

# Updates on OpenMPI and Globus on SubMIT

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SubMIT Users meeting

# OpenMPI

The Open MPI Project is an open source [Message Passing Interface](#) implementation that is developed and maintained by a consortium of academic, research, and industry partners.

## Message Passing Interface (MPI)?

A standardized and portable message-passing system for **parallel computing**. Designed for **distributed-memory architectures** (e.g., clusters, supercomputers).

Indexing and managing processes, sending & receiving messages between processes, collective operations (broadcast, reduction, gather ...)

# OpenMPI

## Implementation on SubMIT

Open MPI 4.1.1

available through the “module” system

e.g. `module load mpi`

## Example usage

```
#!/bin/bash
#SBATCH --job-name=test
#SBATCH --nodes=3
#SBATCH --ntasks=12
#SBATCH --cpus-per-task=1
#SBATCH --time=00:20:00
#SBATCH --mem-per-cpu=100

module load mpi
mpirun -n 12 ./hello_c
mpirun -n 12 python hello.py
```

“mpi4py” or equivalent python library  
needs to be installed (& configured to  
“know” the existing MPI library) for  
running python codes



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```

## Default MCA parameters

Byte-transfer layer:

`btl = ^openib, ofi`

(we do not yet have openFabrics interfaces; so disabled by default)

Point-to-point messaging layer:

`pml = ucx`

(“ucx”, a communication library to support our RoCE networking devices)

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```

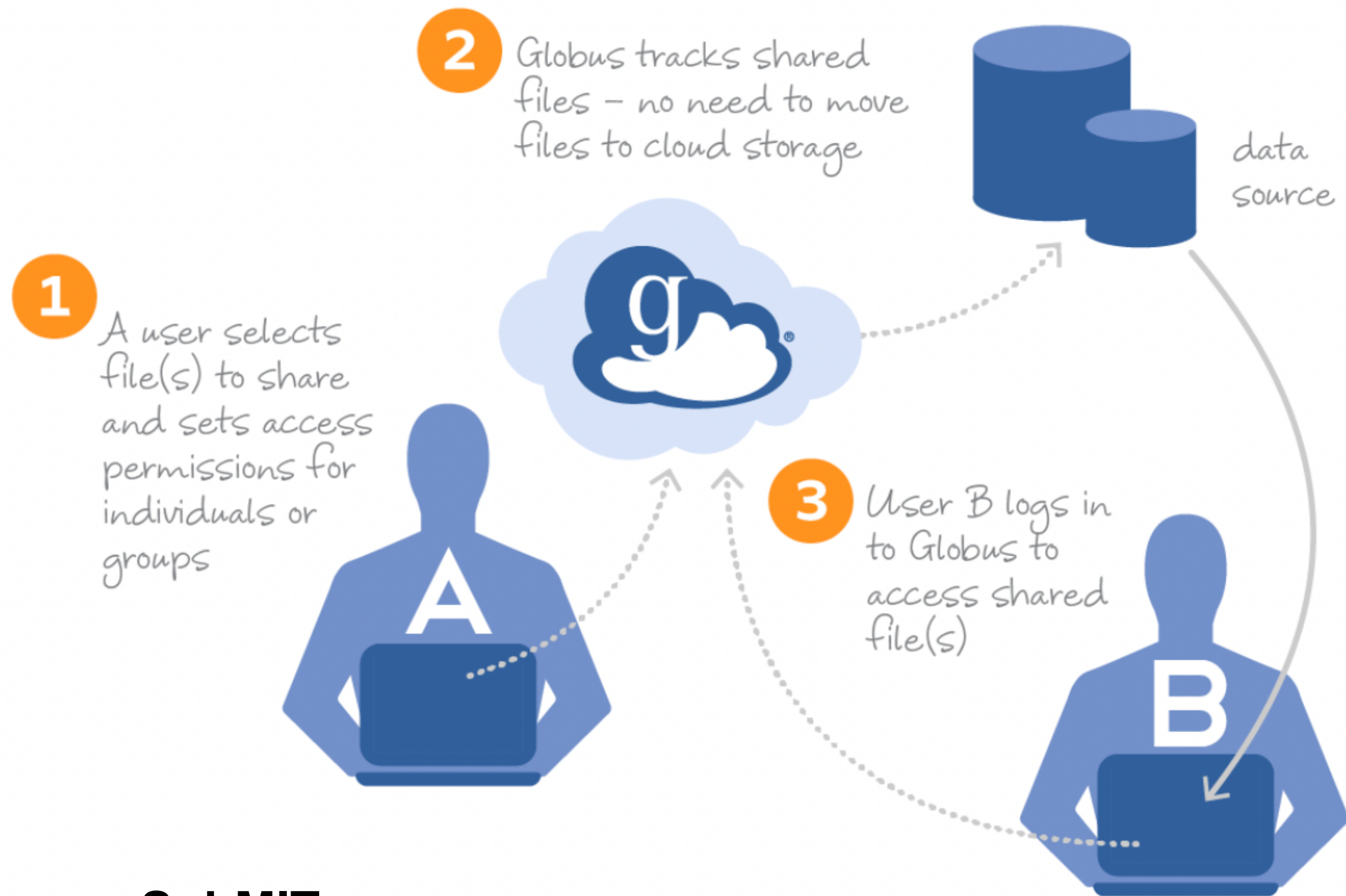
```
module load mpi
mpirun -n 12 ./hello_c
mpirun -n 12 ./ring_c
```

**User guide on the way**

# Globus

For efficiently, securely, and reliably transferring data directly between systems.

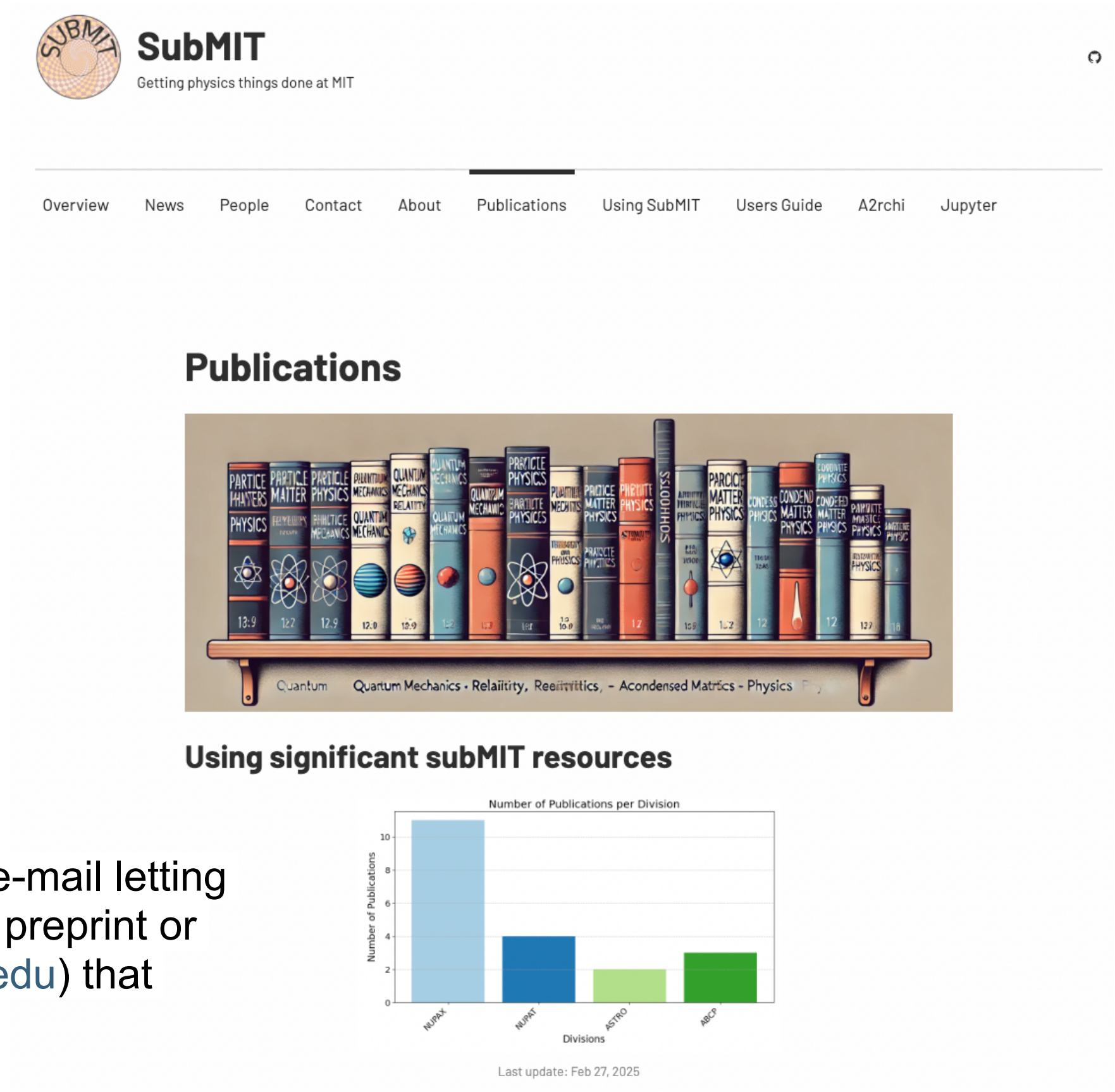




## Status on SubMIT

Endpoint, gateway, collection created  
no subscriptions yet (so no guest collections etc.)  
debugging firewall issues

# SubMIT Publications



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