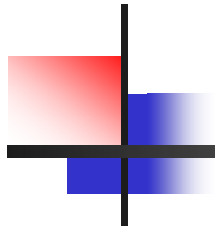# On Job Monitoring in Globus

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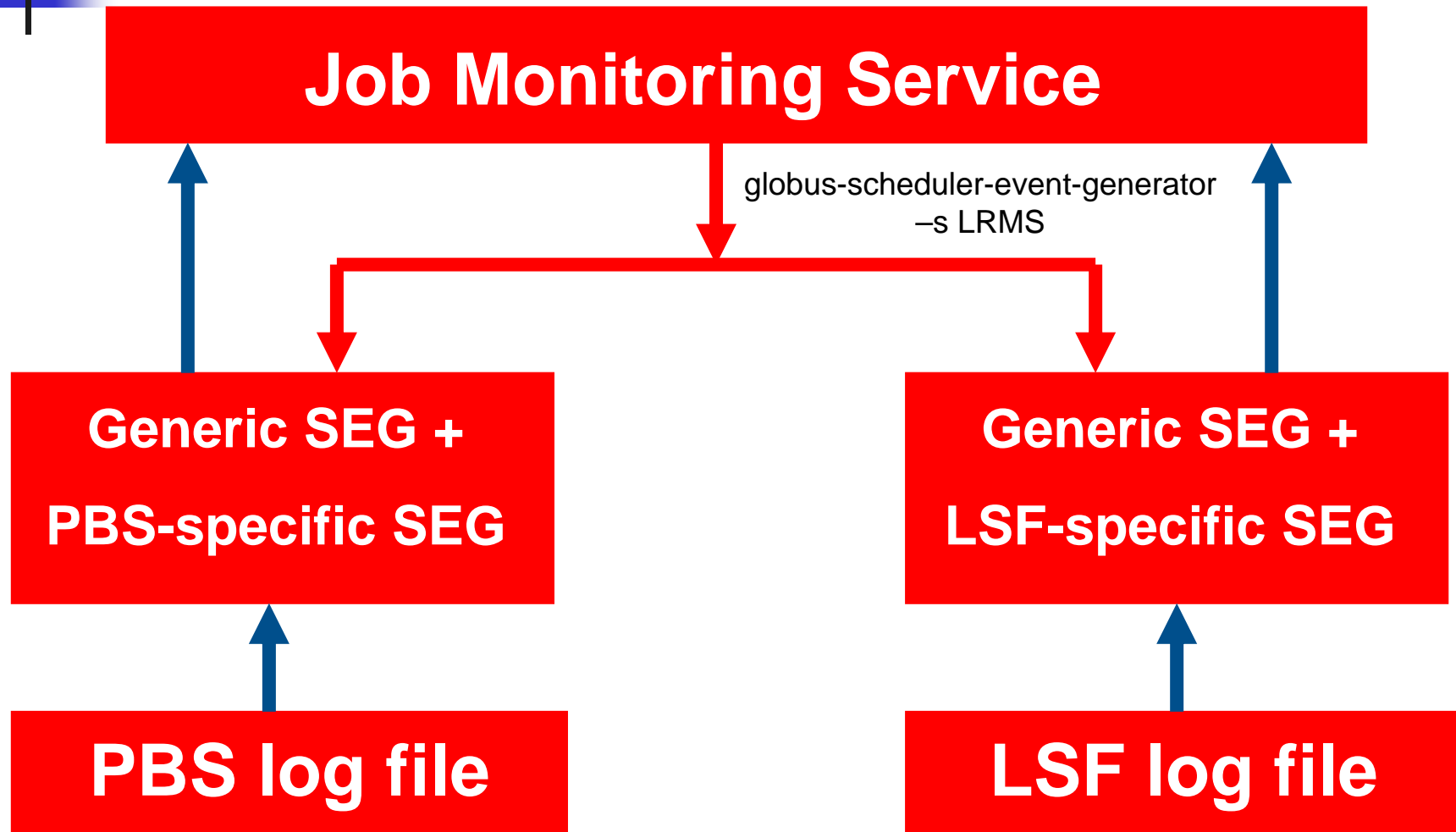
Overview

- The job monitoring architecture
- Limitations of the current approach
- A new approach: break up the dependence between SEG and the local scheduler

Job Monitoring in Globus

Cons of log-file based monitoring

- **Assumes the LRMS stores job status information in a clear-text file which is available on the Globus container machine**
    - SGE 5.3 does not provide this information
    - It is likely that in the near future some LRMS will use a database for this purpose (for better speed and scalability)
    - Often, Globus is installed on one the head nodes of a multi-headed cluster while the LRMS server is on another node
        - Requires exporting the file system used by LRMS

Cons of log-file based monitoring

- **Sensitive to the format of the log file**
  - Small changes in the log file format (e.g., between PBS Pro and Torque) break SEG and require changes to the C source code
    - Making these changes requires understanding the original SEG module written in C
  - Some batch systems, e.g., NQS II do not document the information stored in the log file, and provide instead and API for monitoring jobs
  - Condor uses different log info generators for different universes:
    - The SEG module for Condor assumes XML format of the log file;
    - Until recently, Condor was generating XML for the vanilla universe, but not for the grid universe
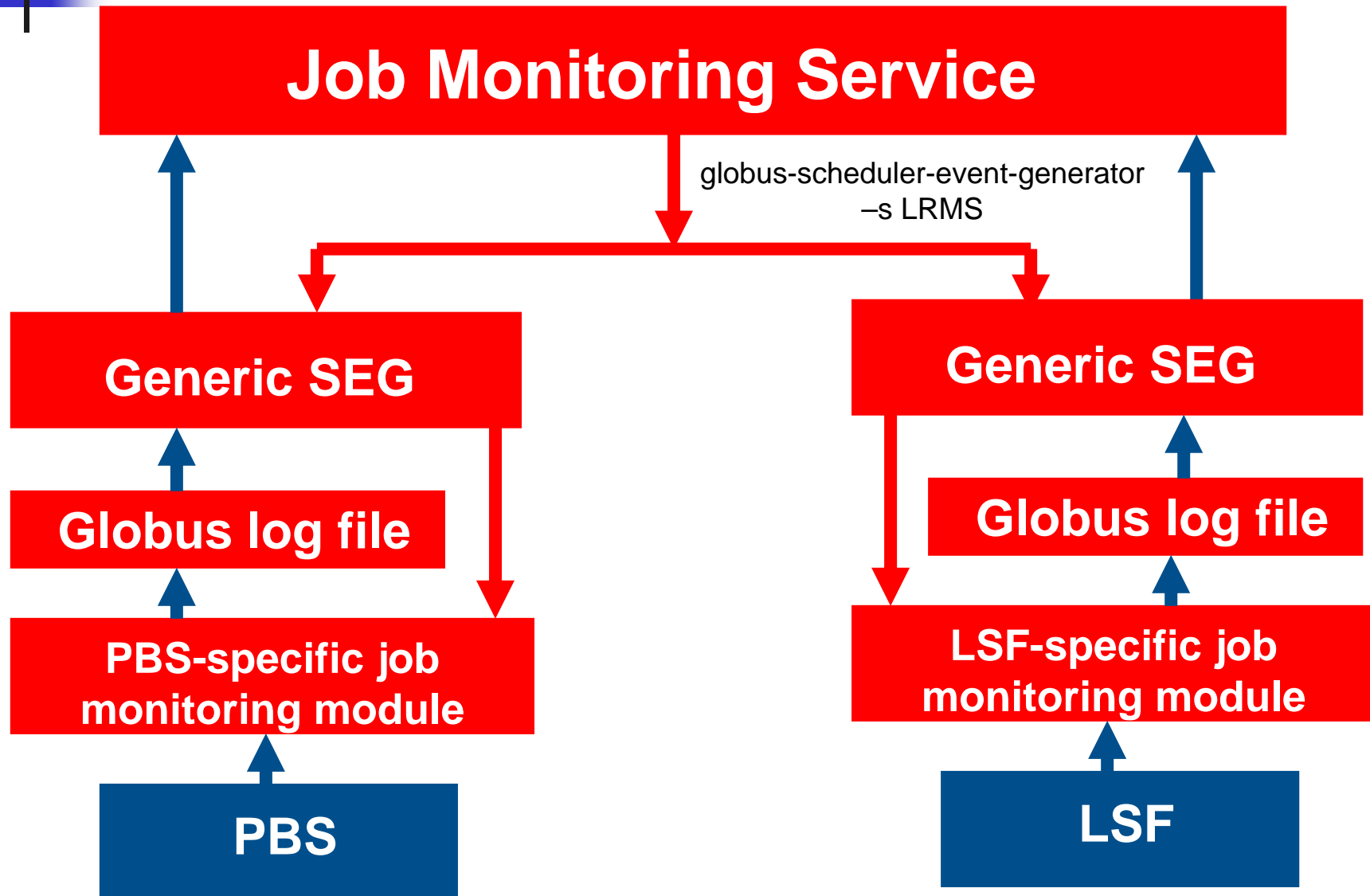
Cons of log-file based monitoring

- Limited job history information
  - Information about the status of the job is discarded after the job lifetime expired
  - Since Globus does not store in a file or database the job transition information, one cannot to trace the transitions of old Globus jobs
  - The GT 4.2 Job Accounting and Auditing project will address this issue
    - Will the job ID stored there be the Globus job UUID or the LRMS ID?

Proposed Job Monitoring

Job Monitoring Service

globus-scheduler-event-generator –s LRMS

Generic SEG

Globus log file

PBS-specific job monitoring module

PBS

Generic SEG

Globus log file

LSF-specific job monitoring module

LSF

Description and Advantages

- **For each LRMS, use an LRMS-specific external module to get job status information**
  - The module uses whatever method the LRMS provides to gather job information
    - Log file
    - Database
    - Event-driven API
  - The module can be written in any language
    - no longer constrained to C
    - no longer tightly coupled to the Globus SEG code
    - thus, easy to customize and update by sites
- **All modules generate a log file that has the same format**
  - For example, one can use the current format of the Fork job starter, which is easy to read by humans
- **Provides Job auditing and accounting information**