

A Survey of LSF Usage at Various HEP/HENP Laboratories

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The spread of computing clusters built with commodity hardware has brought into focus a need for scalable, reliable and cost-effective software to take full advantage of the computing cluster hardware. This will become an increasingly important consideration when building large computer clusters in the GRID distributed computing environment of the LHC-era.

One widely used piece of computing cluster software is the LSF batch package, a commercially available product from Platform Computing (<http://www.platform.com>). Presently, many HEP/HENP laboratories use LSF as a tool to systematically distribute jobs across their computing nodes using a load-balancing mechanism. With that in mind, a survey was conducted to examine the usage of LSF at various HEP/HENP laboratories.

A summary of the survey results is given below (laboratories are listed alphabetically). The results reveal that LSF has proven to be scalable, reliable, stable, feature-rich and well supported by Platform Computing. Looking forward, LHC-era clusters are likely to be composed of 1000's of compute nodes and providing a LSF license for every CPU can become prohibitively expensive and perhaps not viable. Therefore, it is not surprising that some sites are investigating (or have) alternative (or complementary) batch software solutions (Condor, SGE, FBSNG, etc) for their compute clusters.

BNL

Number of licenses: **1600**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **scalable, stable, reliable, rich feature set and good vendor support**

Batch alternative: **considering Condor**

CERN

Number of licenses: **known to be enough to cover all CERN batch systems (1000's)**

Contract type: **unavailable**

Site license: **unavailable**

Reason for using LSF: **meet site's needs, good support, responsiveness and access to developers from vendor**

Batch alternative: **no**

DESY

Number of licenses: **30**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **AFS support**

Batch alternative: **considering SGE (Sun GRID Engine)**

FNAL

Number of licenses: **536**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **reliable, stable and rich feature set**

Batch alternative: **developed and using own batch software (FBSNG)**

GSI

Number of licenses: **300**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **scalable, stable, fairshare feature, rich feature set, good support and documentation, ease of use and maintenance**

Batch alternative: **considering SGE (Sun GRID Engine)**

JLAB

Number of licenses: **367**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **fairshare feature, reliable, stable and ease of maintenance**

Batch alternative: **PBS**

NERSC

Number of licenses: **425**

Contract type: **annual maintenance fee under continuing contract**

Site license: **no**

Reason for using LSF: **reliable and rich feature set, able to handle 1000s of jobs simultaneously**

Batch alternative: **considering SGE (Sun GRID Engine)**

PSI

Number of licenses: **112**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **stable, robust, easily configured, well-documented, competent support**

Batch alternative: **no**

RAL

Number of licenses: **80**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **feature set, vendor support**

Batch alternative: **not for the environment where LSF is used (also run 800 cpu's with OpenPBS)**

SLAC

Number of licenses: **3400**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **functionality, scalability, excellent support**

Batch alternative: **no**

YALE

Number of licenses: **41**

Contract type: **annual renewable contract**

Site license: **no**

Reason for using LSF: **meet site's needs, inexpensive for educational institutions**

Batch alternative: **no**