PIO update

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PIO 2.0

- Complete rewrite in C language
- C and F2003 API’s using F2003 C-interoperability protocols
- New unit testing framework
- New data rearrangement options

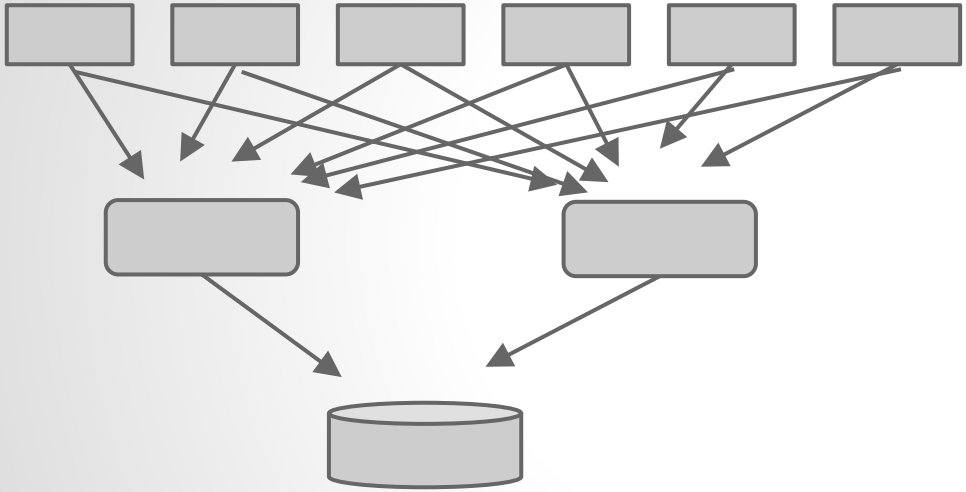
Complete rewrite in C language

- C API is more general and can be used by a wider variety of applications
- F2003 C-interoperability - Finally a standard for C-Fortran interfaces
- Opportunity to clean up code

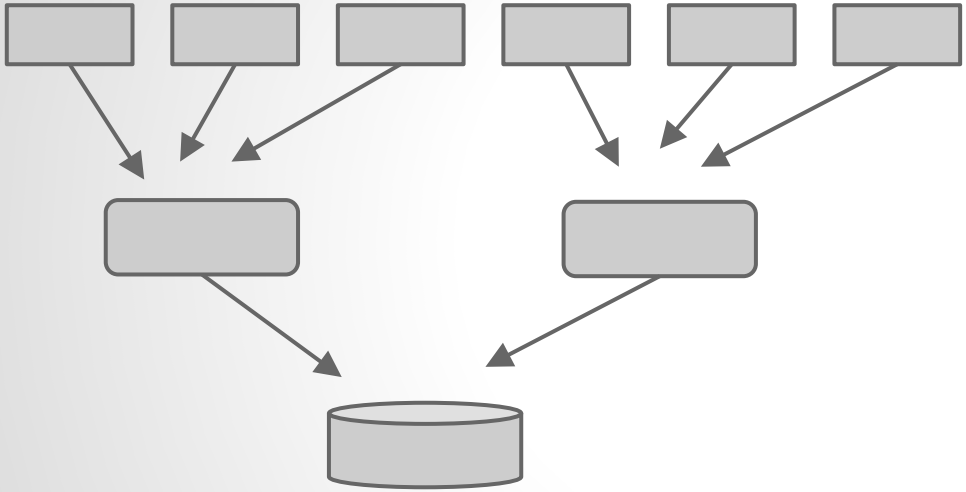
Data Rearrangement

- Box rearranger: Rearranges data into a single contiguous block on each io task.
  - May require all-to-all rearrangement
- Subset rearranger: Each IO task collects data from a subset of compute tasks.
  - Each IO task may have multiple contiguous blocks of data.
  - If every task is an IO task the subset rearranger is at most a transpose (no communication)

Box rearranger output data flow



Subset rearranger data flow



API changes

A few API changes in the F90 API will require that current PIO users port to PIO2.0

- PIO_OFFSET -> PIO_OFFSET_KIND
- pio_subsystem%io_rank -> pio_iotask_rank(pio_subsystem)
- pio_setframe(tdesc, t) -> pio_setframe(File,tdesc, t)

Obsolete or Deferred Features

- VDC support removed
- Support for asynchronous IO tasks deferred

New features

- Rearranger can now be specified for each decomposition instead of each file
- Arbitrary mapping of compute tasks to IO tasks. (API TBD)
- Better reuse of decomps (API TBD)

Further Info:

https://code.google.com/p/parallelio/

Thanks