Notes on Grid Security

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Abstract. I summarize some interesting results on Grid Computing Security. Cooperative Access Control has been put forward by [1] while BYODCert have been put forward in [2]

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1 Cooperative Access Control

The access to Grid resources depends on policies defined by the administrators of the physical organizations and of the Grid middleware. This approach does not require support for access control in the middleware, but since changes in the access control policy of the Virtual Organization imply the involvement of one or more administrators, it lacks the flexibility needed in several Grid application scenarios. In this paper we propose a novel Cooperative Access Control model for Grid environments that increases the flexibility of the access control model offered by state-of-the-art Grid platforms without requiring changes in the middleware. The approach is based on collaboration among Grid users and allows them to exchange access permissions to Virtual Resources without the intervention of administrators. We also propose a solution based on Broadcast Encryption which allows to enforce a Cooperative Access Control model on Grids avoiding misuse and granting anonymity. Finally, we show that our solution can be defined on top of the access control mechanisms offered by state-of-the-art Grid middleware and illustrate how the proposed model has been implemented as a service in a service-oriented Grid environment.

2 BYODCert

We introduce a novel architectural solution (BYODCert) for managing the Bring Your Own Device paradigm at a cross-organizational level by exploiting mobile device certifications. BYODCert acts as a trusted third party allowing organizations to verify the compliance of their employees personal devices against BYOD security policies. BYODCert is implemented as a cloud service that can be adopted by organizations as an external and on-demand BYOD solution.

References

1. Merlo, A.: Secure cooperative access control on grid. Future Generation Computer Systems **29**(2), 497–508 (2013). https://doi.org/10.1016/j.future.2012.08.001,

2. Merlo, A.: Byodcert: Toward a cross-organizational byod paradigm. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) **10232 LNCS**, 725–735 (2017). https://doi.org/10.1007/978-3-319-57186-$7_5$2,