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The Reputation-Based Trust Model for AliEn2

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A Grid is a geographically distributed environment with autonomous sites that share resources collaboratively. In this context, the main issue within a Grid is encouraging site to site interactions, increasing the trust, confidence and reliability of the sites to share resources. To achieve this, the trust concept is vital component in every service transaction, and needs to be applied in the allocation and scheduling of jobs within a set of heterogeneous and dynamically changing resources .

In order to select a more reliable service is necessary monitoring and managing the behavior of the sites and your resources to build the trust and reputation between sites, considering the previous knowledge of their performance. All of this, for better the efficiency and delivery more and better information of the resources' performance.

As the running of the grid system for ALICE experiment, the reliability and efficiency attracts more concerns for jobs management and data management in the grid environment. We propose a Reputation-Based Trust Model (RBTM) for AliEn2 as a decision support to improve the reliability and efficiency of the grid platform.

Due to the highly dynamic, unpredictable characteristic of grid environments and the complexity of services, the Trust Model should make trust decision dynamically. With this consideration, the architecture of RBTM mainly has three types of components: Evidence Gathering, Evidence Repository and the Trust Calculation Engine. Evidence Gathering is responsible for the discovering and gathering the evidences from AliEn2 and MonALISA. Any gathered evidence will be transferred to the Evidence Repository. The Evidence Repository is the storage for all the gathered evidence. The Trust Calculation Engine aims at analyzing the evidences retrieved from the Evidence Repository and calculate the trust value for each trustee with different algorithms. There are many ways to calculate a trustee's reputation and the plug-in mechanisms are introduced to support as many algorithms as possible. The API is also provided to the applications or services for accessing the results of trust values.

The calculation of trust value in RBTM has three aspects: User Feedback, Basic Trust and Dynamic Trust. The trust value of the User Feedback is proposed by the users from their experiences with the grid system. The initial trust value is Basic Trust which is calculated from the resources contributed to the system). The trust value of Dynamic Trust is related with metrics which are collected during the running of the system.

In this paper, the Reputation-Based Trust Model for AliEn2 is introduced which can dynamically make trust decision in different situations. Finally we give the simulation results of our model and comparison with the related works.

Student? Enter 'yes'. See <http://goo.gl/MVv53>

yes

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