PRIUS

PRIvacy against Unlawful Surveillance

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The Introduction

- Internet – Synapse of the World
- Connects
  - People
  - Information
  - Businesses
  - Services
- Pervasive and ubiquitous
- Modern day life is ‘wired’

The Problems

- Internet had benign beginning
- Trusted tool for collaboration and sharing
- Afterthought security and privacy
- Privacy and confidentiality challenges
- Weaker wire tapping laws (for packaged data)

The Problem

- Unlawful Surveillance
- Privacy of
  - Business secrets
  - Financial data
  - Personal (health) information
- Identity theft
- Abuse of critical, private data (Quis custodiet ipsos custodes?)

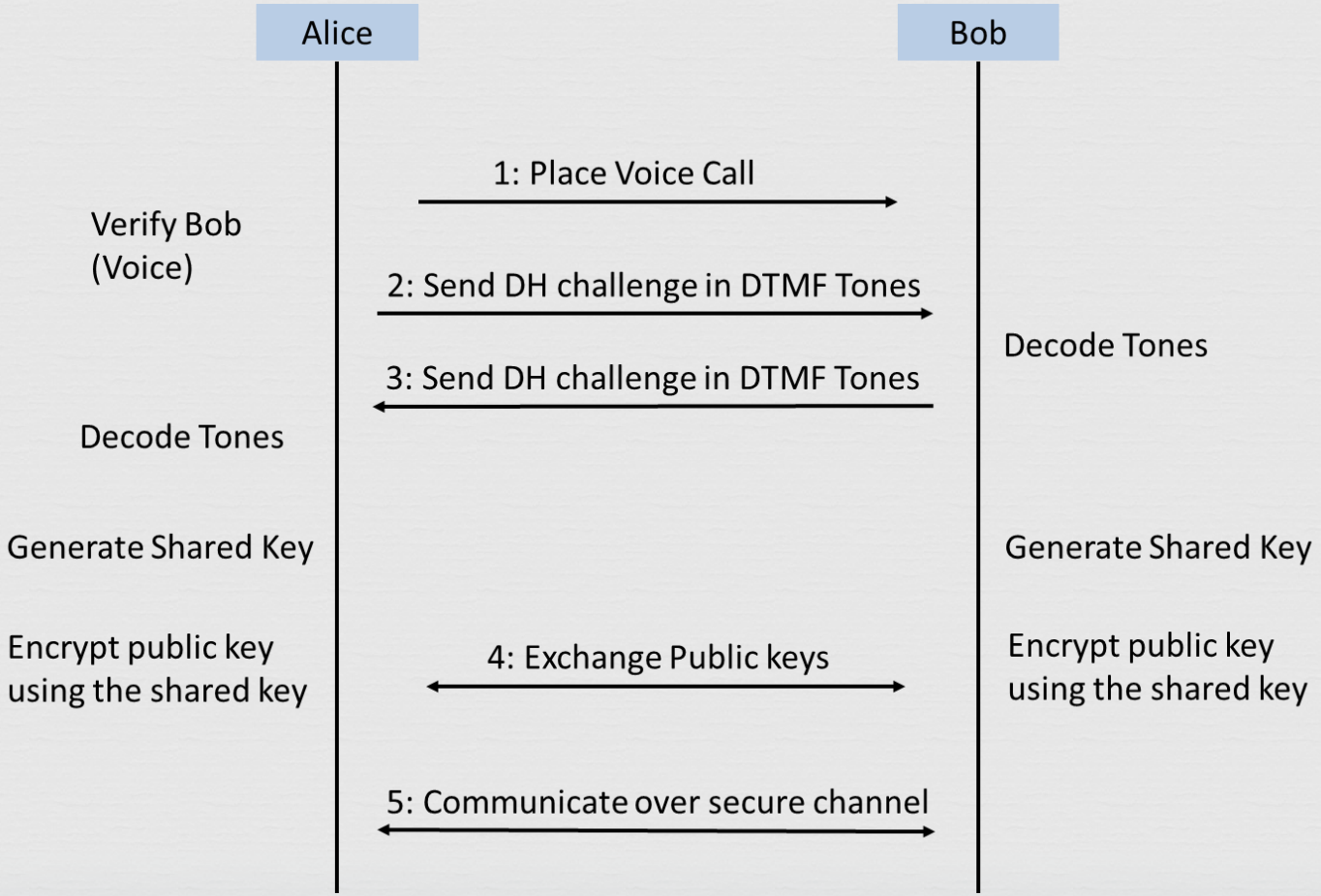
The EFF

- Electronic Frontier Foundation
- Face to Face – most private form of communication
- Voice call – next most private (most protected by the law)
- OTR – Off The Record Protocol

The Solution

- Transfer digitally encoded messages over voice line
- Vocally confirm the recipient
- Exchange cryptographic Diffie-Hellman challenges over DTMF
- Use DH challenges to generate shared key
- Use shared key to encrypt communication

The Protocol



The Prototype

- An Android App
- The mobile app calls the user
- Sends the DTMF codes
- App on the other end receives the DTMF codes
- Decodes the DH challenge
- Generates shared key
- Exchanges the public keys
- Encrypts communication (communication channel agnostic)

The Challenges

- Discouraged call recording
- No easy access to voice line for recording
- Non standard DTMF tone length
- Non standard tone length with variable string size

The Future Work

- Fine tuning the decoding algorithm
- Enhance live decoding capabilities
- Better encoding scheme
- Alternative uses with encoded data exchange

The Discussion

Questions & Comments