

Challenges in Intercepting WiFi

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DigiTask - Who we are and what we do



- Special Telecommunication Systems for Law Enforcement Agencies (LEA)
- Development of special solutions for the needs of LI
- Located in the middle of Germany
- DigiTask has overall experience of many years in LI systems
- DigiTask is market leader for LI in Germany
- DigiTask is privately owned and independent



DigiTask - Main Products



- Complete LI systems
 - Database supported analysis for
 - telephony
 - real time IP decoding and live visualization
 - Integrating multimedia player
 - Supporting ETSI standards
 - Mediation Devices
 - 24/7 support
 - Onsite training
- WiFi-Catcher
- Remote Forensic Software

Current Situation – Mobile Web/Mobile Internet



Mobile Web respectively Mobile Internet gains more and more popularity among mainstream users.

Nearly all modern communication devices are able to communicate over IP networks.

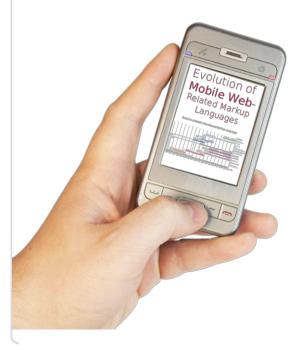


Current Situation – Mobile Web / Mobile Internet



The rates are dropping and the number of usable services on mobile devices is increasing.

Services are specialised for mobile use and devices are advanced for usability of established services.



Current Situation – (Mobile) Internet Services



- Email
- HTTP
- Chat
- Instant Messaging
- VoIP
- Games
- Location Based Services



Current Situation – Mobile WiFi capable Internet devices



- Notebooks/Netbooks
- Cellphones/Smartphones
- Media players
- Digital cameras



Current Situation – Why users prefer WiFi



Most modern mobile communication devices are capable of using WiFi.

Users prefer WiFi in mobile communication because

- it's fast (latency, bandwidth)
- cheaper or often free usage
- nearly impossible to trace

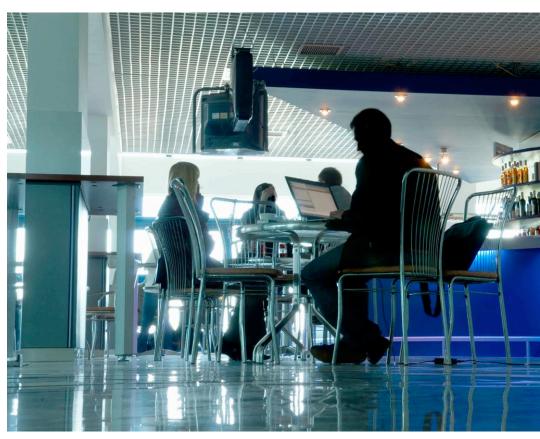


Current Situation – Hotspots and open networks



Public hotspots and other open (unencrypted) WiFi networks are omnipresent in metropolitan areas

- Airport
- Railway station
- Café
- Bar
- Restaurant
- Hotel
- Gas station
- Private network



Challenges in intercepting WiFi



- To which hotspots is the target connected?
- On which channel is the data transferred?
- Many users concurrently
- Filtering of relevant traffic
- Identification of the target
- What's the targets MAC address?



Challenges in intercepting WiFi



- Target changes hotspots/channels
- Poor signal quality, packet loss
- Which antenna(s) should be used
- Where should the antennas be positioned
- How should the antenna(s) be aligned



The DigiTask Solution



Main purpose:

- Capturing traffic
- Filtering the data of a target subject
- Visualizing the captured data within the DigiNet2 system (DigiTask LI system for Internet traffic analysis)





The DigiTask Solution



- Can be used undercover on public hotspots by bringing just a small receiver unit close to the target and analyzing the traffic from the distance
- or with bigger directional antennas from the distance even on all 14 WiFi channels simultaneously



Introduction to the WifiCatcher – Three Main Components



- 1. Notebook for management, decoding and visualization
- Capturing hardware
 - 2. 14 channel unit
 - 3. Single channel unit



Introduction to the WifiCatcher - WiFi-/HF-specs



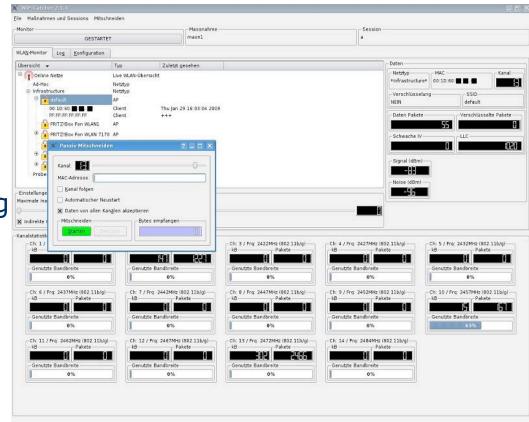
- Working with 2.4GHz networks (802.11 b/g)
- Single channel and simultaneous multi channel capturing
- Working with one or multiple antennas
- Standard N-type antenna connectors



Introduction to the WifiCatcher - Features



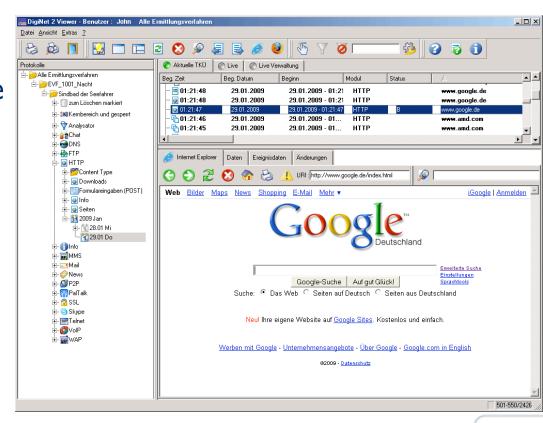
- Network/Channel/Hotspot overview (monitoring)
- Capturing of
 - a single channel
 - a single client
 - one hotspot/network
 - all 14 channels simultaneously
- Target identification using negative sessions and session intersection techniques



Introduction to the WifiCatcher - Features



- Real time packet processing, decoding and visualization of most common internet protocols (HTTP, FTP, SIP, SMTP, POP3, IMAP, IRC, ICQ, MSN, ...) using our DigiNet2 system
- "Channel following" of nomadic users which are using different hotspots
- GPS tracking and time synchronization



Introduction to the WifiCatcher - Small Single Channel Unit



- Portable
- Monitoring all 14 channels
- Capturing on a single channel
- Usable from the distance with big antennas
- Undercover usage close to the target with small antennas



Introduction to the WifiCatcher - Small Single Channel Unit



- Built-in batteries (Lithium Iron Phosphate LiFePO4)
- External batteries or power supply
- Shock resistant SSD buffer
- LCD provides information about current channel, buffer state, coordinates from GPS, etc.
- Wireless data transfer to analysing unit



Introduction to the WifiCatcher - Multichannel Unit



 Same features as the single channel unit except mobility and LCD

 14-channel unit monitoring and capturing all channels simultaneously

