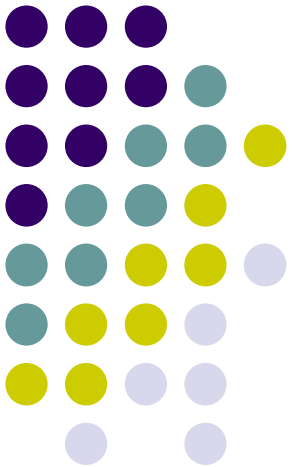
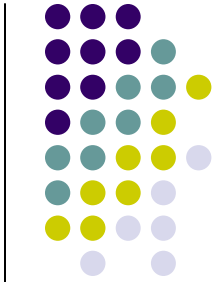
Critical Danger:

An Introduction to Cross Site Scripting Attacks for People Who Do not Know what Cross Site Scripting Attacks Are.



Agenda

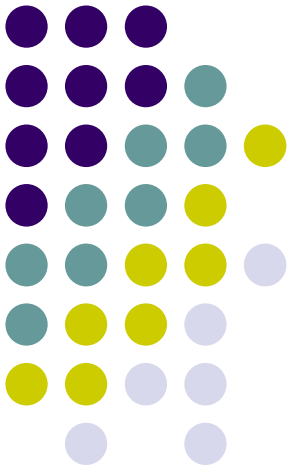


- Introduction to Browsers
- Javascript
  - Java
    - Indonesian spice trade
    - Dutch East India Company
  - Script
    - Plays, Movie and other…
- Browser Attacks Visualization
  - Text only version

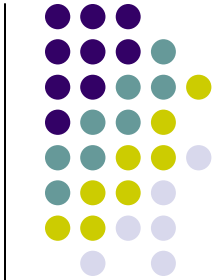
VoIPhreaking

SIPhallis Unveiled

the grugq



Agenda

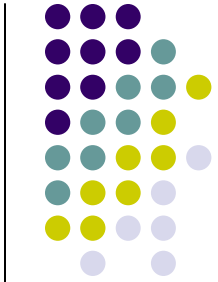


- Introduction
- VoIP Abstract
- Phreaking
- VoIPhreaking
- VoIPhishing
- Conclusion
- Q&A

Introduction

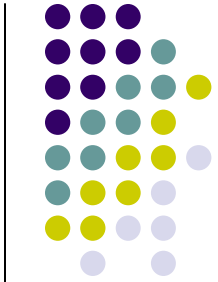
- Voice/Video over Internet Protocol (VoIP) is hot
- Grugq is hotter
  - Lots of years of security research
  - Focusing on VoIP security since forever
  - Snazzy haircut
- VoIP is a serious security threat
  - Security practices are still emerging
  - Deployment isn't waiting for security first

VoIP Abstract Agenda



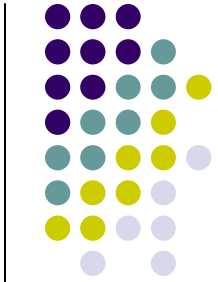
- Overview
- Functionality Realms
- Protocol Suites
- Infrastructure

VoIP Overview



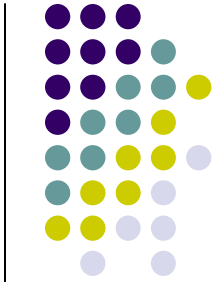
- Provides a mechanism for people to communicate over networks
- Real time multimedia exchange
- In development since early 1990s
  - Bandwidth and services finally make it economically feasible
- Cost is the major driver for VoIP deployments

Functionality Realms



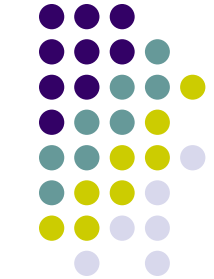
- Signaling
  - Call management
    - Setup, location, tear down, etc.
- Media
  - Content streams
- PSTN integration
  - Telephone to Internet traversal
    - Location, media conversion, signaling propagation

Protocol Suites



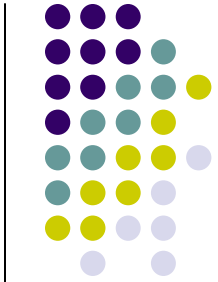
- Signaling
  - Session Initiation Protocol (SIP)
  - H.323
- Media
  - Real Time Protocol (RTP)
    - Transported over UDP
- PSTN Integration
  - Media Gateway Control Protocol (MGCP)
  - ENUM

Signaling: Session Initiation Protocol



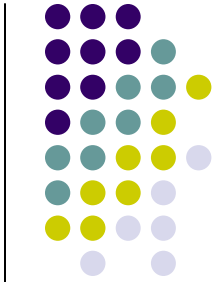
- ASCII text protocol designed by Internet crunchies
  - Bastard child of HTTP and email
- Over a decade old
  - Design began in 1995
  - Still considered “emerging”
- Commonly used for new deployments
  - Most used VoIP protocol on the Internet

SIP Messages



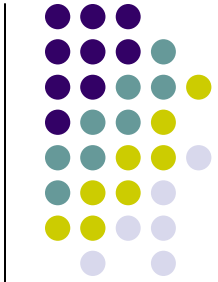
- Start line
  - Request or Response
- Headers
  - Information about the message
    - Destination
    - Origin
    - Route
- Body
  - Usually media stream location information
    - Session Description Protocol

Start Line



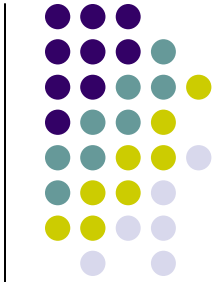
- Request Messages
  - Method based request system
    - INVITE, BYE, REGISTER, etc. etc.
- Response Messages
  - Error code + reason (smells like HTTP)
    - 404 Not Found, 403 Forbidden
- Message Headers

SIP Headers



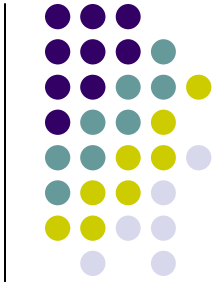
- Display information
  - To: URI
  - From: URI
- Routing information
  - Contacts: URI
- Time To Live
  - Max-Forwards
- Bad Ideas
  - Alert-Info:

Infrastructure



- User Agents / Terminals
  - Soft phones, Hard phones, Voice Mail, etc.
- Proxies
  - Entry/Exit points to a VoIP network
  - Provide authentication services
- Location Servers
  - Registrars, Gatekeepers
  - Map URIs to IP addresses
- Gateways
  - Media Gateways, Signaling Gateways

Phreaking Agenda



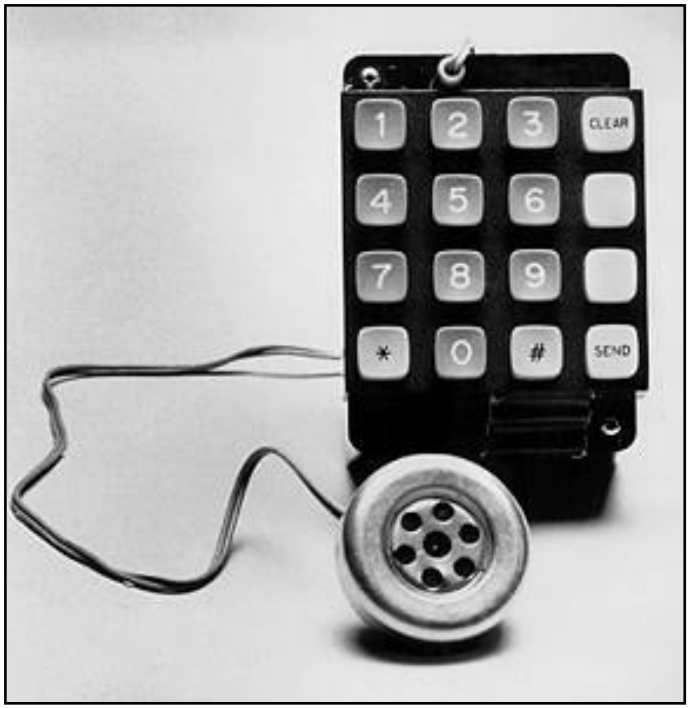
- History
- Techniques
- Death of Phreaking

History

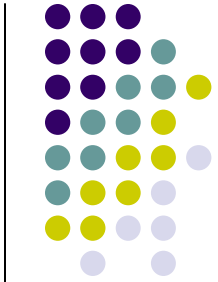
- Started in the 1960's
- Exploited in-band signaling
- Relied heavily on hardware attacks
- Famous Phreaks
  - Steve Jobs
  - Steve Wozniak
  - Cap'n Crunch

Techniques

- In band signaling @ 2600 Mhz
- Typically used for toll-fraud
- The “colour boxing era”
  - Blue boxing
  - Red boxing

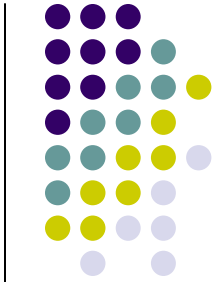


Death of Phreaking



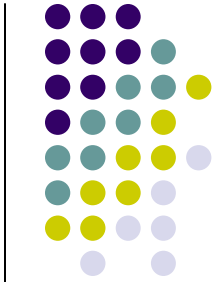
- Out of band signaling
- Aggressive prosecution of phreakers
- Improved fraud analysis complements improving technical solutions
- “I’m not dead yet… I’m feeling better…”
  - The birth of VoIPhreaking

VoIPhreaking Agenda



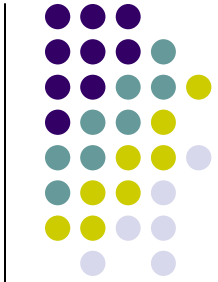
- Motivations
- Attacks Overview
- Techniques

Motivation



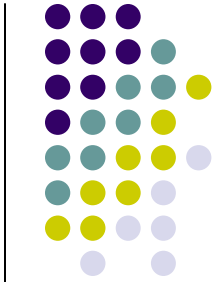
- Hackers enjoy exploring new technology
- Returning to the PSTN after being expelled in the 90s
- Money.

Techniques



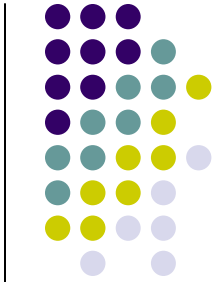
- Media attacks
  - Eavesdropping
  - Injection
- Signaling attacks
  - Hijacking
  - Rerouting
  - Eavesdropping
- PSTN attacks
  - MG intrusion

VoIPhishing



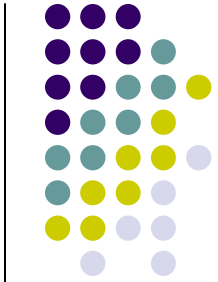
- Application of VoIPhreaking attacks for phishing
- Harvesting personal information
  - Account numbers and access codes
  - Personal identification data
- Wide range of possible exploitation scenarios
- Expect to see these in the news next year
  - Or not…

Techniques



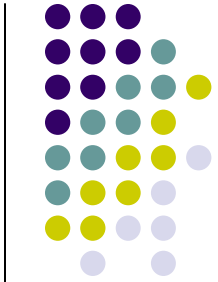
- Impersonating a bank
  - Caller ID spoofing
- Hijacking
  - ENUM poisoning
  - Account theft
  - Man in the middle attacks
- Media stream manipulation

Hijacking



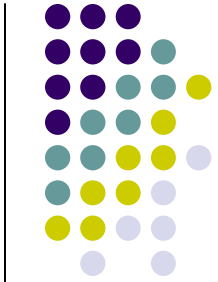
- ENUM Poisoning
  - ENUM database used to route VoIP calls more cheaply
  - Insert a false entry for a financial institution
- Account theft
  - Carrier level SIP Registrar mapping manipulation
  - Redirect inbound calls to an evil call server

Hijacking, cont.



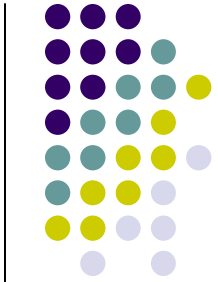
- Man in the middle attacks
  - Manipulate media location
    - Send call streams to multiple locations
  - Signaling manipulation
    - Create false conference call
  - Can happen anywhere between the customer and the bank
- Media stream manipulation
  - Adding content to existing call streams

Demo



- RTP Injection

Conclusion



- New and Improved, Internet Telephony
  - Make phone calls as secure as email!
- Dialing a number doesn’t mean you’ll get that person
- What you hear on a phone call might be more than was said

Questions & Answers