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Method of Authenticating Caller Identity and Call Request Header Data for Outbound Telephony and Data Calls

AzTE Case #M16-102P

Background

A lack of a secure caller ID scheme in today's telephone network system leaves users susceptible to voice and voicemail spam used to gain access to sensitive personal information. Additionally, caller ID masking prevents law enforcement agents from tracing a call and tracking down a criminal. Current caller ID authentication systems are computationally-intensive and expensive to implement. Therefore, there is a need to create a lightweight (low overhead) caller authentication system that can integrate into existing telephony systems.

Invention Description

Researchers at ASU have developed a caller identity authentication and verification scheme for a caller to prove the caller's identity and for a recipient to validate the authenticity of the caller's identity and call information before or during an incoming call. The system uses a trusted certificate authority (CA) that verifies the caller ID and generates a caller identity certificate (CIC) which the caller uses to send a unique session signature to the recipient, enabling the recipient to verify the caller ID. After the caller is properly identified and verified, the recipient has the option to accept and establish a call session or to decline. The detailed authentication system can retrofit onto current telecommunication systems to provide increased defense from spam calls in a variety of network architectures.

Potential Applications

- Voice and voicemail spam defense
- Spam detection and mitigation
- Voice traffic mining
- VoIP and PSTN telephony
- Semi-supervised learning

Benefits and Advantages

- **One-Way Communication** – The system can function with only a single direction of data communication, allowing the system to provide caller identity info for verification by the recipient for an incoming call
- **Extensible** – The system supports add-ons such as conversion encryption and caller reputation
- **Flexible Deployment** – The system is compatible with current telephone infrastructures