

# A Survey of Extended Role-Based Access Control in Cloud Computing

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**Abstract** Access control is one of the key mechanisms for cloud computing security. When it comes to being used in cloud computing environments, RBAC is more scalable and more suitable compared with traditional discretionary and mandatory access control models. A straightforward way is to extend RBAC from traditional fields to cloud computing environments. In this chapter, several extended role-based access control schemes are surveyed from basic extension, A-RBAC, and trust-based RBAC separately. Core techniques of the proposed schemes are detailed. Comparisons around the proposed schemes are analyzed.

**Keywords** Cloud computing • Access control • RBAC • A-RBAC • Trust

## 95.1 Introduction

Nowadays, cloud computing is becoming one of the most popular and trendy computing model in the technology world. In cloud computing model, access is performed through network which has the characteristics of ubiquity, convenience, and service-on-demand. The computing resource is a configurable shared pool consisting of networks, servers, storage, applications, and services [1]. There are different slots or sections of a cloud service. Among them, infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) are the three service models. With the cloud computing having more and more deployment, security issues have become important factors restricting its development and application [2].

Access control is the process of limiting access to system resources for only authorized people, programs, processes, or other system components, which plays an important role in the field of information security. Traditionally, there are three kinds of access control models: (1) discretionary, (2) mandatory, and (3) role based [3]. Among the three models, RBAC model is the most scalable, especially in such cases that tracking the users of the services cannot get through a fixed identity.

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