Cimone Wright-Hamor

Ambient-Discovery:

A Practical Two-Factor Authentication based on Bluetooth Technology

Even though Two-Factor Authentication (2FA) has the potential to increase security, it is not widely adopted. Password-based authentication, a Single-Factor Authentication (1FA) mechanism, remains the dominate authentication method because users are willing to trade security for convince. Traditional 2FA mechanisms require additional user action upon every login attempt, which drastically alter the user authentication experience. The undesirable consequence of traditional 2FA mechanisms is the additional user action required upon every login attempt. The recent research concentration has been on finding alternative 2FA mechanism that are passive, which do not require user additional user interaction. Many of these methods have usability and deployability weaknesses, which make them impractical solutions.

We propose Ambient-Discovery, a new 2FA method that leverages Bluetooth technology in smart phones and computers. The protocol is designed to provide security assurances comparable to or greater than the conventional second factors by remaining un-linkable and not requiring additional user action. Ambient-Discovery uses a mobile application to discovery devices in range; this information is used to validate if the computer a user is attempting to log into is within range of their mobile device. It provides an additional layer of security and is reliable over 99% of the time. The execution of the protocol takes a maximum of 15 seconds.