

DI

TechLab

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- **Problem: Flat budgets and increasing computing requests**
- **Purpose**
“TechLab is an IT project aiming at **improving the efficiency of the computing architecture and making better utilisation of the processors** available today.”
- **Best effort activity started recently**
- **Where to find us?**
 - Concurrency forum (<http://concurrency.web.cern.ch/>)
 - Mailing lists (techlab-announce and techlab-discuss egroups)
 - Twiki: <http://cern.ch/techlab>
- **Who are we?**
 - Very small number of part-time IT staff from different groups
 - Transversal activity in IT
 - Liaise with procurement, Openlab, HPC, fabric, Puppet etc. teams

Hardware type	Specs summary
<u>iWARP 10Gb</u>	13 nodes with 10 Gb iWARP (will be upgraded to 40 and later to 60 nodes)
<u>Quad Socket SandyBridge-EP</u>	4 nodes, each with quad socket 8 cores SandyBridge-EP
Intel Xeon Phi	4 nodes, each with dual socket 8 cores SandyBridge + Xeon Phi 7120P
Nvidia K20X GPU	4 nodes, each with dual socket 8 cores SandyBridge + NVidia K20X
<u>Nvidia K20m GPU</u>	2 nodes, each with dual socket 8 cores SandyBridge + NVidia K20m
Intel <u>SandyBridge-EP</u>	10 nodes, each with quad socket 8 cores SandyBridge-EP E5-4650
Intel Atom S1260	45 cartridges
Intel Atom C2000 "Avoton"	45 cartridges
ARM A9 Calxeda SOCs	4 independent ARM A9-based SoCs cluster
ARM 64 bit	TBD

- **Software stack as close as possible to standard production systems, typically Scientific Linux 6 managed with Puppet**
 - When (reasonably easily) feasible, Fedora Core or modern Kernel
 - Performance tuning wherever possible (Kernel, compilers, libraries, etc.)

- **Simple booking system**
 - Reserve a TechLab system for a limited time like a book in a library
 - Just contact us by email
- **Important for us to understand your needs**
 - What hardware would be of greatest interest? How much would you gain?
 - Where can optimisations be made to your code?
 - How can we configure the TechLab system best for your needs?
 - Multiple parameters (OS, Kernel, compilers, special instruction sets, math libraries, but also memory, network, disk/tape, etc.)
 - Benchmarking essential
 - TechLab systems
 - Applications being tested

- **Continue...or not, depending on community interest**
 - Happy users, but moderate adoption so far
 - Very good experience for IT, but takes time from skilled experts
 - Contributions from outside IT would really help...
- **How can we make the user experience better?**
 - Better or more hardware?
 - Faster delivery/availability?
 - More specific recommendations/consulting?
 - What would *you* like to see?
- **Interesting working areas:**
 - Improve new hardware integration workflow within IT
 - Get involved in the HEPiX HS working group
 - Provide an alternative vision on performance/watt