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Information Flow Control for Secure Cloud Computing

Abstract:

Security concerns are widely seen as an obstacle to the adoption of cloud computing solutions. Information Flow Control (IFC) is a well understood Mandatory Access Control methodology. The earliest IFC models targeted security in a centralised environment, but decentralised forms of IFC have been designed and implemented, often within academic research projects. As a result, there is potential for decentralised IFC to achieve better cloud security than is available today. In this paper we describe the properties of cloud computing-Platform-as-a-Service clouds in particular-and review a range of IFC models and implementations to identify opportunities for using IFC within a cloud computing context. Since IFC security is linked to the data that it protects, both tenants and providers of cloud services can agree on security policy, in a manner that does not require them to understand and rely on the particulars of the cloud software stack in order to effect enforcement.