Federated Service-based Authentication Provisioning for Distributed Diagnostic Imaging Systems

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Abstract—Diagnostic Imaging systems record and manage the patients’ medical images and relevant reports in digital formats. A modern distributed diagnostic imaging system includes PACS (Picture Archiving and Communication System), image viewers, and a large central repository that provides non-proprietary sharing of medical images among clinicians across geographically distributed hospitals. The lack of adequate interface with common infrastructures has made the proprietary PACS systems as closed environments and prevents seamless integration and interoperability with common infrastructures. In terms of security, there is no federated authentication mechanism for PACS systems and each PACS system controls the user identity locally. Therefore the Diagnostic Imaging systems rely on a trust model. We propose a service-based middleware for distributed diagnostic imaging systems by employing different types of agents in order to achieve a federated authentication mechanism for such systems.

Keywords—Authentication; Security; Diagnostic imaging repository; PACS; Multi-agent system;