

Adaptive Certificate-Based Mutual Authentication Protocol for Mobile Grid Infrastructure

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Abstract : Mobile Grid Computing is an environment that allows sharing and coordinated use of diverse resources in dynamic, heterogeneous and distributed environment using different types of electronic portable devices. In a grid environment the security issues are like authentication, authorization, message protection and delegation handled by GSI (Grid Security Infrastructure). Proving better security between mobile devices and grid infrastructure is a major issue, because of the open nature of wireless networks, heterogeneous and distributed environments. In a mobile grid environment, the individual computing devices may be resource-limited in isolation, as an aggregated sum, they have the potential to play a vital role within the mobile grid environment. Some adaptive methodology or solution is needed to solve the issues like authentication of a base station, security of information flowing between a mobile user and a base station, prevention of attacks within a base station, hand-over of authentication information, communication cost of establishing a session key between mobile user and base station, computing complexity of achieving authenticity and security. The sharing of resources of the devices can be achieved only through the trusted relationships between the mobile hosts (MHs). Before accessing the grid service, the mobile devices should be proven authentic. This paper proposes the dynamic certificate based mutual authentication protocol between two mobile hosts in a mobile grid environment. The certificate generation process is done by CA (Certificate Authority) for all the authenticated MHs. Security (because of validity period of the certificate) and dynamicity (transmission time) can be achieved through the secure service certificates. Authentication protocol is built on communication services to provide cryptographically secured mechanisms for verifying the identity of users and resources.

Keywords : mobile grid computing, certificate authority (CA), SSL/TLS protocol, secured service certificates

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