properly

This is your chance to share your useful tools with your colleagues!