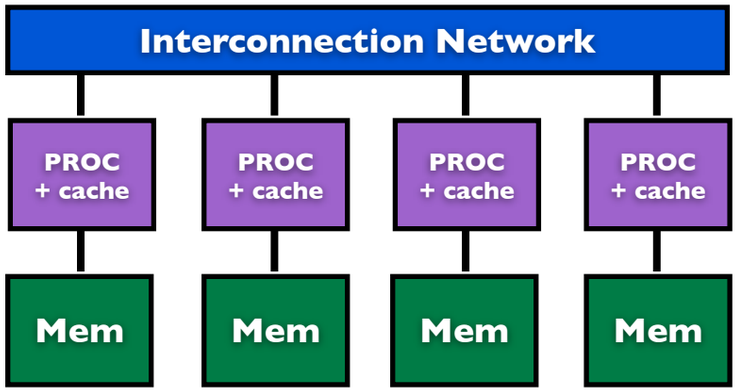
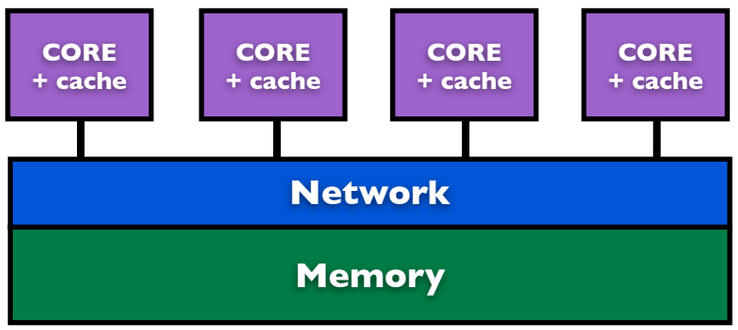
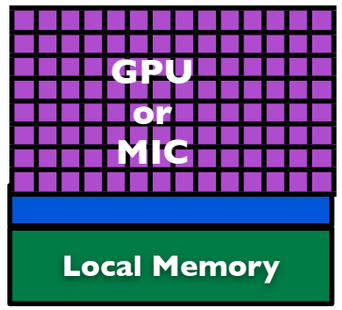
Distributed Memory



Shared Memory

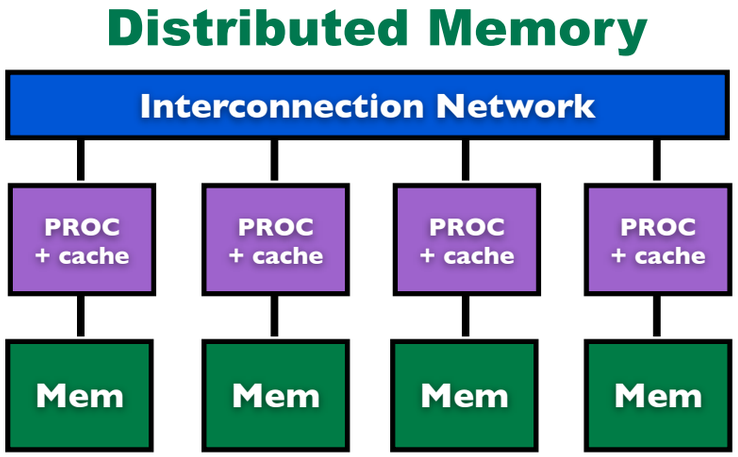


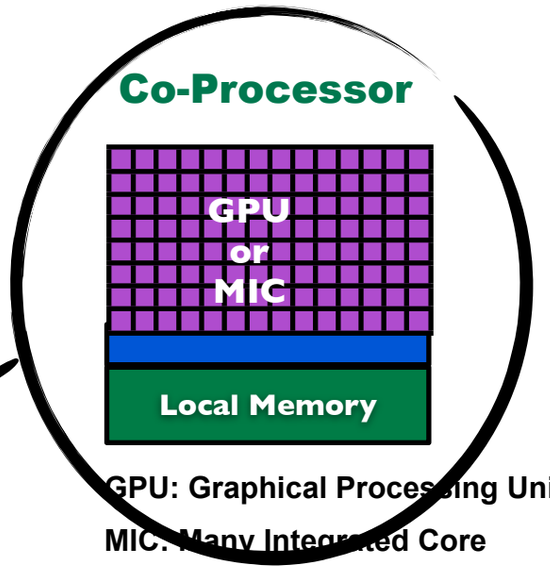
Co-Processor

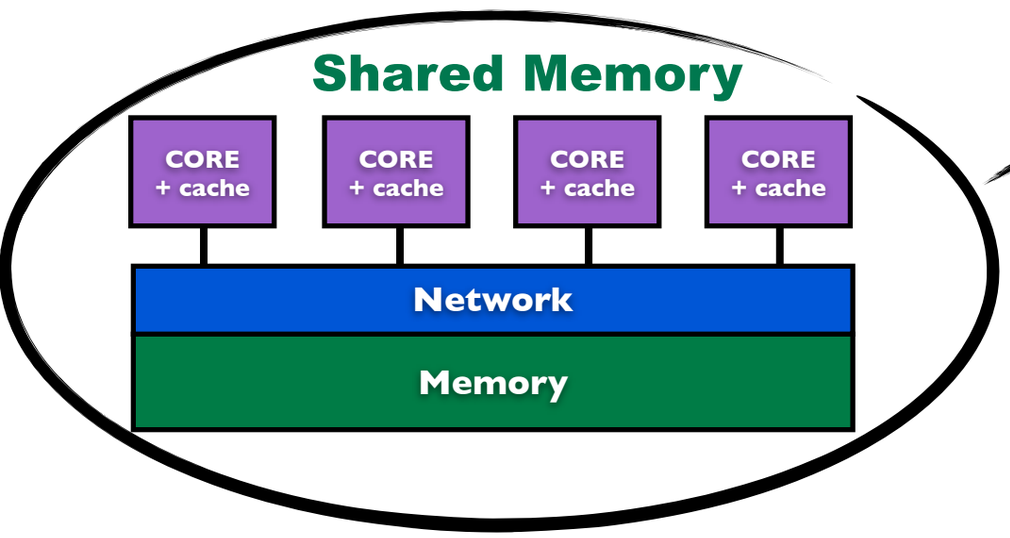


GPU: Graphical Processing Unit

MIC: Many Integrated Core







GPU: Graphical Processing Unit

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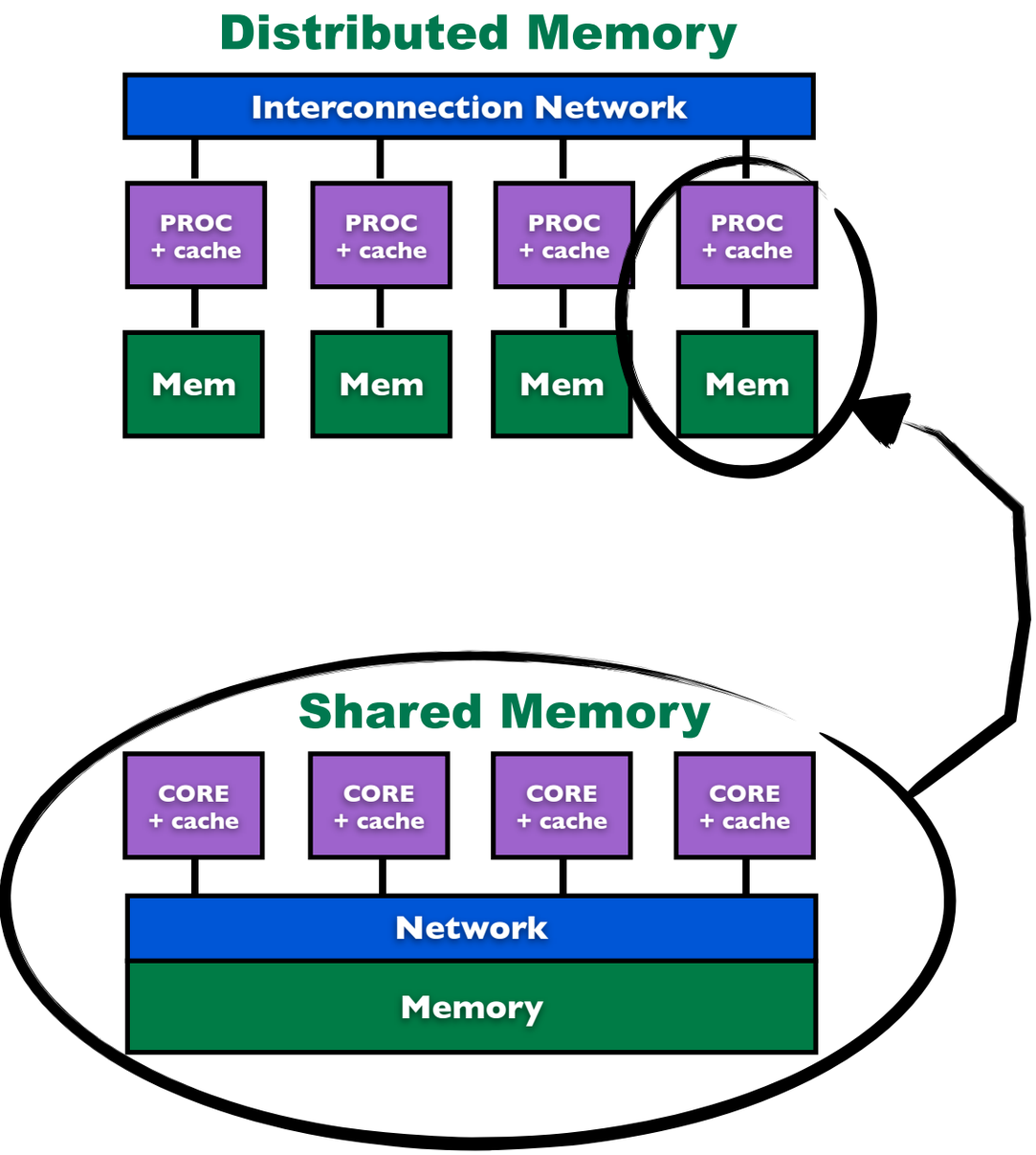

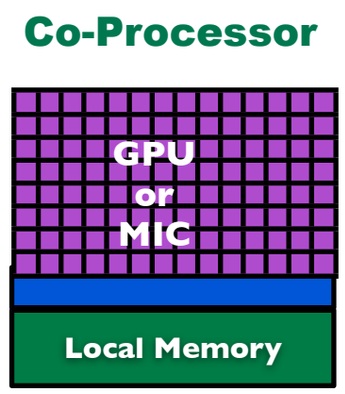

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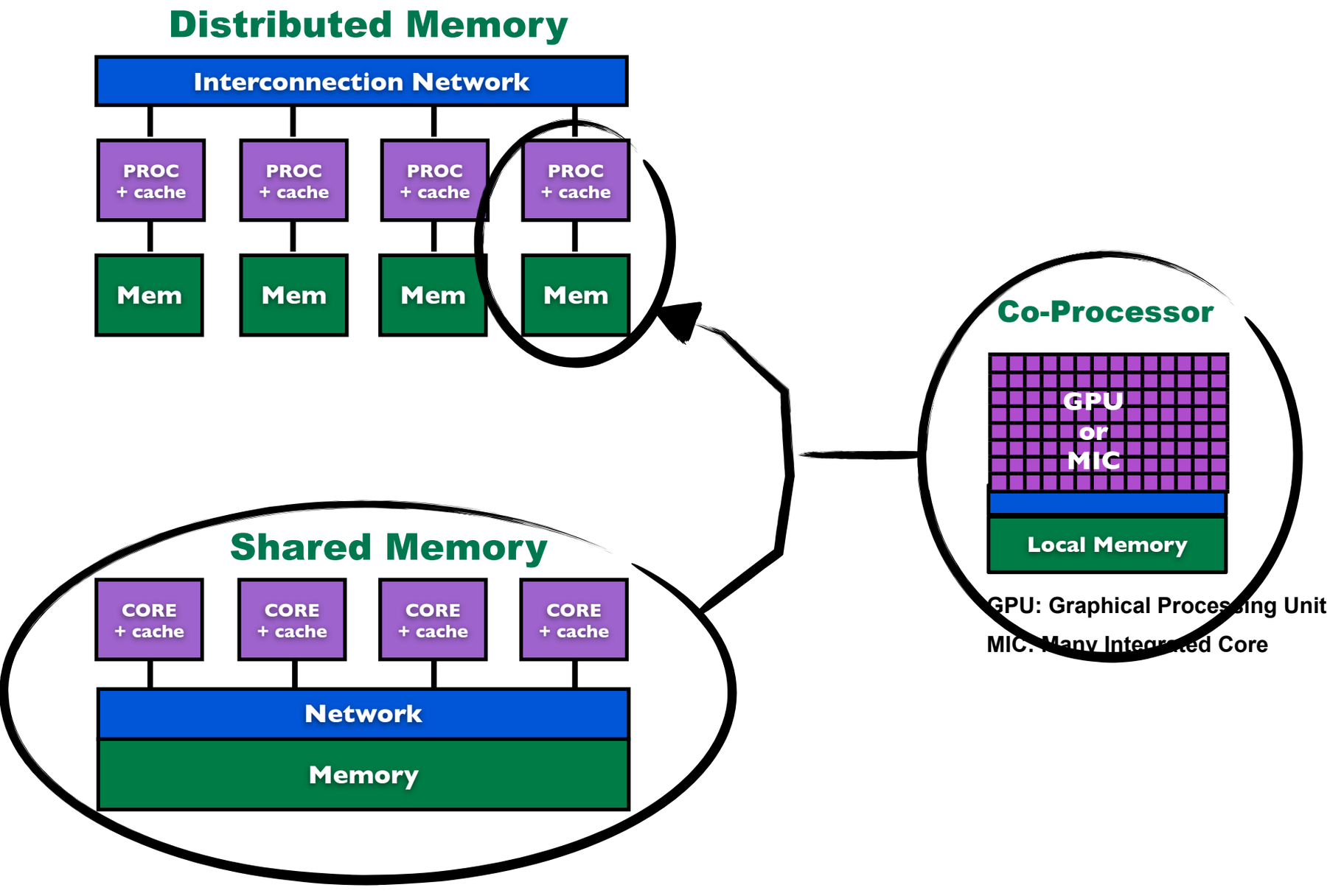
MIC: Many Integrated Core

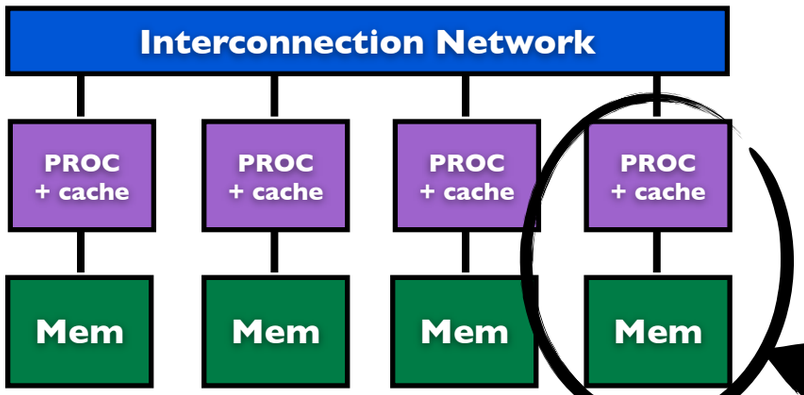


GPU: Graphical Processing Unit

MIC: Many Integrated Core

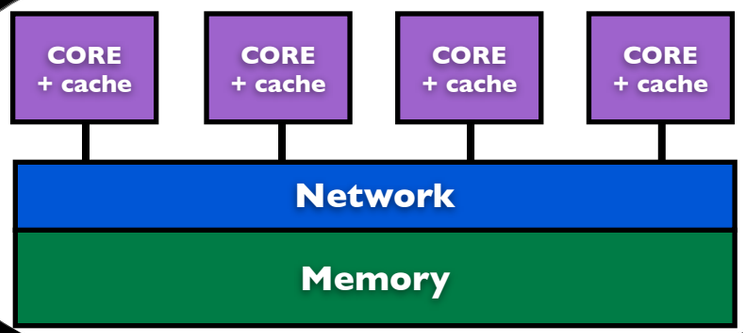
Cluster

Distributed Memory

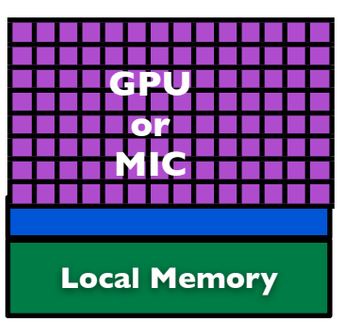


Multicore

Shared Memory



Co-Processor



GPU: Graphical Processing Unit

MIC: Many Integrated Core

GPU or Manycore

Distributed Memory

Interconnection Network

PROC + cache | PROC + cache | PROC + cache | PROC + cache

Mem | Mem | Mem | Mem

Focus on who owns what data and what communication is needed

MPI, Sockets

Co-Processor

GPU or MIC

Local Memory

Same Task on Blocks of data

CUDA, OpenCL

GPU: Graphical Processing Unit

MIC: Many Integrated Core

OpenMP

Shared Memory

CORE + cache | CORE + cache | CORE + cache | CORE + cache

Network

Memory

Focus on which tasks can be parallel

OpenMP, Threads, fork

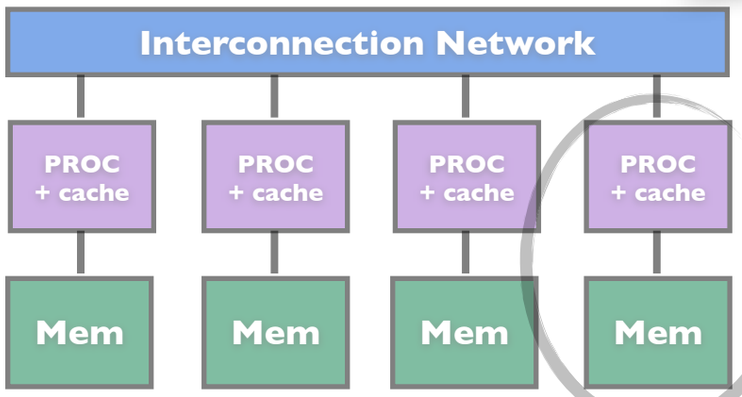
virtual shared memory: nws, Rdsm

Focus on who owns what data and what communication is needed

MPI, Sockets

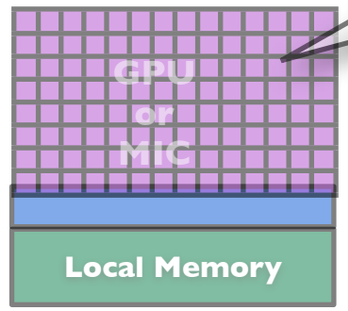
Rmpi, pbdMPI, socketConnection

Distributed Memory



Same Task on Blocks of data

Co-Processor



GPU: Graphical Processing Unit

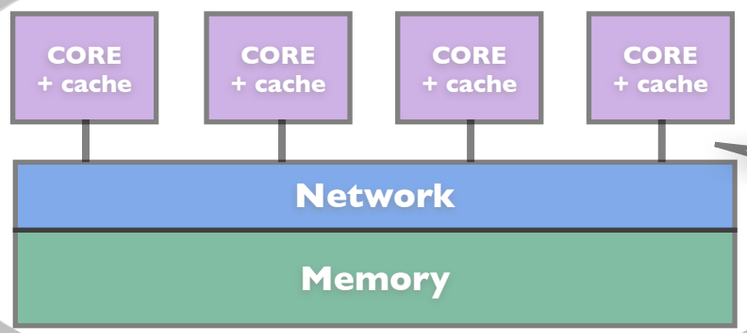
MIC: Many Integrated Core

CUDA, OpenCL

OpenCL

OpenMP

Shared Memory



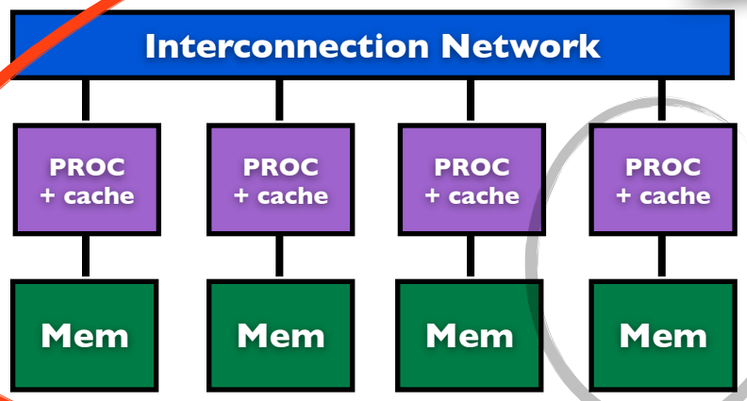
Focus on which tasks can be parallel

OpenMP, Threads, fork

multicore (fork)

snow + multicore = parallel

Distributed Memory

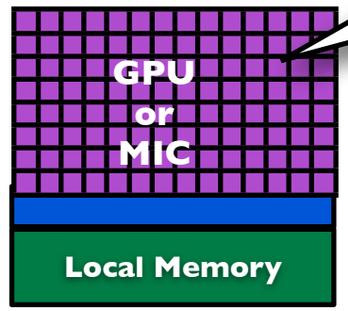


Focus on who owns what data and what communication is needed

MPI, Sockets

Rmpi, pbdMPI, socketConnection

Co-Processor



Same Task on Blocks of data

CUDA, OpenCL

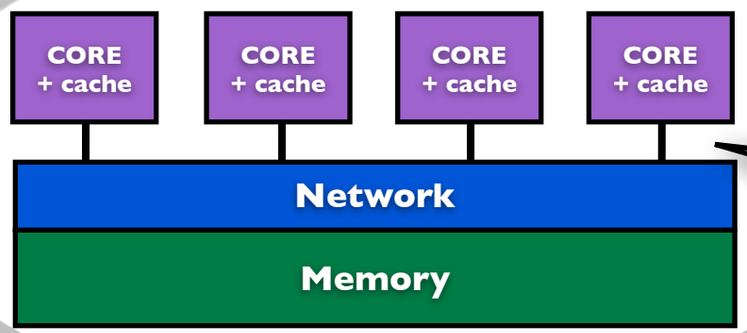
OpenCL

GPU: Graphical Processing Unit

MIC: Many Integrated Core

OpenMP

Shared Memory



Focus on which tasks can be parallel

OpenMP, Threads, fork

multicore (fork)

Distributed Memory

Interconnection Network

PROC + cache | PROC + cache | PROC + cache | PROC + cache

Mem | Mem | Mem | Mem

Focus on who owns what data and what communication is needed

MPI, Sockets

Rmpi, pbdMPI, socketConnection

Same Task on Blocks of data

Co-Processor

GPU or MIC

Local Memory

GPU: Graphical Processing Unit

MIC: Many Integrated Core

CUDA, OpenCL

OpenCL

OpenMP

OpenMP, Threads, fork

multicore (fork)

Shared Memory

CORE + cache | CORE + cache | CORE + cache | CORE + cache

Network

Memory

Focus on which tasks can be parallel

Distributed Memory

Interconnection Network

PROC + cache | PROC + cache | PROC + cache | PROC + cache

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Focus on who owns what data and what communication is needed

MPI, Sockets

Rmpi, pbdMPI, socketConnection

Co-Processor

GPU or MIC

Local Memory

Same Task on Blocks of data

CUDA, OpenCL

OpenCL

GPU: Graphical Processing Unit

MIC: Many Integrated Core

OpenMP

Shared Memory

CORE + cache | CORE + cache | CORE + cache | CORE + cache

Network

Memory

Focus on which tasks can be parallel

OpenMP, Threads, fork

multicore (fork)

Distributed Memory

Interconnection Network

PROC + cache | PROC + cache | PROC + cache | PROC + cache

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MPI, Sockets

Rmpi, pbdMPI, socketConnection

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GPU or MIC

Local Memory

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multicore (fork)