Cross-Site Management of User Online Attributes

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Abstract. People spend time on web 2.0 sites to contribute contents and make connections with each other. On these sites a user wants to selectively reveal parts his attributes to other users, and he also wants to know more attributes of another user. Users’ online attributes are often distributed across multiple sites since most users visit more than one web sites. Currently only the attributes within a specific web site can be queried on that site. This paper proposes a new solution, based on federated identity management, to enable an end user to query the cross-site attributes of another person as easily as possible.

Keywords: online attributes; federated identity management; cross-site; web 2.0 mashup.

1 Introduction

The prosperity of web 2.0 sites witnesses how people enjoy to contribute contents and make connections with other people. Often the user creates personal account at the sites, either to receive better services or required by the site. At the site associated with each account are the user’s attributes, which are in fact fallen into two categories.

One is what the user claims by himself, and the other one is what the site claims about the user. When a user creates account, he is usually asked to input his birthday, interest, occupation and so on. Unless the site verifies these information, the data does not represent anything meaningful to other users.

The other kind of user data, claimed by the site, is sometimes called ‘reputation’. Examples of these attributes are visit history, activity statistics, his social connections on the site, evaluation by other user and so on. In this paper, we focus on this category of data and use the generic term ‘online attributes’ to denote what the site claims about the user.

The online attributes are important assets for the subject user and the web site. The subject user sees his attributes as accumulated activities rectifiable by a third party (the web site), instead of something from his own mouth. For the sites, especially those social network sites with which user interacts intensively, the users’ attributes are among their core competences. To retain existing subscribers and attract new users, web sites encourage its users to contribute content and connect with other users. For other users of the web site, the public attributes of the subject user have a significant influence on whether the contribution content of the subject user (posts, comments etc.) worth reading.
Although a single site can provide attribute query service on that site, anything more that is not an easy task for both the site and the users. Since an internet user frequently visits more than one web sites, his attributes are distributed on multiple sites. The problem arises when the query user wants to know cross-site attributes of the subject user. This cross-site attributes management is what this paper seeks to address, by introducing identity management technologies.

Federated identity, or the ‘federation’ of identity, describes the technologies which serve to enable the portability of identity information across otherwise autonomous security domains. The ultimate goal of identity federation is to enable users of one domain to securely access data or systems of another domain seamlessly, and without the need for completely redundant user administration. Typical use-cases involve things such as cross-domain, web-based single sign-on, cross-domain user account provisioning and cross-domain entitlement management. It can drastically improve the end-user experience by eliminating the need to redundantly login through cross-domain single sign-on.

The rest of this paper is organized as follows. Section 2 describes the problem scenario in detail and the state-of-art solutions. The proposed framework and its implementation considerations are described in Section 3. At last, we conclude in Section 4.

2 The Problem and Current Solutions

Figure 1 shows the generic issue when querying the cross-site online attributes.

Suppose user A is a frequent visitor of web site 1, and user B often visits web site 1, 2 and 3, each of which he has some online attributes associated with and stored at. Now when user A browses web site 1 and finds the identity of user B is interesting, A would like to know more about B. Often web site 1 can provide such services to display B’s public attributes on the site. However, there is no way for A to know B’s