

РЕАЛИЗАЦИИ АЛГОРИТМОВ КОЛЛЕКТИВНЫХ ОПЕРАЦИЙ В БИБЛИОТЕКАХ СТАНДАРТА MPI

№	Операция	MPICH 3.3		Open MPI 4.0	
		Blocking	Non-blocking	Blocking (base)	Non-blocking (libnbc)
1	MPI_IALLGATHER	1. inter: local gather remote bcast 2. intra: bruck's 3. intra: recursive doubling 4. intra: ring	1. inter: local gather remote bcast 2. intra: bruck's 3. intra: recursive doubling 4. intra: ring	1. intra: linear 2. intra: bruck's 3. intra: recursive doubling 4. intra: ring 5. intra: neighbor exchange 6. intra: two procs	1. inter: linear 2. intra: linear 3. intra: recursive doubling
2	MPI_IALLGATHERV	1. inter: remote gather local bcast 2. intra: bruck's 3. intra: recursive doubling 4. intra: ring	1. inter: local gather remote bcast 2. intra: bruck's 3. intra: recursive doubling 4. intra: ring pipeline	1. intra: linear 2. intra: bruck's 3. intra: ring 4. intra: neighbor exchange 5. intra: two procs	1. inter: linear 2. intra: linear
3	MPI_IALLREDUCE	1. inter: reduce exchange bcast 2. intra: recursive doubling 3. intra: rabenseifner's	1. inter: remote reduce local bcast 2. intra: naive 3. intra: recursive doubling 4. intra: rabenseifner's	1. intra: linear 2. intra: non overlapping 3. intra: recursive doubling 4. intra: ring 5. intra: ring segmented 6. intra: rabenseifner's	1. inter: linear 2. intra: linear 3. intra: dissemination 4. intra: ring segmented 5. intra: rabenseifner's
4	MPI_IALLTOALL	1. inter: pairwise exchange 2. intra: bruck's 3. intra: pairwise exchange 4. intra: pairwise sendrecv replace 5. intra: scattered	1. inter: pairwise exchange 2. intra: bruck's 3. intra: pairwise exchange 4. intra: batched sendrecv	1. intra: linear 2. intra: linear sync 3. intra: inplace 4. intra: bruck's 5. intra: pairwise exchange 6. intra: two procs	1. inter: linear 2. intra: linear 3. intra: dissemination 4. intra: pairwise exchange 5. intra: inplace
5	MPI_IALLTOALLV	1. inter: pairwise exchange 2. intra: pairwise sendrecv replace 3. intra: scattered	1. inter: pairwise exchange 2. intra: blocked 3. intra: inplace	1. intra: linear 2. intra: inplace 3. intra: pairwise exchange	1. inter: linear 2. intra: linear 3. intra: pairwise exchange 4. intra: inplace
6	MPI_IALLTOALLW	1. inter: pairwise exchange 2. intra: pairwise sendrecv replace 3. intra: scattered	1. inter: pairwise exchange 2. intra: blocked 3. intra: inplace	-	1. inter: linear 2. intra: linear 3. intra: pairwise exchange 4. intra: inplace
7	MPI_IBARRIER	1. inter: bcast 2. intra: dissemination	1. inter: bcast 2. intra: recursive doubling	1. intra: linear 2. intra: double ring 3. intra: recursive doubling 4. intra: bruck's 5. intra: two procs 6. intra: tree (another recursive doubling)	1. inter: dissemination (?) 2. intra: dissemination
8	MPI_IBCAST	1. inter: local bcast 2. intra: binomial 3. intra: scatter recursive doubling allgather 4. intra: scatter ring allgather	1. inter: flat 2. intra: binomial 3. intra: scatter recursive doubling allgather 4. intra: scatter ring allgather	1. intra: linear 2. intra: generic 3. intra: bintree 4. intra: split bintree 5. intra: pipeline 6. intra: chain 7. intra: binomial 8. intra: knomial 9. intra: scatter allgather (binomial tree scatter followed by a recursive doubling allgather) 10. intra: scatter allgather ring (binomial tree scatter followed by a ring allgather)	1. inter: (?) 2. intra: linear 3. intra: chain 4. intra: binomial 5. intra: knomial
9	MPI_IEXSCAN	1. intra: recursive doubling	1. intra: recursive doubling	1. intra: linear 2. intra: recursive doubling	1. intra: linear 2. intra: recursive doubling

10	MPI_IGATHER	1. inter: linear 2. inter: local gather remote send 3. intra: binomial	1. inter: linear (for long messages) 2. inter: linear (for short messages) 3. intra: binomial	1. intra: linear 2. intra: linear sync 3. intra: binomial	1. inter: linear 2. intra: linear
11	MPI_IGATHERV	1. allcomm: linear	1. allcomm: linear	-	1. inter: linear 2. intra: linear
12	MPI_IREDUCE	1. inter: local reduce remote send 2. intra: binomial 3. intra: reduce scatter gather	1. inter: local reduce remote send 2. intra: binomial 3. intra: reduce scatter gather	1. generic 2. intra: linear 3. intra: chain 4. intra: pipeline 5. intra: binary 6. intra: binomial 7. intra: in order binary 8. intra: rabenseifner's	1. inter: linear 2. intra: linear 3. intra: chain 4. intra: binomial 5. intra: rabenseifner's
13	MPI_IREDUCE_SCATTER	1. inter: remote reduce local scatter 2. intra: noncommutative recursive doubling (butterfly) 3. intra: pairwise exchange 4. intra: recursive doubling 5. intra: recursive halving	1. inter: remote reduce local scatterv 2. intra: noncommutative recursive doubling (butterfly) 3. intra: pairwise exchange 4. intra: recursive doubling 5. intra: recursive halving	1. intra: non overlapping 2. intra: recursive halving 3. intra: ring 4. intra: butterfly	1. inter: (?) 2. intra: pairwise exchange (?)
14	MPI_IREDUCE_SCATTER_BLOCK	1. inter: remote reduce local scatter 2. intra: noncommutative recursive doubling (butterfly) 3. intra: pairwise exchange 4. intra: recursive doubling 5. intra: recursive halving	1. inter: remote reduce local scatterv 2. intra: noncommutative recursive doubling (butterfly) 3. intra: pairwise exchange 4. intra: recursive doubling 5. intra: recursive halving	1. intra: linear 2. intra: recursive doubling 3. intra: recursive halving 4. intra: butterfly 5. intra: butterfly pof2	1. inter: (?) 2. intra: pairwise exchange (?)
15	MPI_ISCAN	1. intra: recursive doubling	1. intra: recursive doubling	1. intra: linear 2. intra: recursive doubling	1. intra: linear 2. intra: recursive doubling
16	MPI_ISCATTER	1. inter: linear 2. inter: remote send local scatter 3. intra: binomial	1. inter: linear 2. inter: remote send local scatter 3. intra: binomial	1. intra: linear 2. intra: binomial	1. inter: linear 2. intra: linear
17	MPI_ISCATTERV	1. allcomm: linear	1. allcomm: linear	-	1. inter: linear 2. intra: linear
18	MPI_INEIGHBOR_ALLGATHER		1. allcomm: linear	-	1. allcomm: linear
19	MPI_INEIGHBOR_ALLGATHERV		1. allcomm: linear	-	1. allcomm: linear
20	MPI_INEIGHBOR_ALLTOALL		1. allcomm: linear	-	1. allcomm: linear
21	MPI_INEIGHBOR_ALLTOALLV		1. allcomm: linear	-	1. allcomm: linear
22	MPI_INEIGHBOR_ALLTOALLW		1. allcomm: linear	-	1. allcomm: linear