

# MPI-2 get/put

Guy Tel-Zur

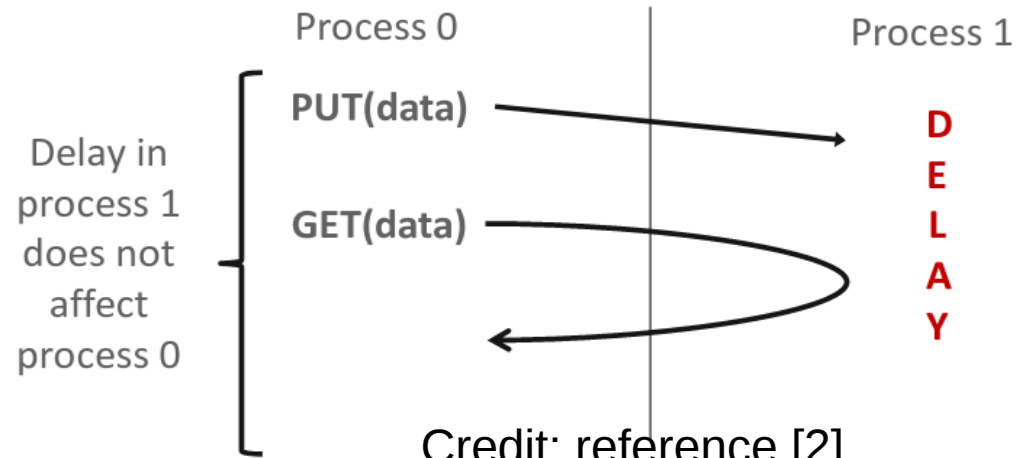
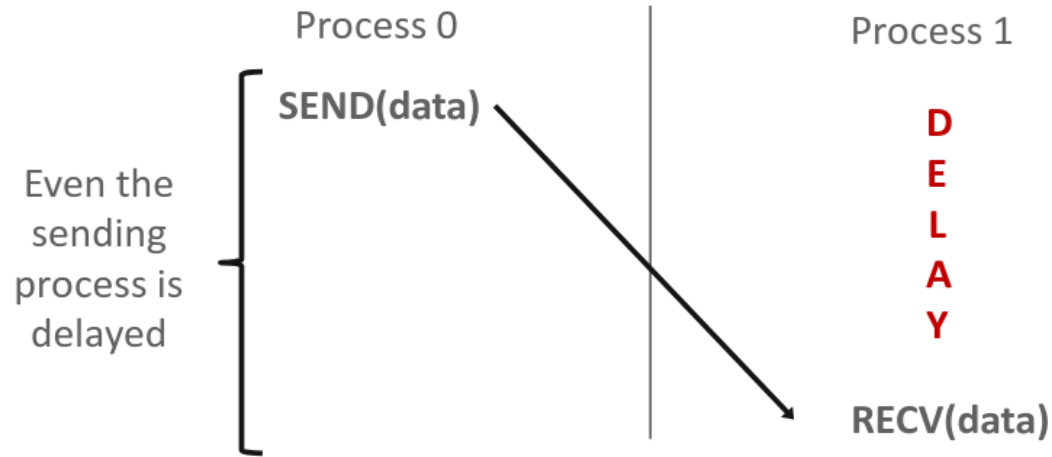
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- MPI-2 was released in 2000
- MPI-3 was released in 2012
- MPI-4 2020 – draft. Expected soon
- The MPI Standard: <http://www.mpi-forum.org>

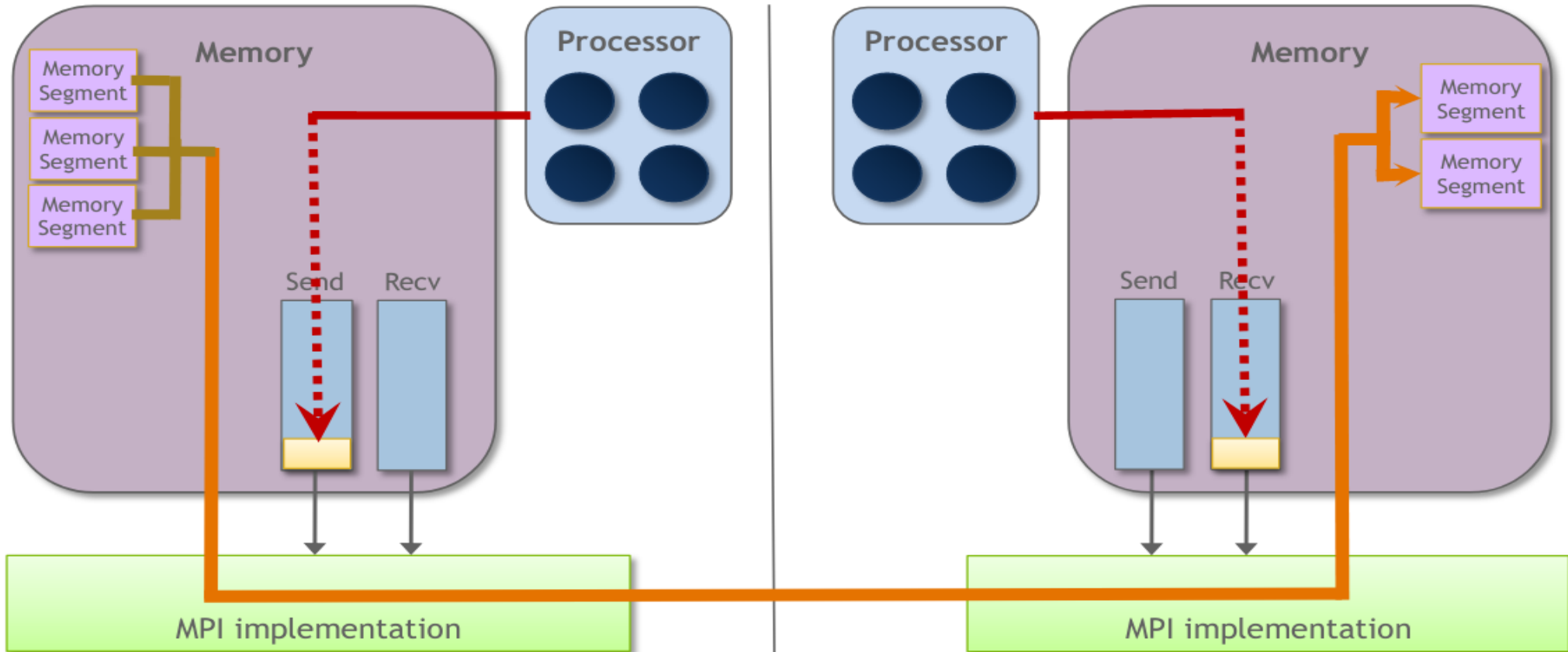
# One-sided Communication

- Decouple data movement from process synchronization.
- Each process exposes a part of its memory to other processes
- Other processes can directly read from or write to this memory

# Comparing One-sided and Two-sided Programming

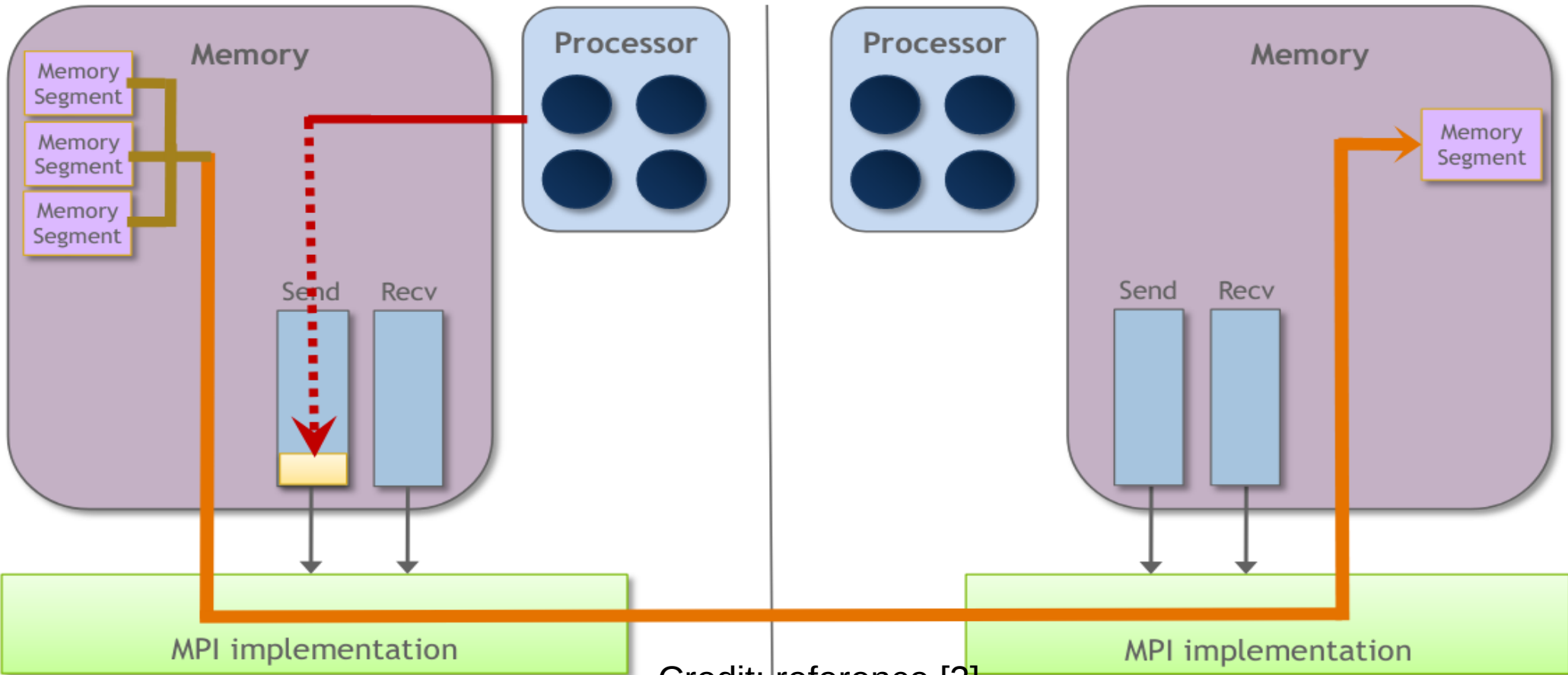


# Two-sided Communication Example

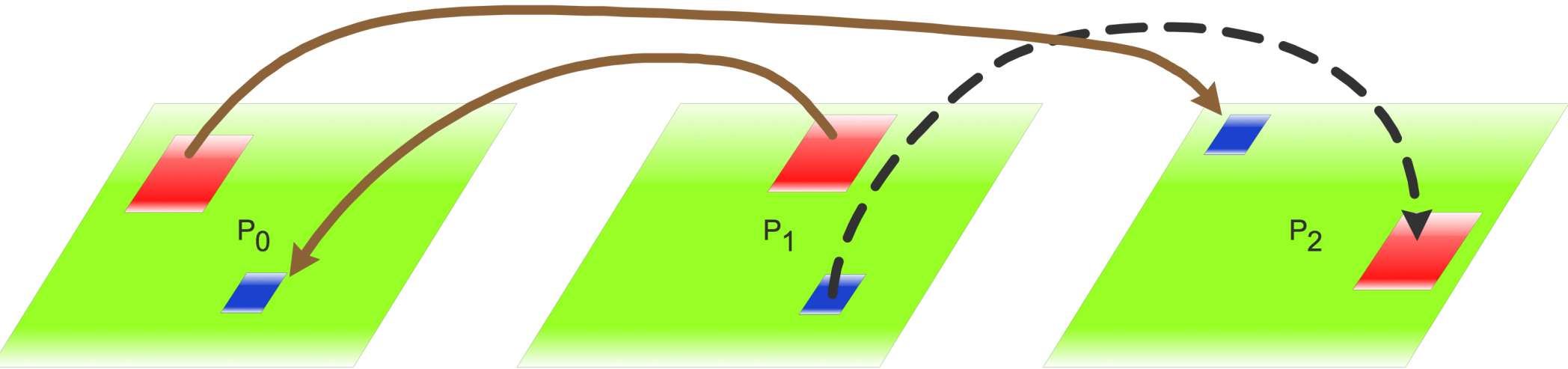
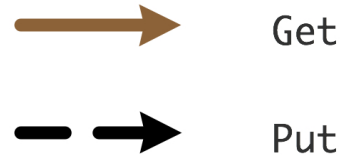


Credit: reference [2]

# One-sided Communication Example



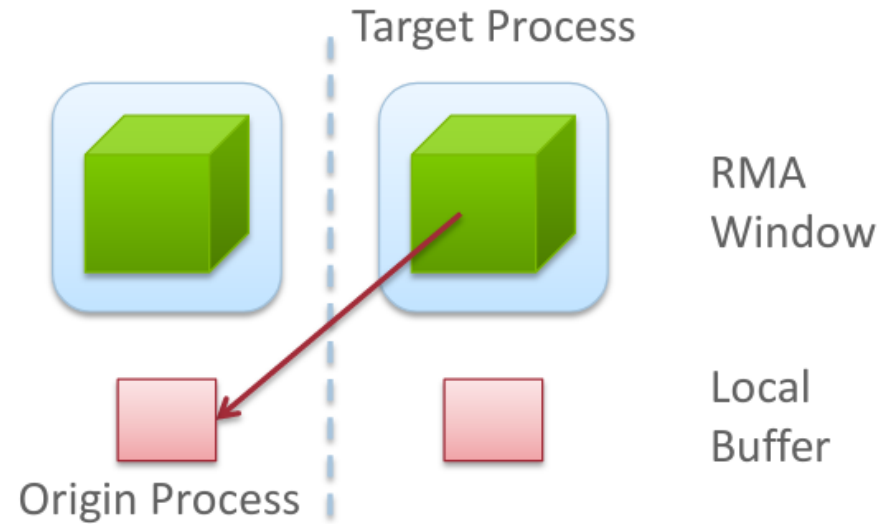
Credit: reference [2]



# Data movement: *Get*

```
MPI_Get(origin_addr, origin_count,  
origin_datatype, target_rank, target_disp,  
target_count, target_datatype, win)
```

- Move data to origin, from target
- Separate data description triples

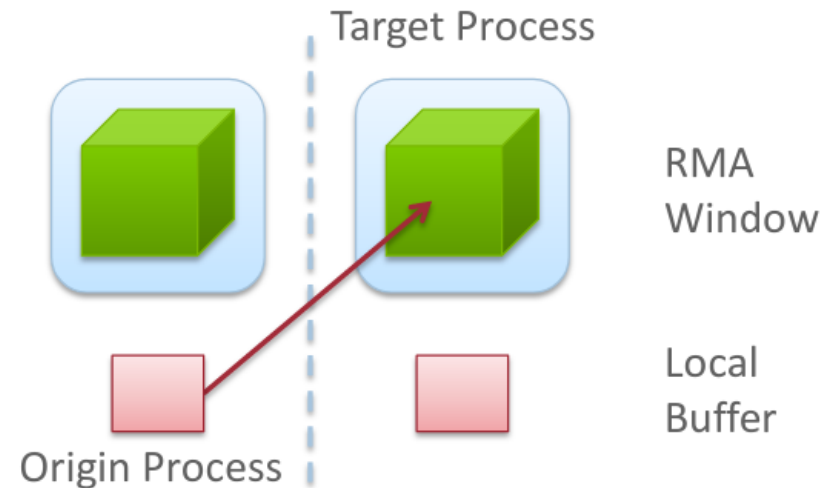




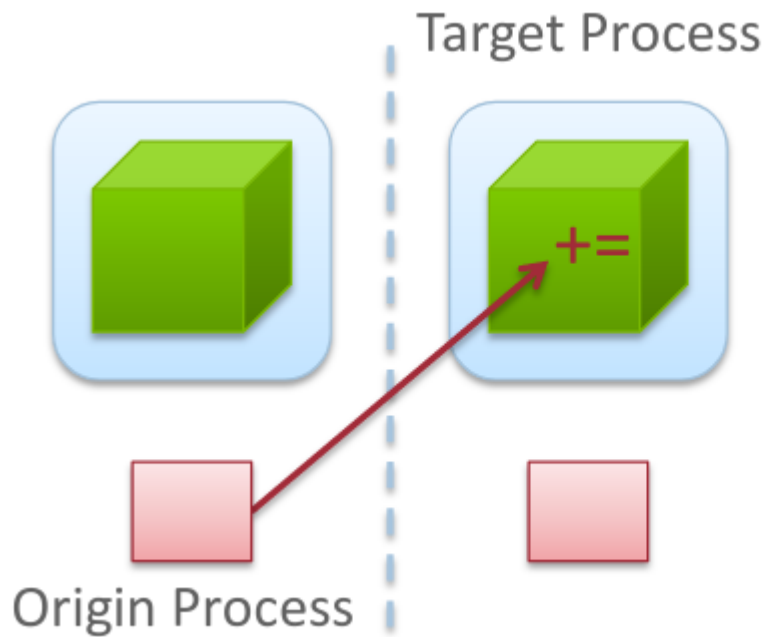
# Data movement: *Put*

```
MPI_Put(origin_addr, origin_count,  
origin_datatype, target_rank, target_disp,  
target_count, target_datatype, win)
```

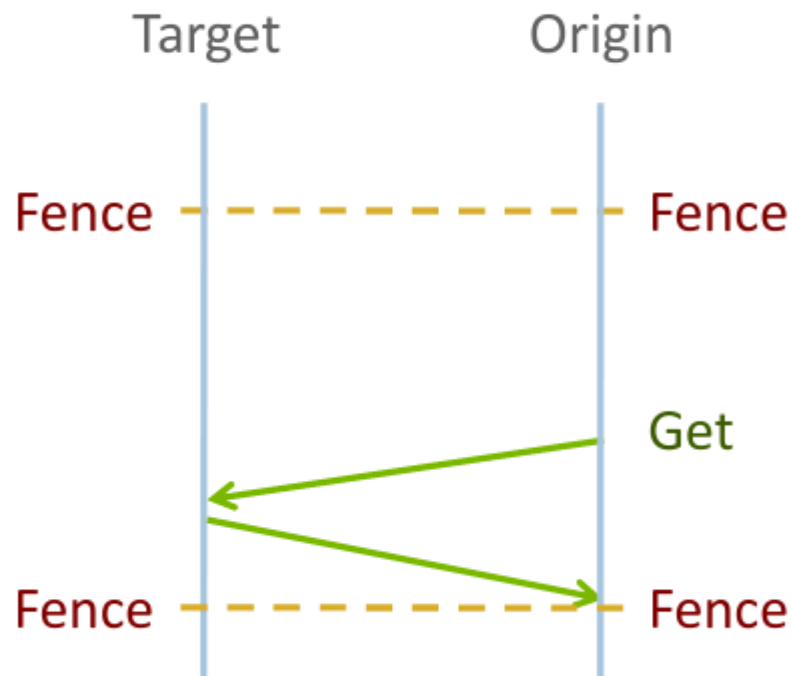
- Move data from origin, to target
- Same arguments as MPI\_Get



## Accumulate



## Fence



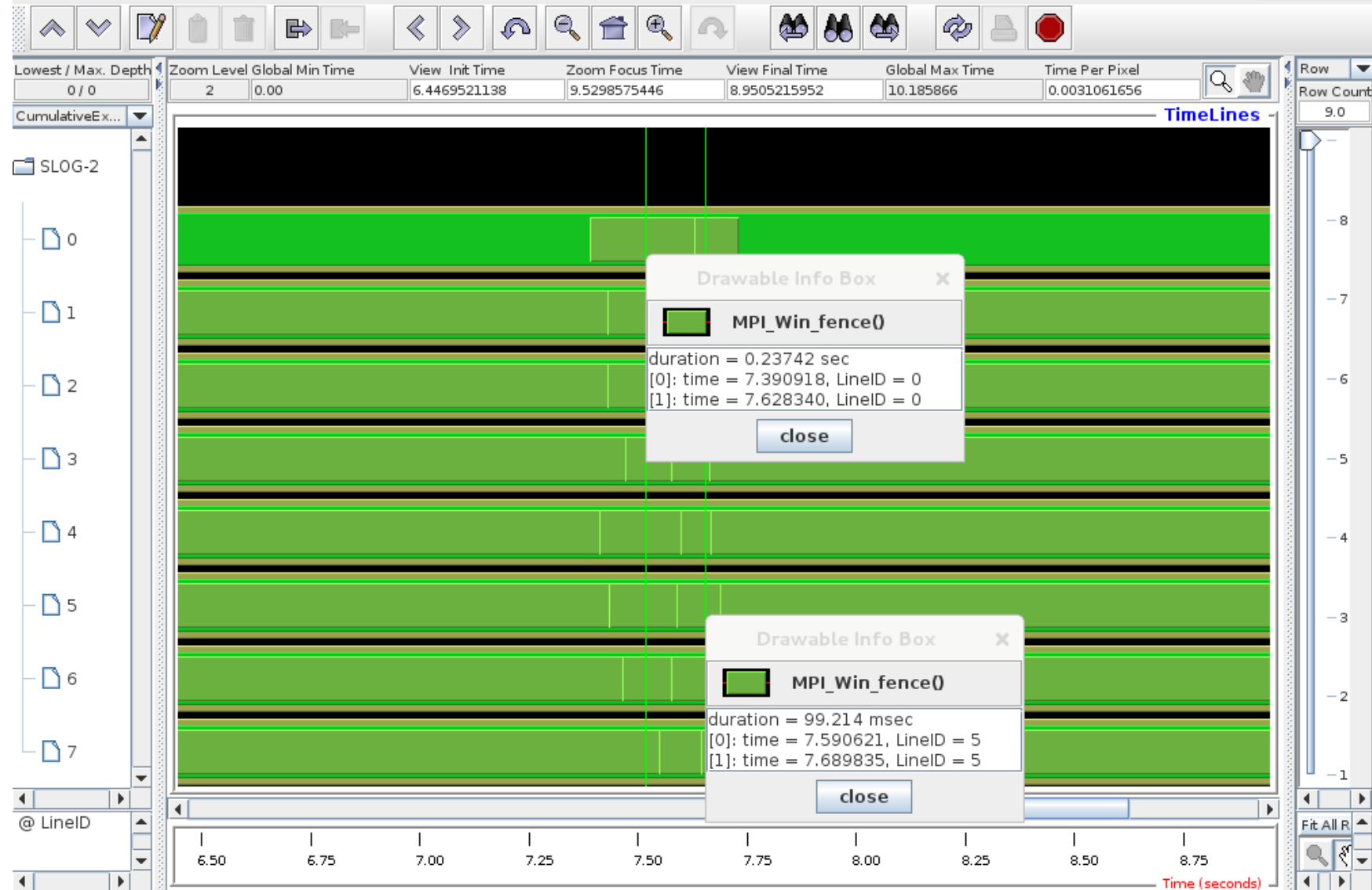
# Compute $\pi$ with RMA

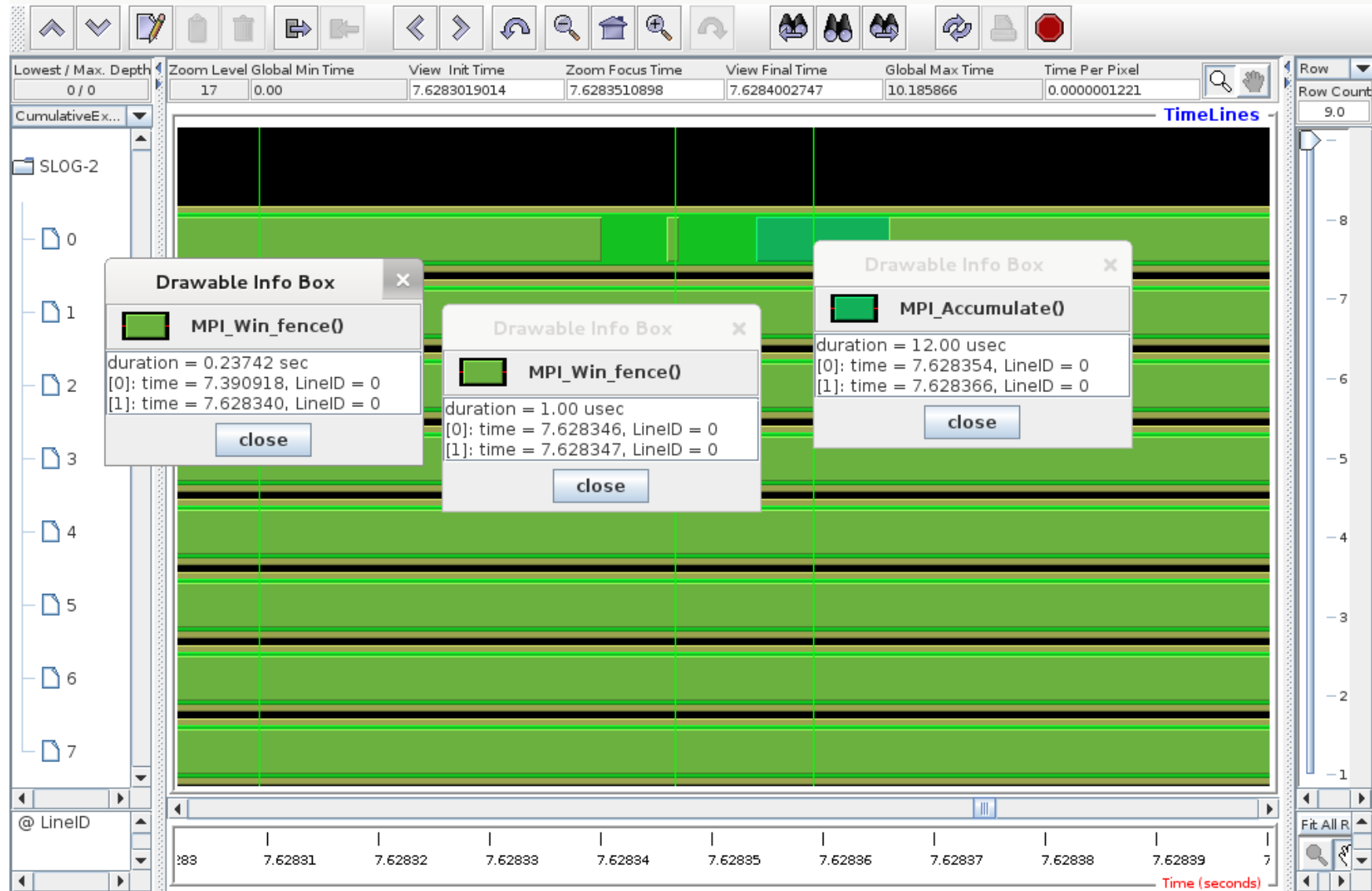
Get the cpi code:

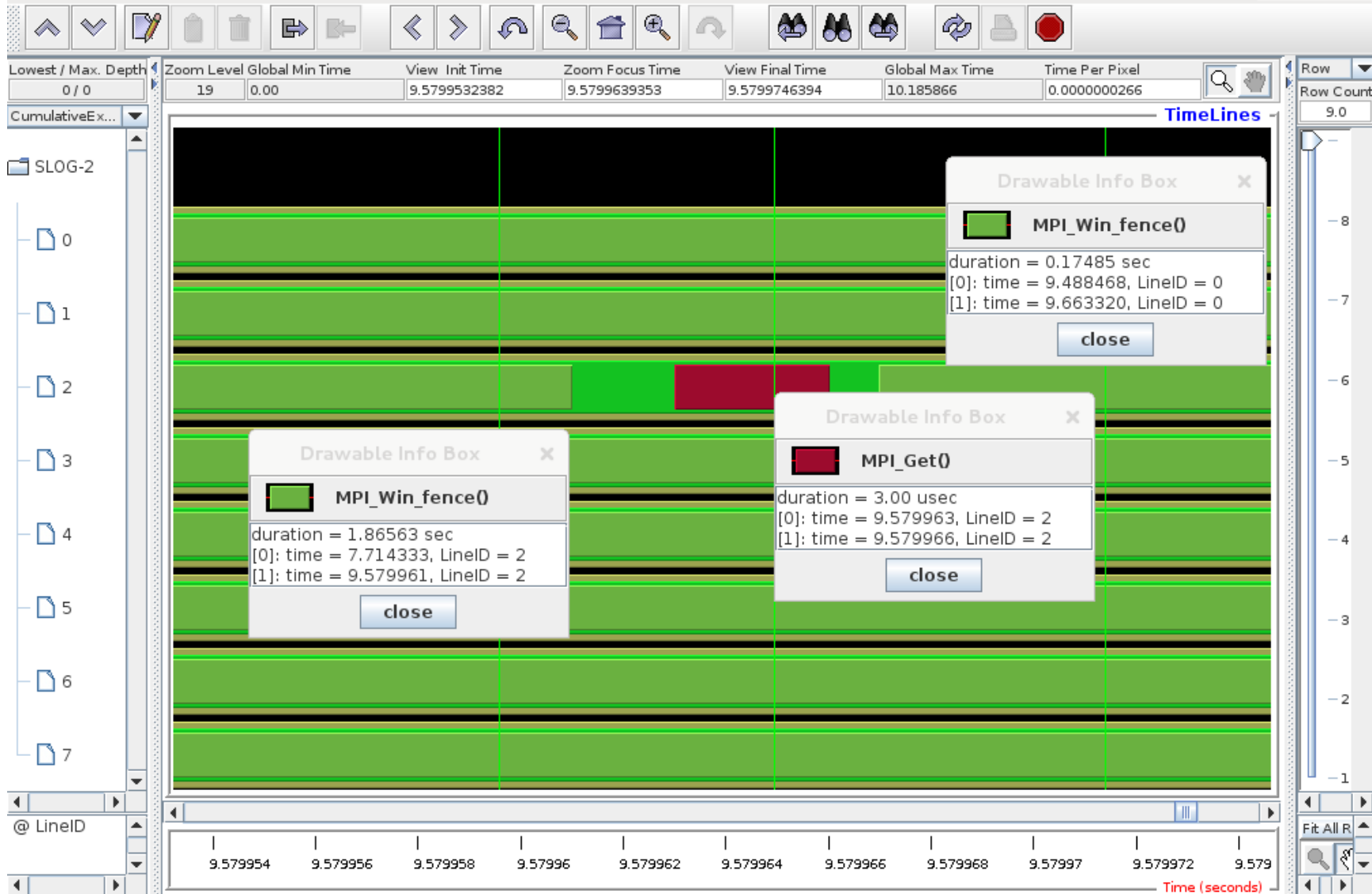
<https://www.mcs.anl.gov/research/projects/mpi/usingmpi2/examples/starting/main.htm>

Or from the course website:

<http://tel-zur.net/teaching/bgu/pp/cpi2.c>







# References

- [1] W. Gropp, E. Lusk and R. Thakur. "Using MPI-2",  
<https://mitpress.mit.edu/books/using-mpi-2> and  
<https://www.mcs.anl.gov/research/projects/mpi/usingmpi2/>
- [2] P. Balaji and T. Hoefler, "Advanced Parallel Programming with MPI-1, MPI-2, and MPI-3",  
[https://hlor.inf.ethz.ch/teaching/mpi\\_tutorials/ppopp13/2013-02-24-ppopp-mpi-advanced.pdf](https://hlor.inf.ethz.ch/teaching/mpi_tutorials/ppopp13/2013-02-24-ppopp-mpi-advanced.pdf)
- [3] V.Eijkhout's, "Introduction to High-Performance Scientific Computing",  
<https://pages.tacc.utexas.edu/~eijkhout/pcse/html/mpi-onesided.html>