

Section 8

Building *Rocstar*

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Other requests for this document shall be referred to IllinoisRocstar LLC (mdbrandy@illinoisrocstar.com)



Building *Rocstar*

Outline

1. Prerequisites
 - Supported platforms
 - Software
2. Source Distribution
 - Directory structure
 - Makefiles
3. Compile *Rocstar*
 - Build and Install options
 - Fluid physics options



Supported Platforms

Maintained

- x86 – Linux
 - Intel Compilers
 - GCC
 - PGI Compilers
 - Absoft Compilers
- x86_64 – Linux and OS X
 - Same as x86



Legacy

- PPC – Linux and OS X
 - GCC
 - IBM XL Compilers
- IBM SP – AIX
 - IBM XL Compilers
 - GCC

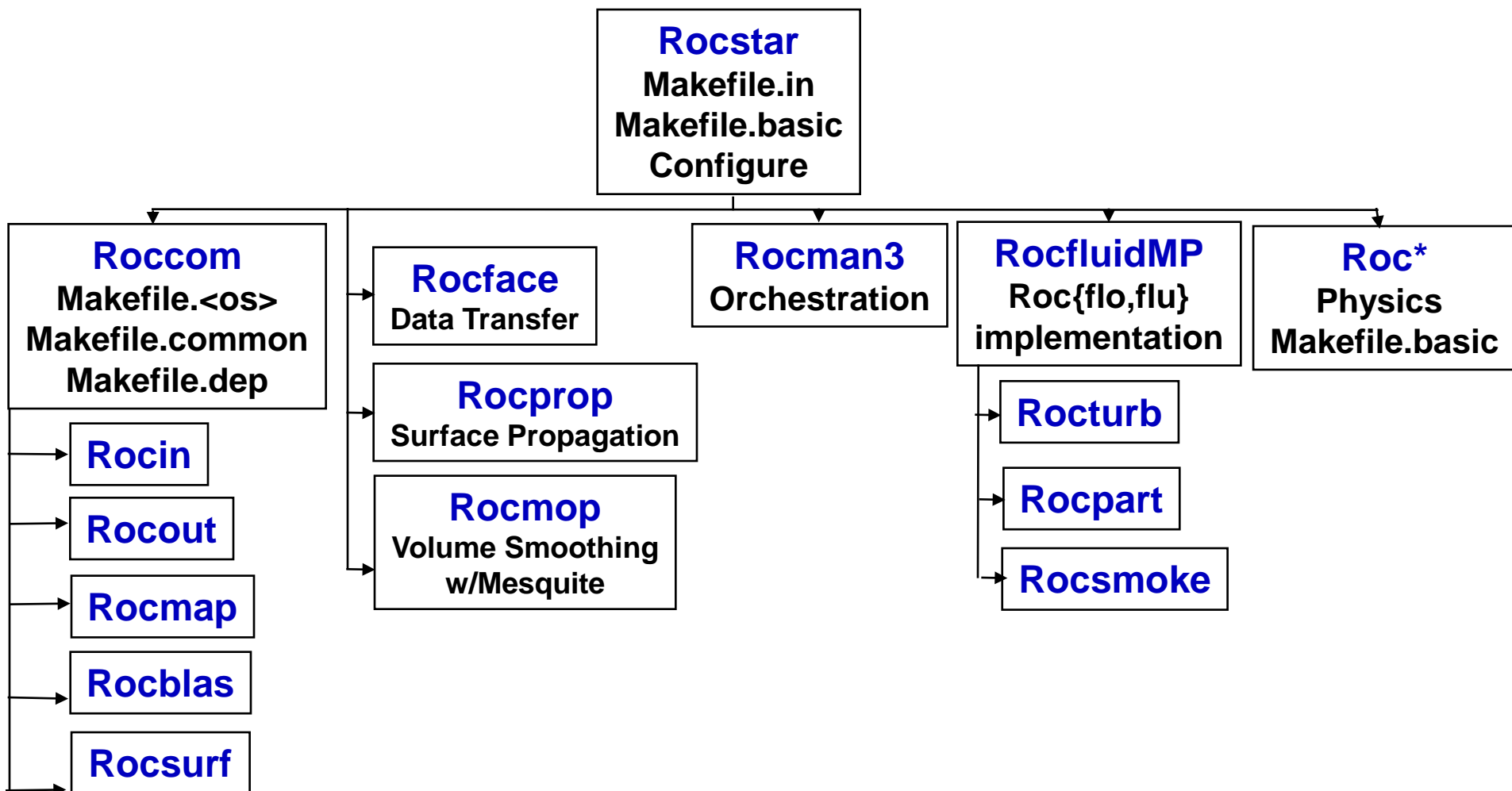


Required Software

- Fortran Compiler (in order of maturity of support)
 - Intel
 - IBM
 - Absoft
 - PGI
 - GFortran
- HDF4
 - RPM's available for x86-based Linux machines (google: HDF4 rpm)
 - Source and binaries at www.hdfgroup.org/products/hdf4
 - Rocstar/utilities/build_HDF
- MPICH-derived MPI (Fortran first!)
 - MPICH www.mcs.anl.gov/mpi/mpich
 - MVAPICH mvapich.cse.ohio-state.edu
 - MPICH-MX www.myrinet.com/scs/download-mpichmx.html
 - Rocstar/utilities/build_MPI
- BLAS and LAPACK



Rocstar Source Distribution



Compiling *Rocstar*

Make sure MPI compilers are in your path

Compile using gmake (=make on most systems)

■ HDFHOME (required)

- HDFHOME=<path to HDF4> (HDFHOME=/usr)

■ CGNS – optionally enable CGNS support

- CGNS=1

■ Fluid physics options

- TURB=1 (*Rocturb* – turbulence models)
- STATS=1 (*Roc{flo,flu}* – collect statistics)
- PLAG=1 (*Rocpart*– Lagrangian particles)
- PEUL=1 (*Rocsmoke* – equilibrium Eulerian particles)

■ Multiple builds from same source

- PREFIX=<exe_directory> (specify executable location)

All modules compiled; load any combo at runtime



Example Compilation Lines

■ Plain build, no Turb/Stats/Particles

- `make HDFHOME=/usr PREFIX=/opt/RocstarPlain`

■ Turbulence build

- `make HDFHOME=/usr TURB=1 STATS=1 PREFIX=/opt/RocstarTurbStat`

■ Multiphase build

- `make HDFHOME=/usr TURB=1 STATS=1 PLAG=1 PEUL=1
PREFIX=/opt/RocstarParticles`

■ Notes:

- Particle builds must have particle information in input files
- Turb/Stat build can be used for anything except particle runs – most flexible
- All builds contain *Rocflo*, *Rocflu*, *Rocfrac*, *Rocburn*

