Parallella-4K
Specifications
Rev0.1
ANDREAS OLOFSSON

Specifications

- **Basic Features:**
  - 256 EE16G301 devices (providing 4096 Epiphany CPU/DSP cores (600MHz))
  - 12 A9 ARM cores (Zynq045 chip)
  - 128 GB DDR3 SDRAM
  - 128 MB Epiphany SRAM software managed cache
  - 64 high speed 240 pin eLink connectors for system expansion
  - 4 60-pin samtec connectors for Parallella board expansion (TBD)
  - 5 Gigabit Ethernet connectors

  Components:
  - 4 Parallella-16 control nodes (or FMC connectors?)
  - 5 eLink flex cables
  - 1 carrier card for connecting Parallella-Meta boards together (mostly reset, clock, connectors)
  - 16 Parallella-Meta boards
- **Aggregate Performance:**
  - 5 TFLOPS
  - 2.5 THz of equivalent CPU performance (4096 * 600MHz)
  - 78 TB/s local SRAM bandwidth
  - 102 GB/s eLink off-board bandwidth
  - 25 GB/s "Ethernet" bandwidth
- **Programming Support:**
  - Software Tools: GCC, GDB, Eclipse
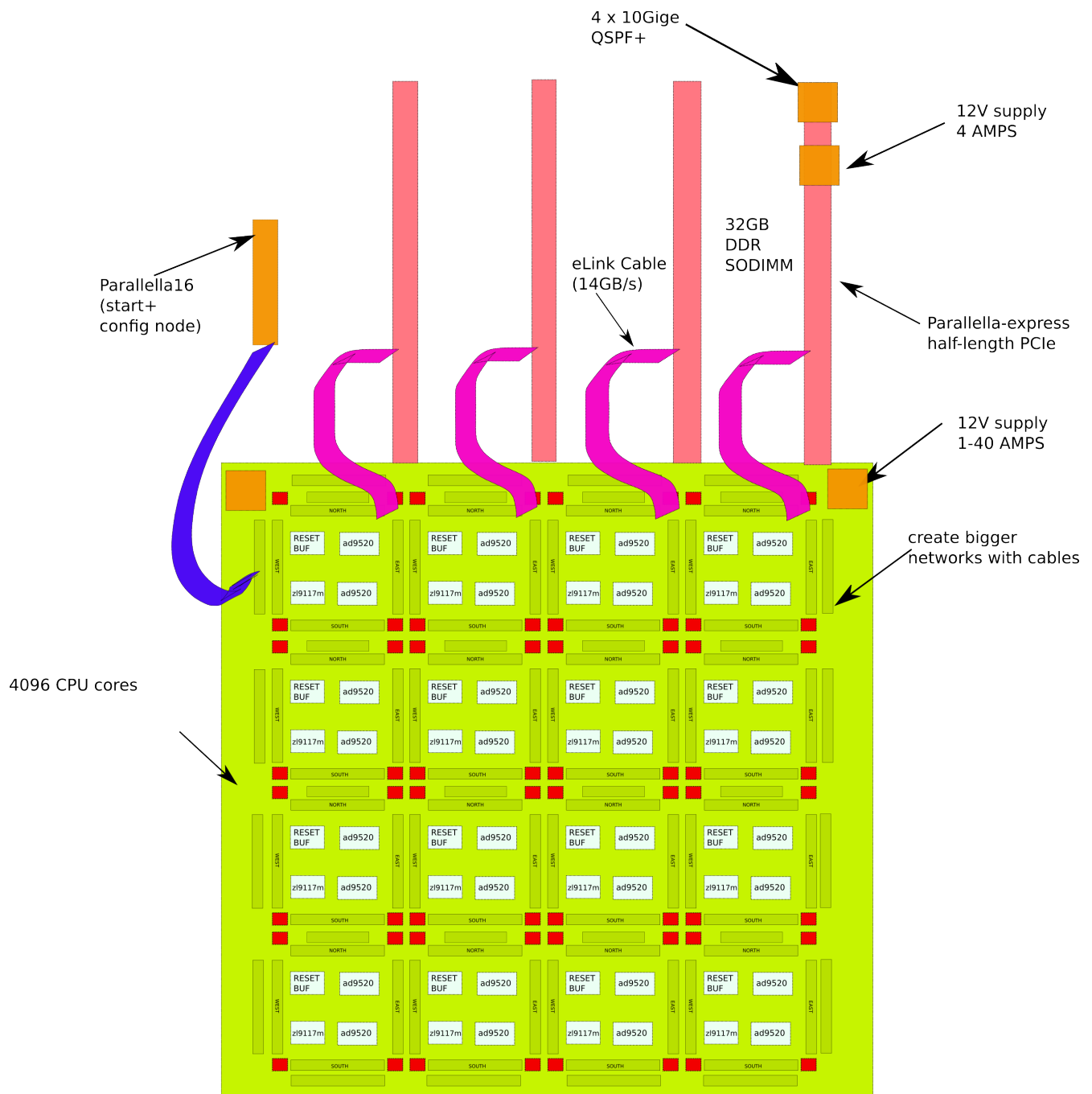 - Programming model: C, C++, OpenCL, OpenMP, MPI,
- **Power: (per meta board)**
  - 1.0V rail for core power (approx 16A)
  - 1.8V rail for LVDS/IO power (approx 8A)
  - Ability to power each Meta card individually through power islands
  - <500W typical power consumption
- **Mechanical dimensions:**
  - Parallella-meta carrier card is 439 x 451 (mm)
  - Total system size would be 710 x 457 x ?? (mm)

Drawings

4 x 10Gige
QSPF+

12V supply
4 AMPS

Parallella16
(start+
config node)

eLink Cable
(14GB/s)

32GB
DDR
SODIMM

Parallella-express
half-length PCIe

12V supply
1-40 AMPS

create bigger
networks with cables

4096 CPU cores

| RESET BUF | ad9520 |
| zl9117m | ad9520 |

Top side view of server fitting into 19 inch rack. Front panel would be at the bottom of this drawing.