# Securing the Open Softphone

Kickoff Colloquium
September 1, 2010





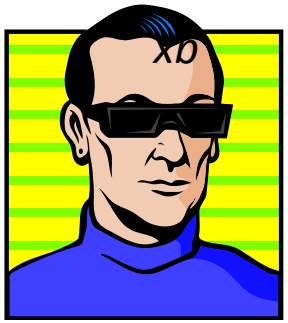
# Brain Teaser 1

# Brain Teaser 2

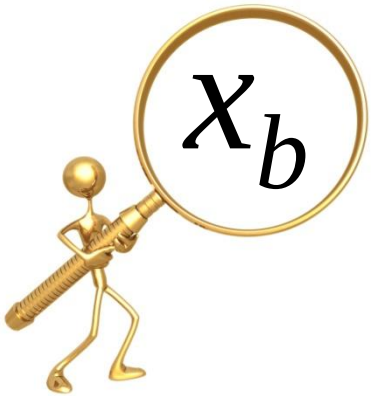
1. Alice chooses two reals by an unknown process

$x_0 < x_1$

2. Bob chooses a uniformly random bit $b$




3. You get only $x_b$




Your goal: guess $b$ with probability better than 50%

# What's the Problem?

- Wallpaper apps on Android Market are found to be gathering phone numbers, subscriber ID, etc, and transmitting to an unknown server registered in China
- Thieves steal your car and GPS and use it to find your home, stealing your other car
- Hackers plant malware in Windows Mobile games that make expensive calls to Somalia

# FLEXISPY

Protect Your Children | Catch Cheating Spouses

FlexiSPY Direct
OFFLINE

Home | Features | Phones | Demo | Support | Community | Reseller | Affiliates | About Us | Cart

## *Is Someone Keeping Secrets from You?*
## *Reveal All with the Worlds Most Powerful Spyphone*

- Download FlexiSPY spyphone software directly onto a mobile phone and receive copies of SMS, Call Logs, Emails, Locations and listen to conversations within minutes of purchase.
- Catch cheating wives or cheating husbands, stop employee espionage, protect children, make automatic backups, bug meetings rooms etc.
- Learn all about FlexiSPY. Still have questions, try Live Chat who are waiting to help


## FLEXISPY - PRO - X

PRO-X | FULL DETAILS | Supported Phones

***TOP OF THE RANGE SPYPHONE***

- Listen to actual phone calls
- Use as a secret mobile gps tracker
- Includes all PRO features
- Change phones as often as you like
- Symbian, Windows Mobile & BlackBerry

ORDER NOW: **$349.0** (per year)

LEARN ABOUT SPYPHONE FEATURES HERE | Buy Now

## NEW FLEXISPY iPhone

iPhone | FULL DETAILS

***Worlds Most powerful iPhone spy phone***

- Secretly read SMS, Email, Call Logs
- Track location on map
- Make secret spy calls
- BASIC version from $ 39.99

ORDER NOW: **$349.0** (per year)

Buy Now

## FLEXISPY - PRO

PRO | FULL DETAILS | Supported Phones

***MID RANGE SPYPHONE***

- Spyphone to bug a room or person
- Read their SMS, EMAIL and Call Logs
- BUY NOW for Instant Download
- Change phones as often as you like
- Symbian, Windows and Blackberry

ORDER NOW: **$249.0** (per year)

ALL YOUR QUESTIONS ANSWERED HERE | Buy Now

## NEW FLEXIRECORD

RECORD | FULL DETAILS

***RECORD SPYCALLS ON A PC***

- Automatically records SPY calls to PC
- Ideal companion to any PRO or PROX
- Control multiple target directly from PC

ORDER NOW: **$249.0** (one time)

Buy Now

## FlexiSPY Android Community Edition

FREE Android Spy Phone software lets you secretly read Call Records, SMS Messages and GPS locations

ready to get started?
**FREE DOWNLOAD**

Visit the new Flexispy Forum

TWITTER
DO YOU FOLLOW ME?


## HOW CAN FLEXISPY HELP YOU

- UNCOVER Employee espionage
- CATCH cheating husbands and cheating wives
- TRACK THEIR location using GPS
- PROTECT your children from SMS abuse.
- ARCHIVE all your own SMS for the future.
- SAVE your call history.
- BUG Meeting rooms and CHECK babysitters
- Ten Day MONEY BACK GUARANTEE

Winners Choose FlexiSPY

# *Softphone*

- Mini laptop/netbook
- +….
- Powerful sensors

Location (GPS)

Motion (Accelerometer)

Camera

Microphone

Compass

# *How bad could it get?*

- Bring down 911 systems?
- Blind air traffic control?
- Facilitate espionage?


**Friend or Foe?**

# *What's the good news?*

- We have an opportunity for clean-slate development of softphone security
- Softphone platforms are nascent and relatively fluid architecturally
- New modalities to leverage in support of security
  - Physical proximity
  - Mobility
  - Rich sensor data stream

# Overview

**User Security and Privacy**

**System Security**

Attacks on the Hardware

Protecting User Privacy

Authentication

Attack Detection

Incentives

# *User Security and Privacy*

- **Attacks on the Hardware**
  - *Securing the Hardware*
    - Avoid creating side channels, design of hardware with built-in attack detection – M. Karpovsky
  - *Hardware Hardened Modules*
    - Preventing side channel leakage – L. Reyzin
  - *Managing Leakage*
    - Exposure-resistant cryptography – L. Reyzin
- **Protecting User Privacy**
    - Secure, distributed sensing – N. Triandopoulos

# *User Security and Privacy*

- **Leveraging Sensing to Authenticate**
  - *Sensor-Based*
    - Sensor-generated secrets – L. Reyzin
  - *Proximity-Based*
    - Sensor-based proximity verification – L. Reyzin, D. Starobinski, and A. Trachtenberg

# *System Security*

- **Attack Detection**
  - *Physical Layer, esp SDR*
    - Analyzing SDR threats – M. Crovella, D. Starobinski, G. Troxel
  - *Statistical Attack Detection*
    - Crowd-sourced attack detection – M. Crovella
- **Advanced Authentication**
  - *Code authentication*
    - Resilient over-the-air programming – A. Trachtenberg and D. Starobinski
  - *Data authentication*
    - Distributed data authentication – N. Triandopoulos

# *System Security*

- **Economics**
  - *Economics and security impact of spectrum management*
    - D. Starobinski
  - *Incentive-compatible traffic control*
    - Protocol design – S. Goldberg
  - *Economic approach to unwanted traffic*
    - Attention bonds for spam suppression – S. Homer