

ExaNeSt

Project Highlights

- ARMv8 with UNIMEM (global sharable coherent memory scheme)
 - Supporting MPI and Partitioned Global Address Space (PGAS)
 - low energy compute, low overhead communications
 - UNILOGIC FPGA acceleration
- Networking – *unified* compute & storage, low latency
- Storage – converged offering locality while distributed, non-volatile memories
- Real Applications – Scientific, Engineering, Data Analytics
- Data Centre Infrastructure – Power, Cooling, Mechanicals, Total Liquid Cooling

Anticipated technology for EsD

- The Nest – Ready to power, connect and liquid cool different distributed compute nodes (@3.2kW/u, 762mmx600mm cabinets)
- FPGA/ARM Nodes – Initial Nodes for the Nest with 4 FPGAs (+ Cortex-A7x from EuroExa)
- Networking, Storage and Application Developments – Ready to support the Nest, Nodes and the Ecosystem, various node config available commercially from Kaleao

How should this technology be used / integrated (I/F, APIs)

- The Nest accepts 16x 120mmx130mm at up to 200W daughter card nodes per u with a prescribed pin out and 48v DC supply
- Networking, Storage and Applications are optimised for ARM and Xilinx FPGA reconfigurable accelerators and can be ported to other platforms
- Nodes can be used in different infrastructure supporting their pin-out, thermal and mechanical needs

Are there any pre- or co-requisite items

- The project anticipates improvements from co-operation with outputs from sister projects EcoScale and ExaNode, potential for different processors that follow node pin out

Any extra work/interaction (on top of current project roadmap) needed to make them ready?

- Further development is already planned and funding committed...
- Results are expected to be strong at the end of the project, with demonstrators being arranged and enhanced in further projects TBA. EuroExa plans a 1 PFLOP theoretical peak testbed at STFC

What information / actions are needed to best prepare for EsD projects?

- Discussion, collaboration with other projects and interested EsD consortia
- Key partners in the UK are committed to EU based operations as needed....