

Ganesh Devarajan & Don LeBert

**VDLDS – ALL YOUR VOICE ARE  
BELONG TO US**

# Agenda

- Introduction
- Problem
- Background
- Scenarios
- Architecture
  - Server Model
  - Distributed Client server model
- Demo
- Future Work

# Introduction

- Ganesh Devarajan
- Don LeBert

# Problem

- People give out a lot of information on the phone calls
  - PII Data
  - Account information
  - Insider information

# Background

- Government has the ability to tap Phone conversations and look for key words
  - Jihad, terrorist, etc.
- This is done at the provider level or with an expensive bug

# Background

- What is DLP?
- Why is it important?

# Background – In the News

- Sony PS3 Hack
- RSA
- Citi Bank Hack
- ADP

# Background

- What is VoIP?
- How does a VoIP phone call work?
- SIP, RTP



# Scenarios

- Social Engineering
- Insider Trading/Leaks
- Calls to bookies/Brokers
- Call centers
- Vendor Account information
- Spy on People?
- PII Data
- Credit Cards

# Architecture



# Architecture



# Architecture

- VoIP data to Audio file
  - WireShark
  - VoIPong
  - VOMIT
  - Oreka
  - RTPBreak
  - RTPscan, RTPdump, RTPplay
  - Cain & Abel

# Architecture

# Architecture

- Audio to Text Converter
  - Microsoft Speech (Now called "Tellme")
  - Sphinx (3/4)
  - OSX (use NSSpeechRecognizer Class)
  - Other Commercial

# Architecture

- Sphinx 4 Architecture
  - Speech recognition system written in java
  - Portable (mobile, osx, linux, windows...)
  - Interaction with engine via scripting languages
  - Easy to hide ;)

# Architecture

- Keyword Detection Engine
  - Script based
    - Completely custom in what you are trying to pull out
    - Takes some skill
  - Rule based
    - Easy for Joe sixpack
    - Low customization



# Deployment Architecture



# Deployment Architecture



# Deployment Architecture

Demo

# Future Work

- Extension for Mobile devices
  - Disguised App
  - Conversation sniffer
- Real time Voice Obfuscator
- Interact with conversation
  - Filter
  - Inject

# References

- <http://cmusphinx.sourceforge.net/wiki/tutorialconcepts>
- <http://cmusphinx.sourceforge.net/sphinx4/>

# Questions?

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