

Progress on “Standard” Interfaces for Regular Data

The Goal

- Develop interfaces for basic scientific data structures
 - Raw data (collections of bytes)
 - Multi-dimensional arrays (local & distributed)
 - Meshes/grids (structured & unstructured)
 - Parallel data distributions
- “Standard” in that we hope many existing and new libraries/components will adapt to/code to these interfaces. Not clear (to me) exactly what relationship to formal CCA spec is
- Intended to be a basic 80-90% solution

Progress and Plans (Raw & Regular Data Objects)

- **RawData** *(Craig, voted & approved)*
- **Generalized IOVec** *(Jarek/David, deferred until clear need)*
- **LocalArray** *(David, strawman posted to CCA-Data, critiqued Wednesday afternoon)*
- **LockingLocalArray** *(David, strawman posted to CCA-Data)*
- **DataDistQuery** *(David, strawman posted to CCA-Data)*
- **DataDistDefine** *(under development)*
- **DistributedArray** *(planned)*

DistributedArray could be implemented on top of LocalArray and DataDistQuery/DataDistDefine

DataDistQuery/DataDistDefine also targeted for use by MxN components

Thoughts on Data Ports

- *Based mostly on advice/comment from other CCAers, Thanks!*
- Wait until there is an actual need before standardizing
 - Keep specs “close to” actual code
 - Expect generalized IOVec raw data object to be useful, but no customer yet, so consideration deferred
 - LockingLocalArray strawman probably premature
- Separate creation of objects from basic access/inquiry from operations
 - Creation tends to be particular to the implementation. Experiment with early implementations to see what works
 - Variety of operations is limitless

How You Can Help

- Subscribe to cca-data@mcs.anl.gov
- *Comment on strawman proposals when they're offered*
- Experience of an individual author is limited, but by combining forces, we can cover a lot of territory
- Contemplate adapting your apps to use them
- Contemplate implementing them from scratch
- Suggest important applications/libraries which need to be supported, or (better) take the proposal and analyze whether it will work with your favorite app and post the analysis