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Recent Advances and Future Prospects in iRCCE and SCC-MPICH

Wildcard Extensions for iRCCE

Master

```
if(my_rank == 0) { // Master: receive results from workers:
   for(i=1; i<num_ues; i++)
      iRCCE_recv(buf, iRCCE_ANY_LENGTH, iRCCE_ANY_SOURCE );
}
```

Workers

```
else { // Worker: send result to master:
   iRCCE_send(result, worker_specific_length, 0);
}
```
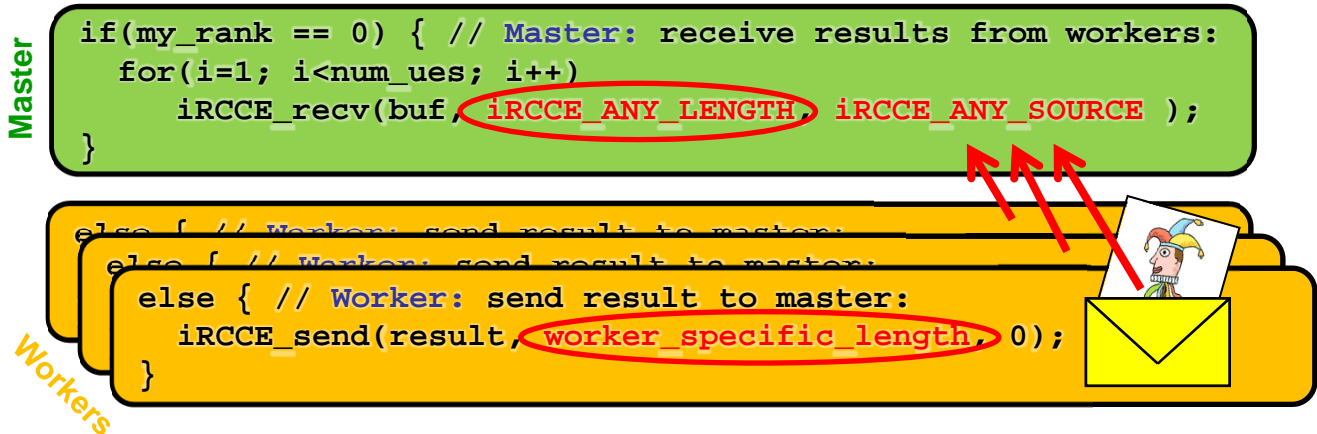
SCC-MPICH: Yet Another MPI Library for the Intel SCC

MPI Application

- MPI Interface
- Profiling Interface
- Platform *independent* Communication Layer
- ADI2 Interface
- Platform *dependent* Communication Layer
- OS / HW Interface

Operating System Hardware

SCC-MPICH

- Generic ADI2 Device
- Channel Interface
- SCC Device | Socket Device | SHMEM Device
- iRCCE | TCP/IP | SHMEM
- . . .   .

SCC — MPI_COMM_SCC — On-Die Communication via MP-Buffers

TCP over eMAC

MCPC — MPI_COMM_MCPC — Shared-Memory Communication

MPI_COMM_WORLD

- SCC-Customized
- Full MPI-1 compliant
- Multiple Protocols
- Hierarchy-aware
- Optimized Collectives (by using RCCE_comm)
- Support for the MPI-3.0 proposed Tool Interface