

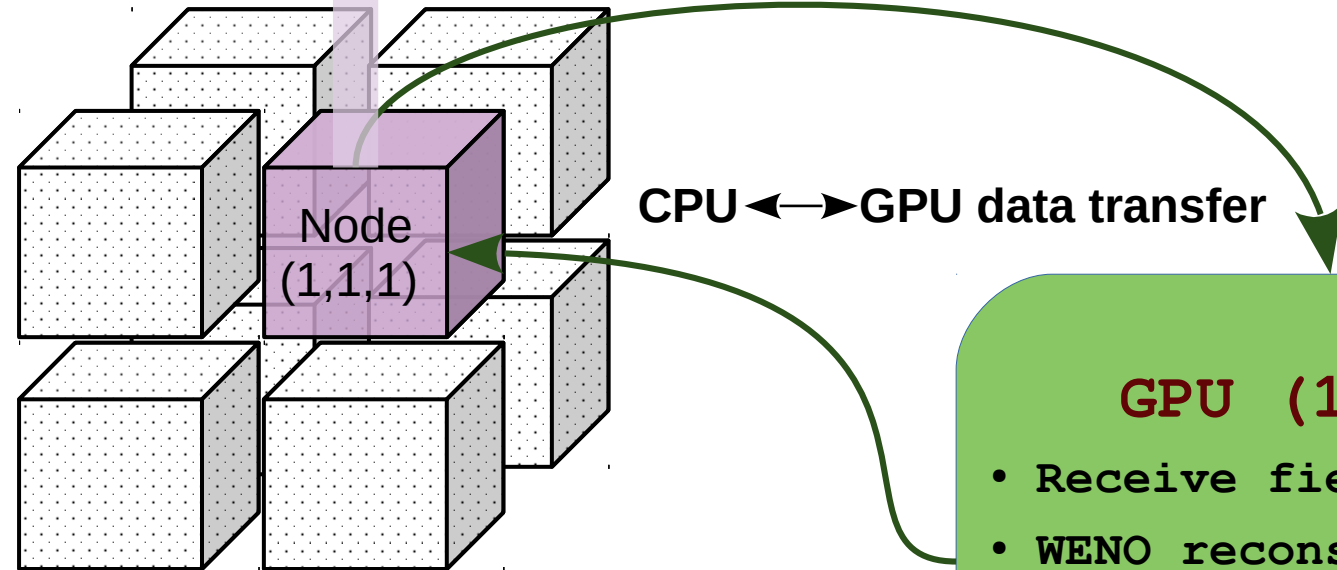
## CPU Node (1,1,1)

### DNS:

- Send flow-field to GPU
- Receive updated field from GPU
- MPI\_Isend and MPI\_Irecv:
  - Share boundary grid points info with neighbour nodes
- Periodic B.C. auto-satisfied with MPI virtual topology API
- Saving Eulerian flow-field

### LPT:

- Track fluid particles
- Save Lagrangian data:
  - Tracking ID and co-ordinates
  - Particle Velocity and grads.
  - Particle properties and required grads.
- Inter-node transfer of particles crossing the node dimensions using MPI



Data decomposed and sent to compute nodes on the cluster using **MPI Virtual Topology**

## GPU (1,1,1)

- Receive field from CPU
- WENO reconstruction
- GKM-flux calculation
- Update Flow Field
- Return field to CPU