

THE IBM BLUE GENE/Q COMPUTE CHIP

Paper by: **R.A. Haring et al.**

Presented by: **Lambros Mertzanis**

The Blue Gene/Q Compute chip is a system optimized for price performance, energy efficiency, and reliability in large-scale scientific applications.

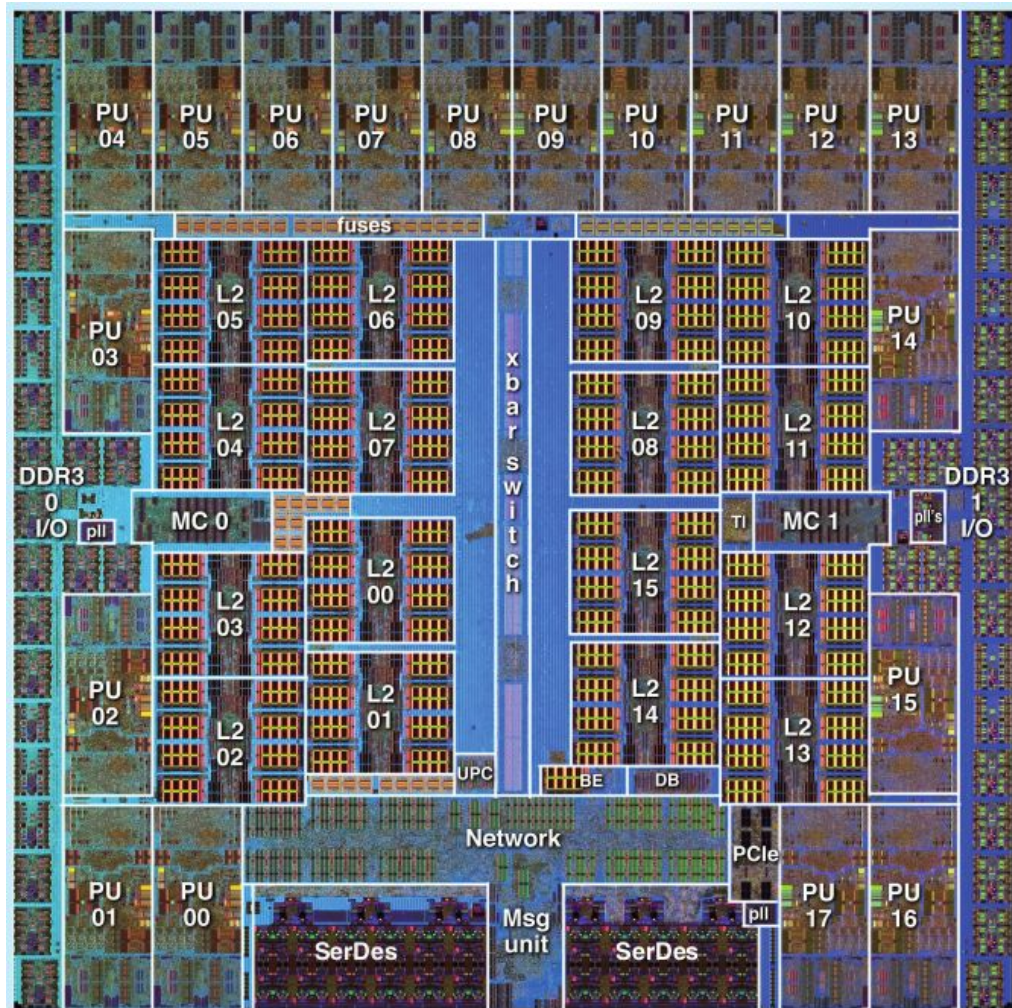
Useful for applications like analytics.

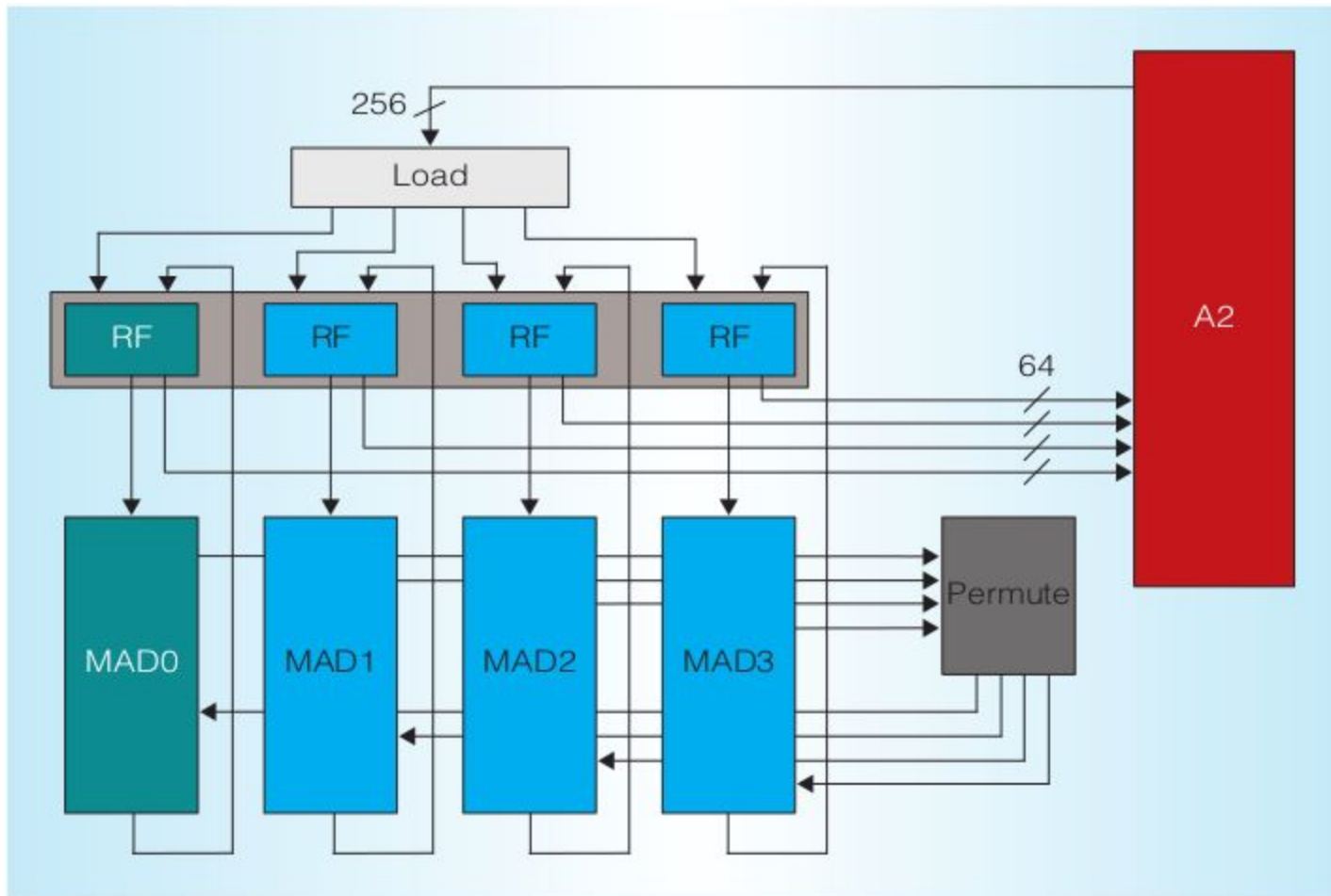
Specifically designed for MPI & OpenMP.

It consists of:

18 IBM PowerPC A2 processors
(45nm Transistors)(16 KB L1 Cache)
Shared 32MB L2 Cache

Adds support for SIMD floating point
operations

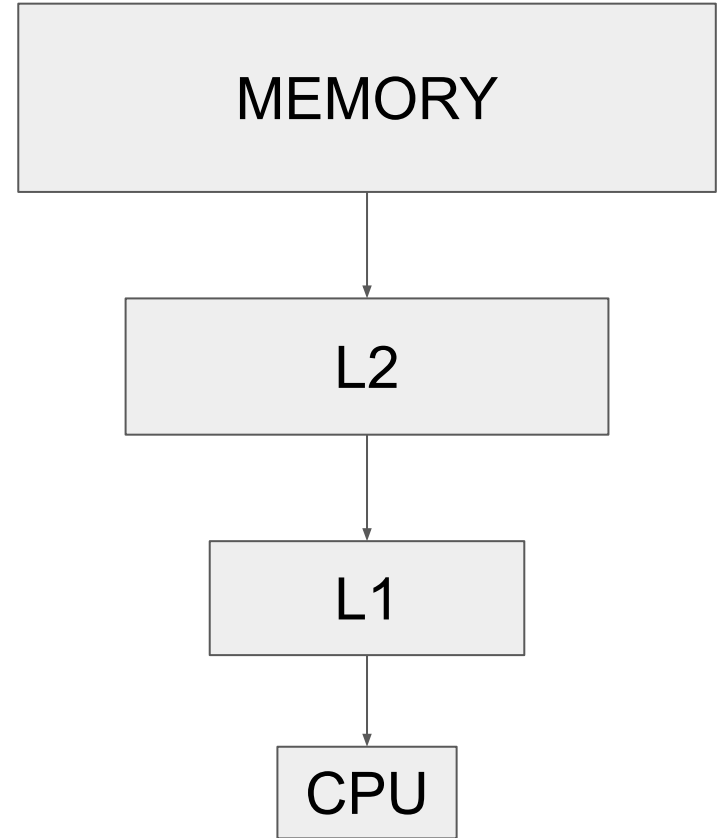




L1 Prefetching

Stream Prefetching

List Prefetching



WakeUp Unit

Reduces thread-to-thread interactions arising from software blocked in a spin loop.

Allows threads to pause and not waste time waiting.

Increased power efficiency

Each processor core has its own
WakeUp unit

Each WakeUp unit has 12 Wait Address
Compare (WAC) registers.

Each WAC snoops writes on the chip looking
for a wake up signal.

I suppose we are out of time now.