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Access to Shared Grid Resources in Heterogeneous Queuing Systems

Pawel Piwowarek

PSNC, Network Services Department

Marek Zawadzki

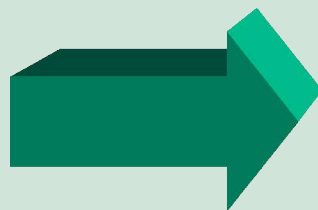
PSNC, Supercomputing Department



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Sun Fire 6800 partitions



24 Ultra SPARC III+ @900MHz

24 GB RAM

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SGE<=>LSF integration

sgi[®]

SUN
Sun[®]
microsystems



SGE LSF
gateway
daemon
(developed in PSNC)



Platform[™]
LSF

GRID ENGINE



GRID ENGINE

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SGE \Leftrightarrow LSF integration

The idea

The idea behind is to distribute load from SGI machine running LSF queuing system under IRIX to Sun Fire6800 running SGE. Both machines have different administrative policies, separate user accounts and belong to different departments.



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SGE<=>LSF integration

The solution

SGE 5.3 running under Solaris

SGE client for IRIX

LSF <=> SGE gateway daemon developed in PSNC

NFS shared storage

SGE calendars along with custom shell scripts are used to control the load during the day, night and weekends. Sun resources are shifted accordingly to predefined policy



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SGE \Leftrightarrow LSF integration

Advantages

load balancing:

jobs submitted on one machine are distributed to another system



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Advantages

integrations respects local administrative policies with respect to:

load: queues and resources allocated to SGE are configured independently on both sides

user accounts/disk space: only one special account with home directory shared via NFS (SGE runs under this account, while the gateway daemon takes care of authentications and distribution of the results between IRIX users)



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Advantages

reduction of licensing costs:

since SGE is free, adding CPUs to SUN machine does not increase number of licenses needed for LSF (which requires license for every local CPU).



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Technical details

- 1** IRIX users submit jobs to local LSF queue via special wrapper
- 2** The wrapper submits the request to the gateway daemon, which performs the authentication, sends the job to the SGE queue on the remote machine (via IRIX SGE client) and blocks the wrapper command until the job is finished

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Technical details

3 The wrapper returns and the job is done from the LSF point of view

4 The user gets the results by mail. Output files are copied by the gateway daemon into special directory

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Conference in PSNC

10th Anniversary of PSNC

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Q&A

Pawel Piwowarek

pawel.piwowarek@man.poznan.pl

Marek Zawadzki

marek.zawadzki@man.poznan.pl



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Thank you



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