

# MPI3 RMA

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# MPI-3 RMA

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- Presented an overview of some of the issues and constraints at last meeting
- Homework - read Bonachea's "Problems with using MPI 1.1 and 2.0 as compilation targets for parallel language implementations", <http://upc.lbl.gov/publications/bonachea-duell-mpi.pdf>
- Called for alternative proposals; several volunteers but no activity on mailing lists
  - ◆ Note that we're waiting on proposals
- Breakout will be used to sign up members and to identify subgroups to develop proposals
- Possible topics
  - ◆ Address issues in Bonachea's paper (e.g., memory model, address-space accessibility)
  - ◆ Exploit different memory models (e.g., cache coherence or other consistency models)
  - ◆ Minor updates (e.g., need for put-ack)
  - ◆ Extending accumulate to some kind of user-defined operations
  - ◆ Extending accumulate to support read-modify-write operations
  - ◆ Active message (and why not with threads/point-to-point?)



# MPI RMA Breakout



# Agenda

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- Sign up for the MPI3 RMA Mailing list!
- Status of Efforts Launched at last Meeting
- Call for new topics
- Discussion of possible topics



# Issues Raised in Bonachea's Paper

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- Address-space accessibility
  - ◆ Collective creation
  - ◆ Potential limitations on passive target window memory
- Memory model
  - ◆ Erroneous vs. undefined behavior
  - ◆ Local updates vs remote updates
- Passive target allows only one target process
  - ◆ cannot easily atomically update memory owned by several processes
- Note that MPI's choices made to reflect hardware realities at the time (some of which still apply, some of which may return)



# Exploit different memory models

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- Specialization for cache coherence
- Specialization for release consistency, etc.



# Minor updates

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- Option to turn off the required ack for put



# Extending accumulate to some kind of user-defined operations

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- Homogenous platforms only?
- Limit to some datatypes (e.g., integers)?



# Extending accumulate to support read-modify-write operations

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- Fetch and increment
- Compare and swap
- Transactional memory (e.g., update or not, atomically)



# Active message

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- Why not with threads and point-to-point?

