Sun Grid Engine at Synopsys

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Sun Grid Engine Workshop 2007,
Regensburg, Germany
September 10-12, 2007

Overview

- About Synopsys
- Grid Software at Synopsys
- SGE at Synopsys
  - Compute Farms & SGE configuration
  - R&D tools
- Benefits
- Wish list
- Future Plans

About Synopsys

- Applications
  - Electronic Design Automation (EDA)
    - Target markets: Semiconductor design and manufacturing
- Business Objective
  - Market leader for EDA solutions that speed Advanced Integrated Circuits into volume production
- Industry Ranking & Revenues
  - 1.2B FY 2006
  - Top three (Synopsys,Cadence, Mentor G.,)
    - 75% of total EDA s/w sales worldwide

Grid Software at Synopsys

- IT supports both SGE and LSF
- 70% SGE machines, 30% LSF
- SGE grew from multiple R&D engineering groups adoption
- SGE cost advantage - free, time unlimited downloads

SGE at Synopsys

- Current version 6.1
  - Upgrades from Codine to SGE 5.3 and to SGE 6.0
- Compute Farms
  - 40 + SGE farms worldwide
    - Individual farm size: 50 to 2000 socket-cpus
    - Over 7000 socket-cpus total
  - Regressions, builds, benchmarks, real customer designs
  - Hardware supported
    - Intel (32/64) Itanium, AMD64, SPARC, Power, HP/PA
  - Operating systems supported:
    - Linux (RedHat & SuSE) (32 bit & 64 bit), HPUX, Solaris (x86 & SPARC), AIX, Windows

Mountain View Farm

- Mountain View, CA main farm
  - 1000 machines
  - Contributed by multiple business groups
    - 70% - 80% batch jobs
- Additional 6 farms dedicated to individual groups
    - 300-400 machines
    - R&D

SGE environment

- SGE's dynamic configuration
  - “qconf” commands, fast and transparent
- In house scripts built around SGE
- Wrapper scripts around “qconf”
- Daily priorities changes
  - users send requests through a support system.
- In house process to allow high priority jobs
  - re-set priorities on projects
- Use the user list/access control
- Use resource quota control to guarantee turn around time for regressions

SGE and Synopsys' products

- All products work with SGE in batch and interactive modes
- Multiple Synopsys products have adopted the MPI capability with SGE and more are on the way

Benefits

- Easy to manage
  - IT is able to automate 90% SGE administration tasks
- Dynamic configuration enables zero interruption to production environment
- Scalable
- Lower cost

Wish list 1

- Provide Split Fairshare in addition to Global Fairshare
- Resource Quota improved documentation
- Future Advance Reservation feature to allow sysadmin to decide what to do with the job if exceeds the window reserved
- Support EM64T Natively (not AMD64 Port) for path/logistics/CPU Type reasons

Wish list 2

- Improve real time monitoring and management of the farms
  - Access Monitoring (direct login to SGE machines)
  - Health monitor at h/w level
  - Detailed job real time reporting
  - Include OS and software provisioning features
  - Job profile monitoring – idle/ Length
- Consistent “arch” definition
- Improve SGE Windows support
  - SFU no longer supported
- ARCO too complex to use now/without a lot of useful features
  - Apache support
- Match LSF RFE and Support call fast response time

Future Plans

- To migrate to 6.2 and beyond
- Continue to grow the farm size to accommodate more R&D needs
- Continue to help more Synopsys products adopt SGE