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Abstracts book

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Towards a Distributed CPU Usage Accounting Infrastructure

Overview :
The APEL (Accounting Processor for Event Logs) is a CPU usage accounting tool deployed within the EGEE and WLCG projects. APEL publishes accounting records into a centralised repository at a GOC (Grid Operations Centre) for access from a GUI web tool. A distributed accounting infrastructure is proposed based on modifications and extensions to the records transport mechanism of APEL to support a robust accounting capability at a NGI level and flexible across VOs accounting records queries.

Analysis :
Currently APEL tool uses R-GMA (Relational Grid Monitoring Architecture) as the transport mechanism for moving accounting records generated on each Grid client site to a centralised repository at a GOC: R-GMA Primary Producers for publishing records from each Grid site and a Secondary Producer for aggregating records into a centralised repository. In future, a more scaleable transport model is needed in a distributed accounting infrastructure, which will includes a large number of NGIs and support flexible queries on accounting records generated by VOs across multiple NGIs. Due to the lack of available efficient distributed database query mechanism, a central records cache of NGI accounting instances will be set up to support across VOs accounting records queries. In addition, the infrastructure may open to other accounting tools (e.g. glite DGAS publisher) to support queries across even more Grid sites.

Impact :
A general topic publication and subscription messaging model enables distributed components in a system to publish and subscribe messages to/from a well defined topic that can be viewed as a virtual destination and source of messages. The definition of topics and low level reliable delivery of messages among components can be achieved by using a concrete message broker implementation to this model. The work reported here investigates the feasibility of adopting such a messaging model to implement a distributed accounting infrastructure and utilises the Apache ActiveMQ message broker to replace R-GMA as the accounting records transport layer of APEL for robust delivery of accounting record messages. In the distributed infrastructure, while the ActiveMQ message brokers will manage the delivery of accounting records messages, at a NGI level and between NGI accounting instances and the central records cache, the original user interfaces for existing APEL clients will remain consistent.

Conclusions :
The prototype implementation of an ActiveMQ broker based APEL and the testing of the implementation with production CPU usage records demonstrate that the transport mechanism of a distributed accounting infrastructure can be implemented based on topic publication and subscription messaging model. Further investigations on the scalability and fault tolerance features of ActiveMQ broker and the security issues (encryption, authentication) of across VOs accounting record queries will be conducted.

URL :
http://goc.grid.sinica.edu.tw/gocwiki/ApelFaq

Keywords :
APEL, CPU Accounting, Distributed Model, EGI, NGI

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