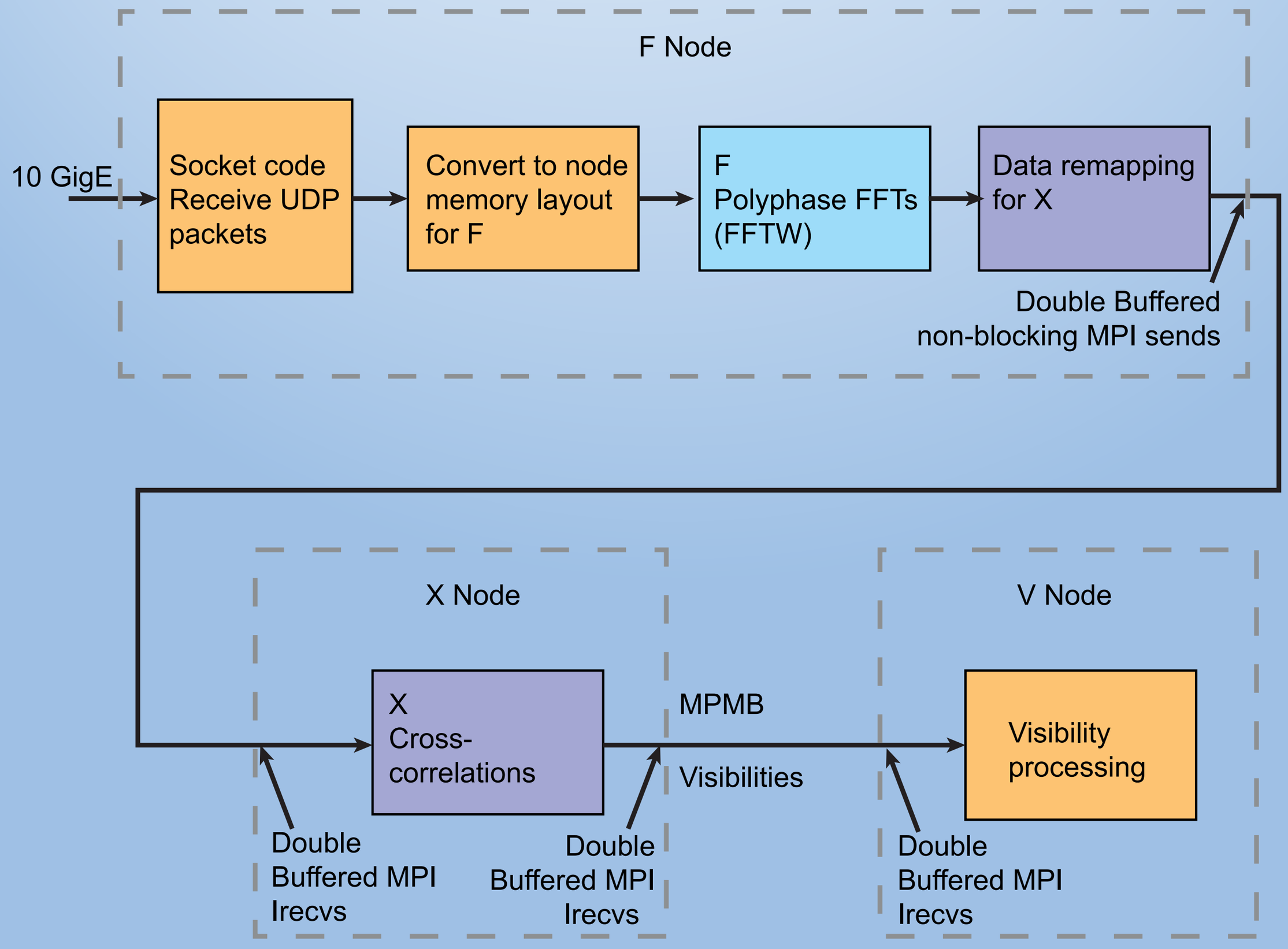
Prototype All Sky Imager (PASI)

Real-time Streaming Correlation for Long Wavelength Array (LWA) Radio Astronomy Applications

The Problem: Correlation is a daunting challenge for large-scale interferometric radio telescope arrays.

The Solution: PASI correlates 256, dual-polarized 50-100 KHz antenna streams in real time.

- PASI uses 4 standard Intel Xeon servers interconnected with IB 4x DDR
- Pipeline constructed via MPI using double buffering of incoming and outgoing data at each pipeline stage
- Process is heavily optimized via SSE vectorization, threading, and careful data layout.



PASI Pipeline Block Diagram

Live PASI Imaging: http://www.phys.unm.edu/~1wa/1watv.html

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