

Grid @ ARM

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Agenda

- Little Background
- Grid Technology at ARM
- Why we do Grid
- What works for us and what doesn't
- Future

Background

- ARM is the industry's leading provider of 16/32-bit embedded RISC microprocessor solutions
 - 750 staff in 18 offices (mainly Cambridge UK)
- Me – Head of team the supports / develops engineering infrastructure – been at ARM for 10 years
- Microprocessor design front to back
 - HDL model development / verification
 - Design synthesis
 - Design implementation
- Software design
 - Development tools
 - ARM apps
- Development board
 - System prototyping

Grid Technology @ ARM

- 5 Clusters, one in each of our main Design Centers
 - Heterogeneous (50% Linux, 40% Solaris, 10% Other) (SPARC, I-32, PA-RISC, AMD64, ARM)
 - Platform LSF as scheduler
 - Some inter cluster work done manually
- 80% of Engineering work done in cluster
 - All microprocessor design both interactive work and batch job work
 - System prototyping and software development done on desktop

Why We “Do Grid”!

- Sharing of limited resources
 - EDA software tools are ARM's 2nd biggest expense after staff costs
 - Grid helps us share the usage of these tools and means we need less
 - Compatibility platforms for testing
 - Latest greatest machines usable by all
- Keeps the admin costs down
 - No need for expensive to maintain super computers instead make use of cheap off the shelf hardware
- Grid enables us to do massively parallel tasks
 - Chip model simulation

What works and what doesn't

- Simple clusters work well
- Thin client technology works well
 - People with windows can do real engineering through their browser
- Grids across WANs don't work
 - Suffer from data transfer issues
 - EDA vendor licensing issues
- Integration between EDA software and grid technology doesn't work at all!
 - Licensing models don't encourage stuff
 - Software doesn't have Grid features
 - Market opportunity

Future

- Data grid
- Supercluster
 - Desktops cycles
 - One grid with resources spread over the WAN
- Utility grid / compute on demand
 - Someone else's computers (and software)
 - Sizing your infrastructure for average work rate use this to deal with peaks
 - Security BIG issue here
 - Billing who will this be done...