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FronTier Install Manual

Software for front tracking method

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Available for linux system

- Strongly recommend ubuntu and Fedora

- They are all free with many packages installed

http://www.ubuntu.com/
http://fedoraproject.org/

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Install packages in linux

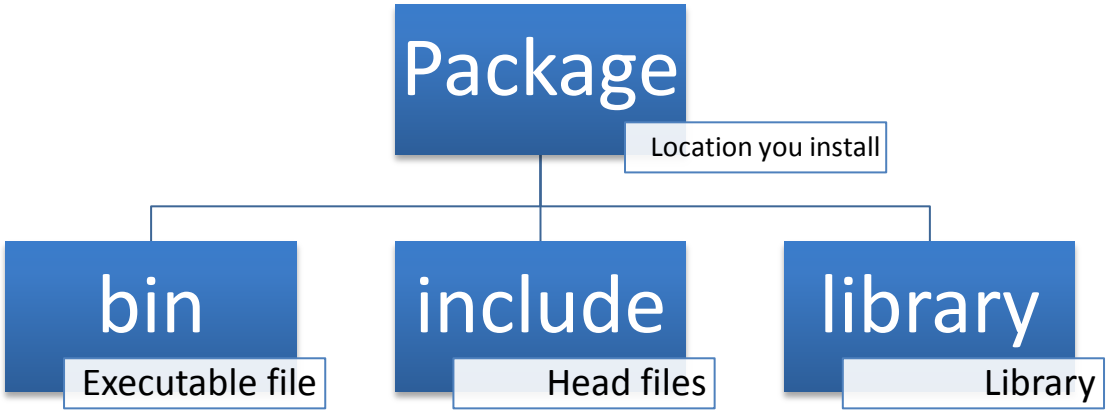
- Install with APT (advanced packaging tool)

  sudo apt-get install yourpackge

- Compile with source code
  - ✓ Google the package and find the source code
  - ✓ Configure: ./configure --prefix=/location_for_install
  - ✓ Compile: make
  - ✓ Install: make install

After installation

- You will see the followings in the location you install



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Shared and static library

- Static library: .a (or .lib in windows)

A program using a static library takes copies of the code that it uses from the static library and makes it part of the program.

(large size, no external dependencies)

- Shared library: .so (or .dll in windows)

A program using a shared library only makes reference to the code that it uses in the shared library.

(runtime loading cost, small size, update without recompiling)

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Environment variables

- PATH: path for executable file (used by shell)

  /bin/matlab, /bin/visit, /bin/mpicc

- LIBRARY_PATH: path for static library (used by complier)

  /lib/libfftw3.a

- LD_LIBRARY_PATH: path for shared library (used at runtime)

  /lib/libpetsc.so

Set environment variables

- Edit .bashrc in home directory.
- export LIBRARY_PATH=/first_path_of_library:/second_path_of_library

Software and Library we need

- Parallel Compute
  - MPICH2
  - Open MP
  - CUDA
- Linear Solver
  - PETSc
  - LAPACK
  - BLAS
- Visualize
  - HDF
  - VisIt
  - GD

Install manual

- Install Compiler
- gcc, g++:

  sudo apt-get install gcc g++ gfortran
- mpich and open mp
  - ✓download mpich on: http://www.mpich.org/downloads/
  - ✓compile with source code

Install manual

- Install blas and lapack

✓ sudo apt-get install libblas-dev

✓ sudo apt-get install liblapack-dev

Install manual

- Install PETSc (incompatible with latest version, prefer 3.1)

✓ ./configure --prefix=/usr/local/pkg/petsc --download-hypre --with-mpi-dir=/usr/local/pkg/mpich2 --with-shared-libraries=0

✓ make

✓ Then follow the install instructions

Install manual

- Install HDF and GD
- Install zlib, szip and gd

sudo apt-get install libpng12-dev libjpeg-dev libgd2-xpm-dev

- Install HDF

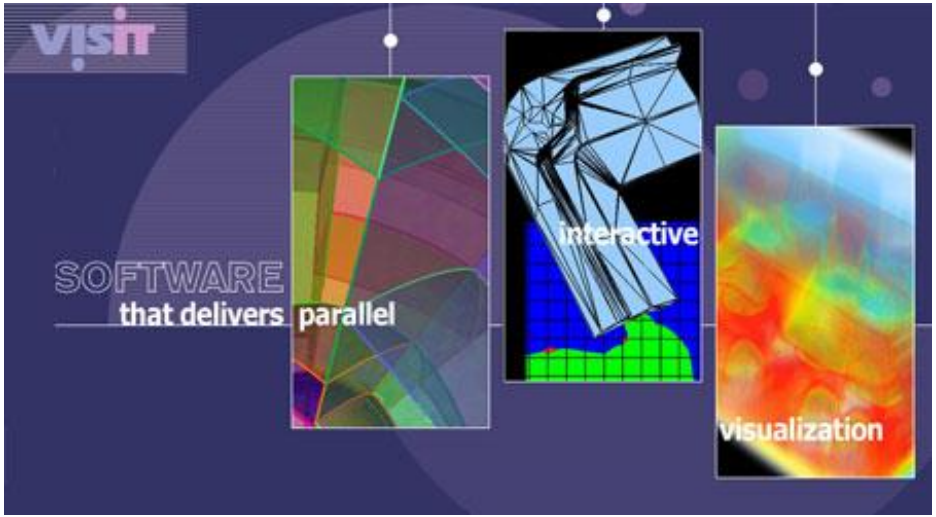
✓ ./configure --prefix=PATH_TO_HDF --enable-fortran --enable-cxx --with-szlib=PATH_TO_SZIP

✓ make

✓ make install

Install manual

- Install VisIt
- Download VisIt executables
- Downlad install scripts
- Run the install script



- Reference:
  https://wci.llnl.gov/simulation/computer-codes/visit/executables

Install manual

- Revise script “build” in FronTier directory to be compatible with your machine
- Set the path of PETSc, HDF, MPICH for FronTier
- Please refer to

  http://www.ams.sunysb.edu/~qgshi/pkgs4FT/INSTALL_FT.pdf

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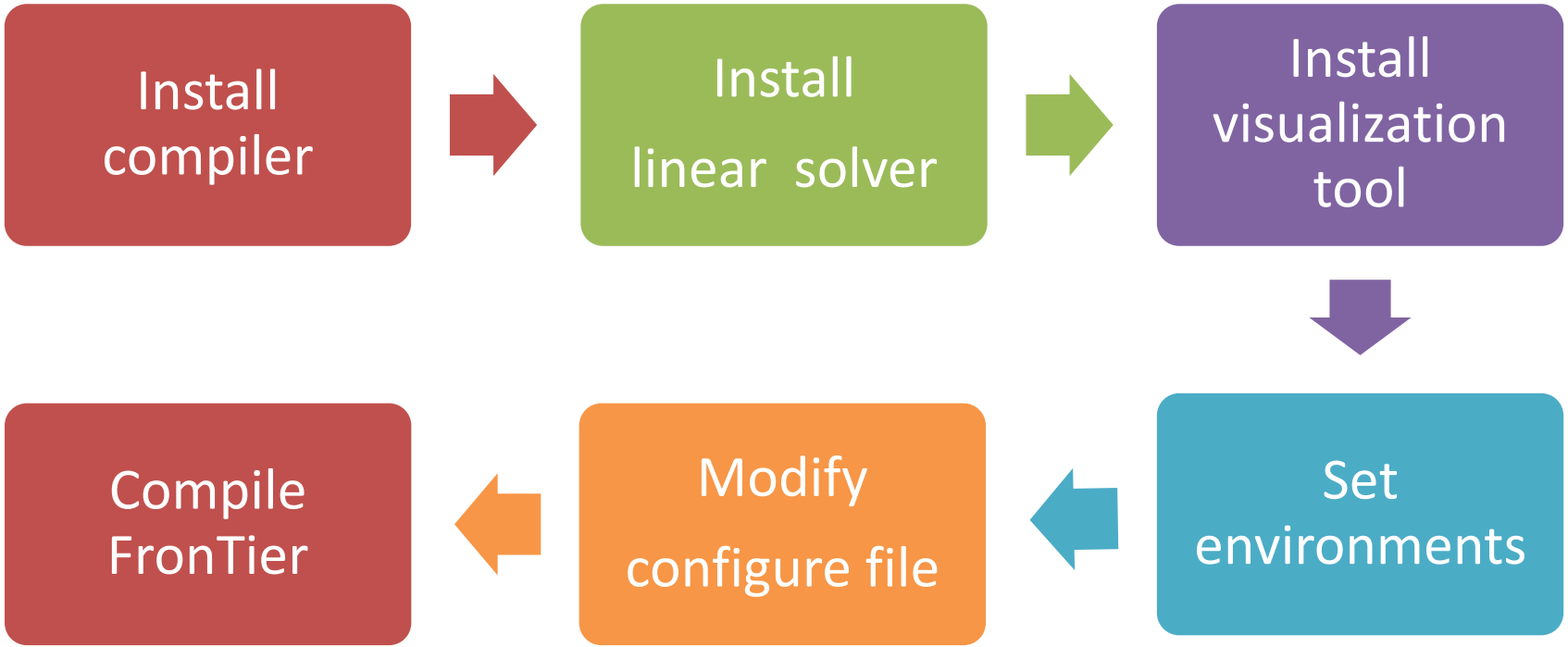
Final step

- Set environment variables like LIBRARY_PATH, LD_LIBRARY_PATH
- cd to FronTier directory
- build
- make
- Enjoy!

Flow chart


Install compiler
Install linear solver
Install visualization tool
Set environments
Modify configure file
Compile FronTier