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2L-RBACG: A new framework for resource access control in grid environments

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ABSTRACT

With the increasing complexity of dynamic and collaborative computing environments in Grid, access control has become a critical factor. Several approaches have been proposed in grid environment for scalable and efficient authorizations that are either VO-centric or Resource-centric. Reviewing different kinds of proposed authorization systems, we find out that VO-level and Resource-level authorization systems look at two different aspects of the grid authorization. Indeed, they complement each other, and can be implemented together to provide a holistic authorization solution. For this purpose, we propose a new access control framework which uses an extended two level RBAC model in Grid computing environments. By separating the administrations of users by VO level policies and mapping these policies to resources by resource or service providers, our scheme provides decentralized, autonomous, and fine-grained security management. The art of this approach is support of high flexibility in policy configuration, dynamically modifying authorization policies and reducing the cost of policy management.

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