

Context-Aware Management Domains

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Abstract. In this paper we extend the concept of management domains to a new concept called Context-Aware Management Domains (CAMDs). CAMDs enable context-aware management of policies allowing the grouping of entities based on context information. Since context is dynamic, so is the domain membership. As a consequence, the association of policies with the entities in the domain also becomes dynamic. In this paper we provide CAMD examples and an information model together with a discussing on our ongoing implementation for our target context-aware service platform.

1 Introduction

Context aware services adapt themselves to the current user's situation. An example of this is a tourist service which uses the current user location, activity, and preferences to personalize tourist advices. In order to support context awareness, service platforms have been designed to support context information acquisition, reasoning and distribution [1].

Typical context-aware service platforms have thousands or millions of entities (users, service providers, context providers, etc.) and different types of policies have to be managed. Policies are required, for instance, to control access to context information, to enforce user's privacy, and to manage trust relationships among the entities. Due to the complexity, dynamicity, and large number of entities, the specification of these policies can easily become unmanageable.

Standard policy management tools ease the policy management, however, the problem with these tools is that they provide either static management capabilities (e.g. management domains [2]), or, if there is some form of dynamic management, this is limited to one specific area (e.g., X-RBAC [3], [4], and [5] for access control and COMITY [6] for trust management). For this reason, these policy management tools do not fulfill the dynamic policy requirements of context-aware service platforms.

In a context-aware service platform, policies are defined based on the context of the entities. One example is a privacy policy stating that "Bob's identity should not be anonymized for nearby persons". In this case, "nearby persons" refers to a set of

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