Research Overview

An integrated authentication infrastructure based on Shibboleth have been operated in Kanazawa University. Currently more than 30 information systems have been Shibboledized and approximately 15,000 users use the infrastructure. Because password authentication is no longer safe, I decided to introduce a multi-factor authentication. But I need to consider about two points. The first point was that multi-factor authentication takes more time than password authentication. The second point was that if users don’t have a specific possession (Smartphone, IC card, and so on), they can’t authenticate.

Instead of replacing all password authentication with multi-factor authentication, I have realized a risk-based authentication mechanism that requires multi-factor authentication in certain specific situations. The mechanism uses the Shibboleth’s MultiFactorAuthnConfiguration.

By requiring multi-factor authentication only when the user accesses the important SPs from “Outside”, security enhancements can be realized without compromising convenience.

Keywords – Shibboleth, Multi-factor Authentication, Risk-Based Authentication, MultiFactorAuthnConfiguration, GakuNin

Future Work

Currently, the mechanism has been applied to the production environment, and I plan to further increase SPs of Level 2 or higher by the first half of 2019. Also, currently I have provided only tiqr as a multi-factor authentication method, I have been proceeding with the verification of adding a new multi-factor authentication method.

Further, I’ll add the risk-based authentication factor in addition to the IP address of the user. Now I have analyzed the log data of the past authentication records in the IdP and I’ll add some criterions and algorithms to the mechanism.

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