



## Secure: How to Avoid Attacks on Hardware and Data

Morgan Holkesvik  
CISSP, MCITP

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## What I hope you get from this

- Understanding of what a "Hacker" is
- Knowledge of the vast amount of information online and how it can be used
- Understand the risks of the digital age and how to guard against attacks

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## A little about me...

- From Waxahachie, Texas
- IT Assistant Manager at the Texas Association of Counties in Austin, Texas
- Graduated from Texas State University with a degree in Public Administration and History
- No formal computer training

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Most famous hacker in the galaxy

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“ I changed the conditions of the test ”

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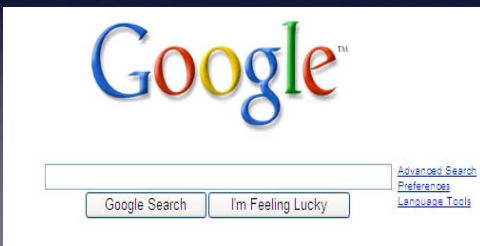
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What is the most powerful tool at a hackers disposal?



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# What can we find on Google?

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- Lock Picking - 19,300,000 hits
- RFID cloning - 580,000 hits
- Wireless Hacking - 23,600,000 hits
- Safe cracking - 21,800,000 hits
- Social Engineering Techniques - 6,000,000 hits

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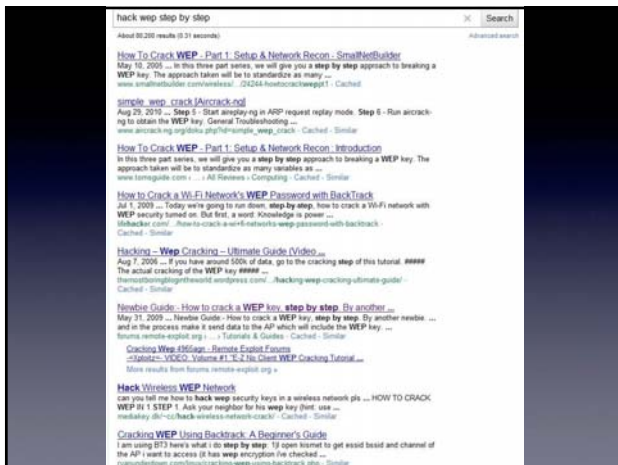
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What's the second most powerful tool?



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## The worlds obsession with Youtube

88,000,000,000 video views per month

48 hours of content is uploaded every minute...

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136,000 Videos on picking locks



255,000 Videos on WiFi hacking



2,380,000 Videos on Social Engineering

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Universal Master Key

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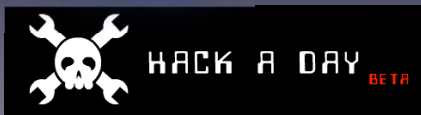
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Where Hackers hone their skills



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What you may expect

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### Understanding Human Behavior

- Human behavior is a fundamentally important to have a successful social-engineer.
- Humans want to trust you!
- We LIKE likeable people.

TRUSTED

Hacking with Psychology

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### Some Caution

- Only targeted sales, engineering, and others.
- Stayed away from IT at this point.
- Stayed away from Public Relations and executives (who may pick up on it).

### Probabilities

- Woman have a 90% more likelihood than men to be successful in SE.
- Kids have a 97% more likelihood than woman to be successful in SE.
- SE in general has around a 84.3% success rate.

Hacking with Psychology

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"The access panel on the sign is generally protected by a small lock, but often are left unprotected. Upon opening the access panel you can see the display electronics."



"In all likelihood, the crew will not have changed the password. However, if they did, never fear. Hold "Control" and "Shift" and while holding, enter "DIPY". This will reset the sign and password to "DOTS".

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The next day...



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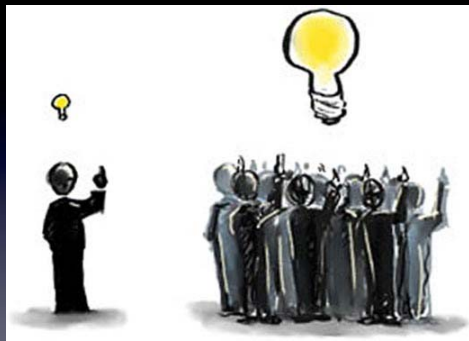
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Crowd Sourcing

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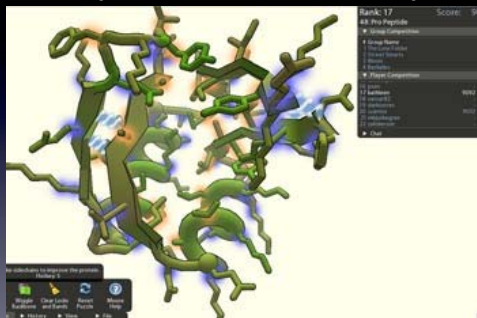
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10 years in 10 Days



Fold.it

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80,000,000 Records

21,000,000 accounts

## Black Hat activities

Average cost per compromised record: \$154

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# \$3,800,000

Average Cost of Data Breach

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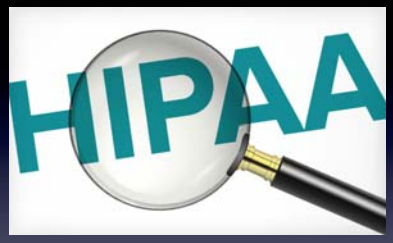
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## Double That or More for Health Care

Anthem expected to top \$100,000,000 hit.  
(That's just for notification and identity theft monitoring)

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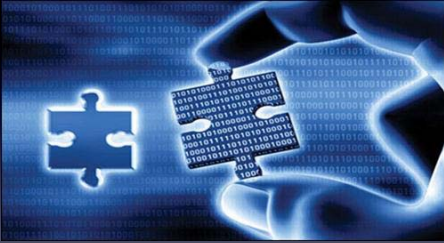
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There's a Cost Even if Everything Goes Right

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- Full Stop of Operations
- Bring In Forensics
- Fix the Problem
- Bring up everything
- Wait for results



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## Why risk jail time?

- Difficult to pinpoint who started it
- Often foreign based operations with no regulations
- Prosecution extremely difficult due to chain of evidence
- Economy downturn creates cyber criminal jobs
- Money. Lots of money.



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THE CYBERCRIME ECONOMY

### 8 charged in \$45 million cybertheft bank heist

By Chris Isidore @CNMoney May 10, 2013: 1:56 PM ET

Recommend Like Tweet 240 Share 29 Print 56 Email Print



How hackers stole \$45 million from banks

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Stolen Data Black Market Value

\$10 per Health Record  
\$1 per Credit Card

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How much money?

**\$575,000,000,000**  
In 2013 Alone.

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Now for the fun stuff

On the offensive

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Social Engineering

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The Con Artist

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## Phishing Attack

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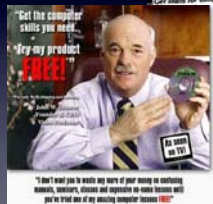
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**WANTED: Somebody to go back in time with me. This is not a joke. P.O. Box 322, Oakview, CA 93022. You'll get paid after we get back. Must bring your own weapons. Safety not guaranteed. I have only done this once before.**



**BETTER LOAN RATES AVAILABLE!**  
**Need Cash Fast**  
**No Upfront Fees**  
Good or Bad Credit. Free Bankruptcy Help  
AVAILABLE LOANS FROM  
**\$2,500 to 250K**  
Call Toll Free 8009466-8333 24 HRS  
Free Consultations  
Get loans for auto, personal, debt consolidation, medical, business, 502 and more...  
www.loanpros.com

## The old way of doing it.

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twitter

facebook



## The New Way

Reach millions in seconds

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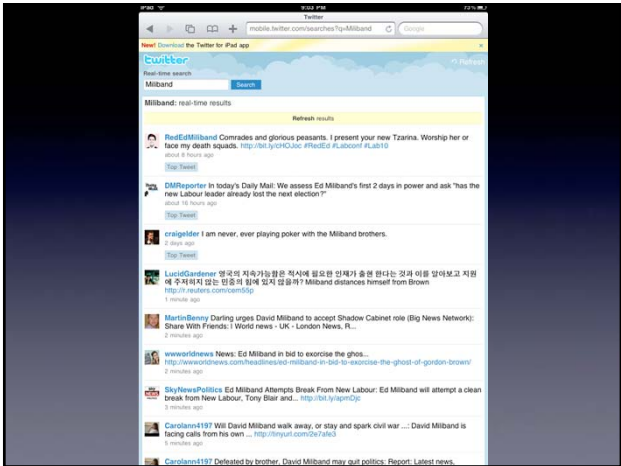
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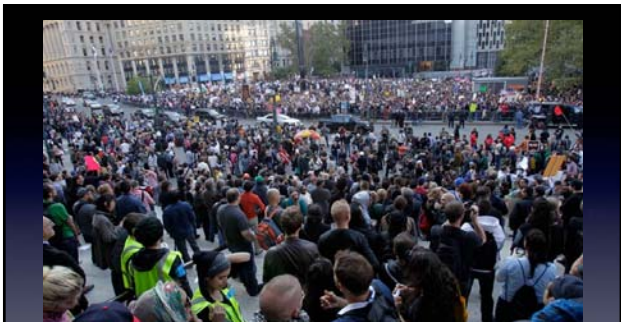
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Undeniably powerful for organization

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## Twitter bomb

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## First step- gather followers

Remember, you can pretend to be anyone

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## Or first step if your lazy...

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## Time to camp

And play the waiting game

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A global event provides a perfect opportunity

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twitter

CNN offers editors (not me, yet) trip to Atlanta to tout new wire service. <http://bit.ly/31Bz8z>

about 17 hours ago from web



I've got pics!

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## Redirection

Pay me to fix!

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***STOP: 0x000000D1 (0x00000000, 0xF73120AE, 0xC0000008, 0xC0000000)
A problem has been detected and Windows has been shut down to prevent damage to your computer.
DRIVER_IRQL_NOT_LESS_OR_EQUAL

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

*** WXYZ.SYS - Address: F73120AE base at C0000000, DateStamp 30b072a3

Kernel Debugger Using: COM2 (Port: 0x2F8, Baud Rate: 19200)
Beginning dump of physical memory
Physical memory dump complete. Contact your system administrator or technical support group.
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## Then disaster strikes

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Facebook | Joshua Norton  
www.facebook.com/profile.php?id=10000...

**Joshua Norton**  
Wall Info Photos

Tell us about yourself. Begin editing your profile below.

**About Me**

Basic Info  
 Sex: Male  
 Birthday: April 1, 1905  
 Relationship Status: Single  
 Interested In: Women  
 Looking For: Networking  
 Current City: San Francisco, California  
 Hometown: San Francisco, California  
 Political Views: Monarchy  
 Religious Views: scientology

**Education**

UCLA '21  
History/Political Science

San Francisco High School '18

**Work**

City and County of San Francisco (1955 - Present)  
Emperor  
San Francisco, California  
Ruled as Emperor of the United States.

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facebook | Search

**Joshua Norton**  
Wall Info Photos

Tell us about yourself. Begin editing your profile below.

**About Me**

Basic Info  
 Sex: Male  
 Birthday: April 1, 1905  
 Relationship Status: Single  
 Interested In: Women  
 Looking For: Networking  
 Current City: San Francisco, California  
 Hometown: San Francisco, California  
 Political Views: Monarchy  
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**Education**

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san francisco high school '18

**Work**

City and County of San Francisco (1955 - Present)  
Emperor  
San Francisco, California  
Ruled as Emperor of the United States.

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Quotations - Mark Twain

**Education and Work**

**Employers**  
 City and County of San Francisco March 1955 - Present  
 Emperor  
 San Francisco, California  
 Ruled as Emperor of the United States.

**College**  
 UCLA '21  
 History/Political Science

**High School**  
 san francisco high school '18

**Likes and Interests**

**Activities**  
 I Love Cats, Civil War History, History, Ruling the World

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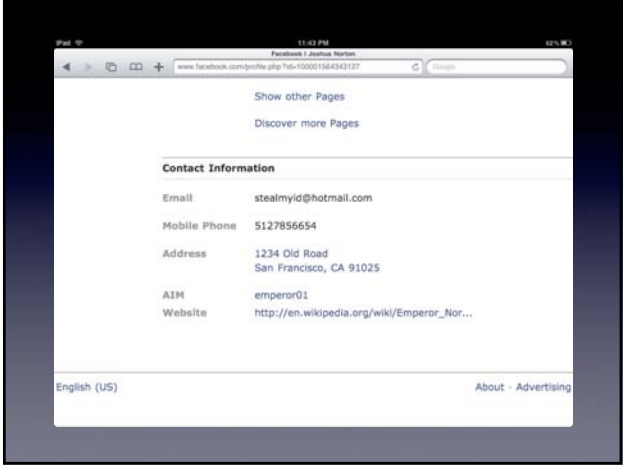
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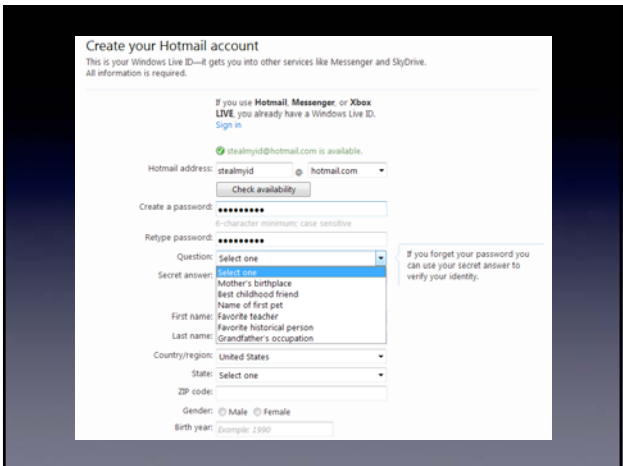
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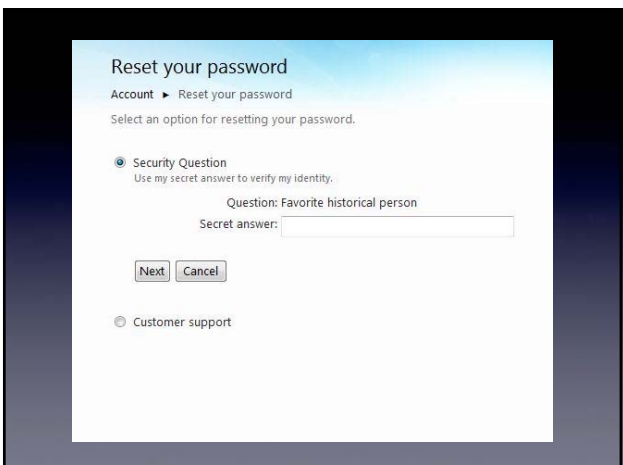
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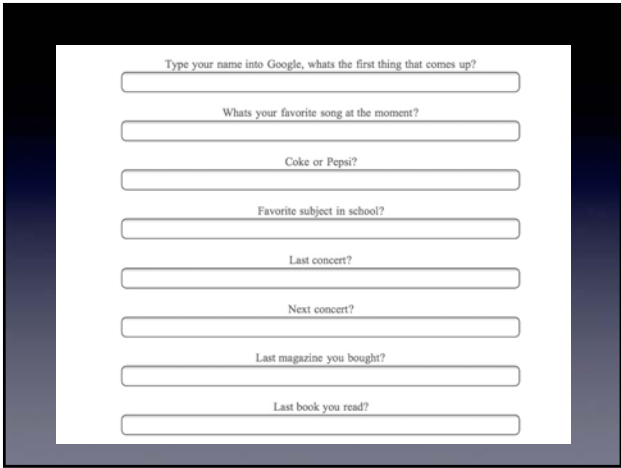
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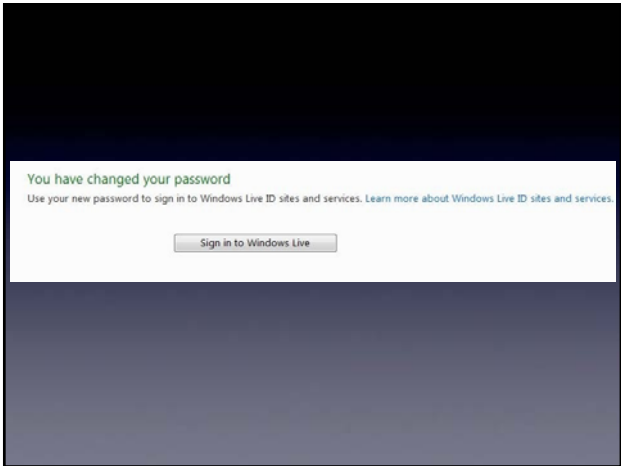
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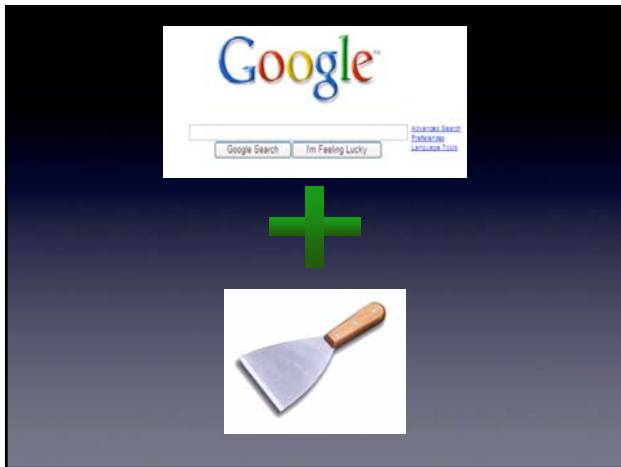
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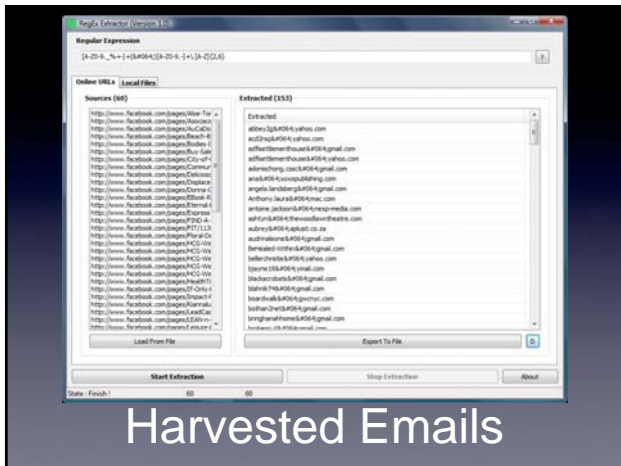
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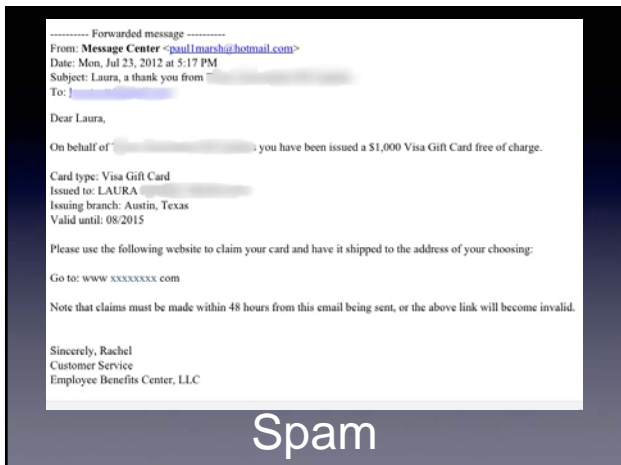
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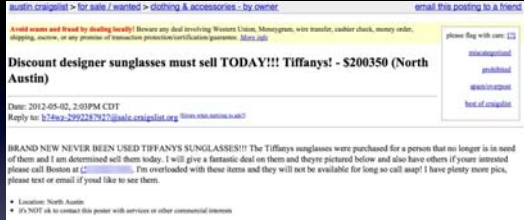
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## Too Good to be True

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## Spearfishing

Selective targeting

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## The Target

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### Notification and fees

The following fees and deposits are charged by the property at time of service, check-in, or check-out.

Fee for in-room wireless Internet: USD 9.95 (for 24 hours, rates may vary)

Fee for wireless Internet in all public areas: USD 9.95 (for 24 hours, rates may vary)

Valet parking fee: USD 12.00 per day (in/out privileges)

Pet fee: USD 50 per room, per stay

## Freely given information

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... a 20-year hospitality veteran, is recently joined by the rest of the executive team including:

- General Manager [redacted] - Bringing more than 30 years' experience in successful full-service hotel operations in major and tertiary markets to the property, [redacted] most recently served as general manager of the upscale, 340-room Chattanooga Marriott at the Convention Center in Tennessee.
- Director of Catering Sonya Villarreal: As a certified wedding consultant with 15 years of upscale hotel experience, Villarreal's hospitality career includes exceptional planning and guest service management with the historic St. Anthony Hotel in downtown San Antonio and with The Adolphus in Dallas.
- Assistant General Manager - Rooms Division [redacted] With 21 years of experience in the hospitality industry, [redacted] has held diverse positions ranging from director of housekeeping, corporate sales manager and assistant general manager; in 2007, she was nominated for the #1 Crowne Meetings Director of Crowne Plaza Hotels for InterContinental Hotels Group.
- Assistant General Manager - Food and Beverage, [redacted] With 25 years' hospitality experience, including full-service properties in Miami and Dallas, [redacted] career includes national sales trainer for grooming catering sales managers for a major hotel company.
- Director of Human Resources [redacted] A native of the San Marcos area, [redacted] began her professional career in the hospitality industry, where she quickly excelled; prior to joining John Q. Hammons Hotels & Resorts, she held the position of HR manager with Cintas, a hotel industry supplier.
- Director of Accounting [redacted] brings 20 years' experience in hotel accounting to the San Marcos property, including seven years with John Q. Hammons Hotels & Resorts.
- Director of Engineering [redacted] A 32-year hotel veteran, [redacted] career in the hospitality industry spans major hotel brands, such as Marriott, Doubletree, Adam's Mark Hotels, Sheraton, and InterContinental Hotels Group, among others.

## Freely given information

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Starwood Hotels and Resorts Worldwide - Hotel Reservations with ...

[www.starwoodhotels.com](http://www.starwoodhotels.com)

Book at the official site for Sheraton, Westin, Le Meridien, W Hotels, Luxury Collection, St. Regis, Four Points, aloft & element Hotels- view exclusive online offers ...

★ Show stock quote for HOT

## Time to look around...

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**MALTEGO**  
**304**



All in one wonder tools  
And it's free

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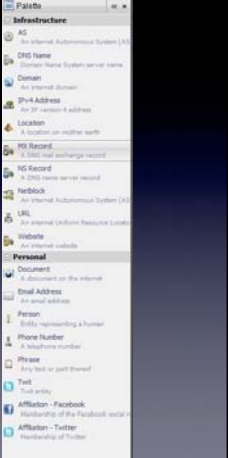
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- Info on individual people
- Phone number reverse lookups and associations
- A specific document
- Every bit of information about a website including sub domains like "mail"
- Email associated with a person or company



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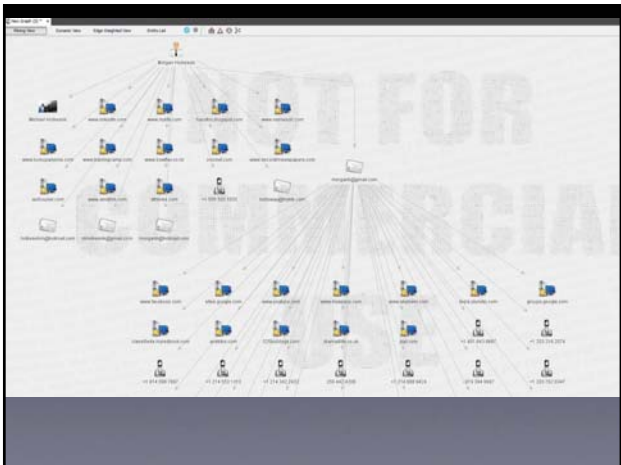
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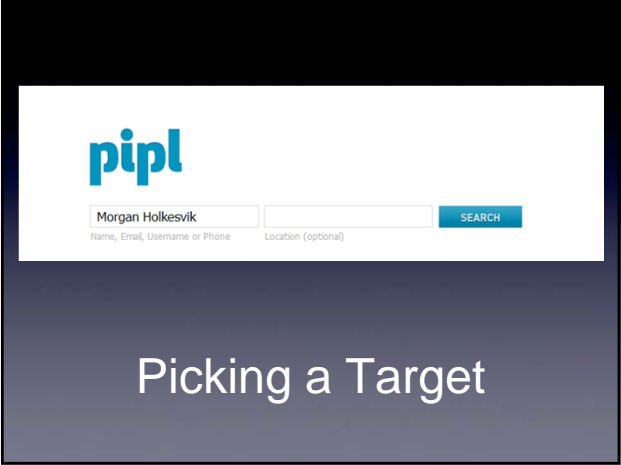
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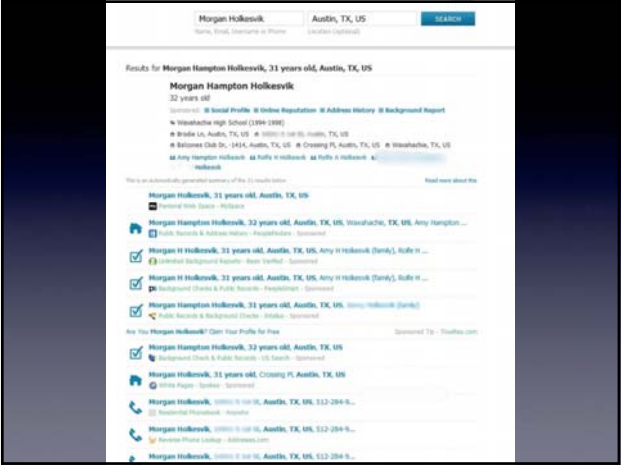
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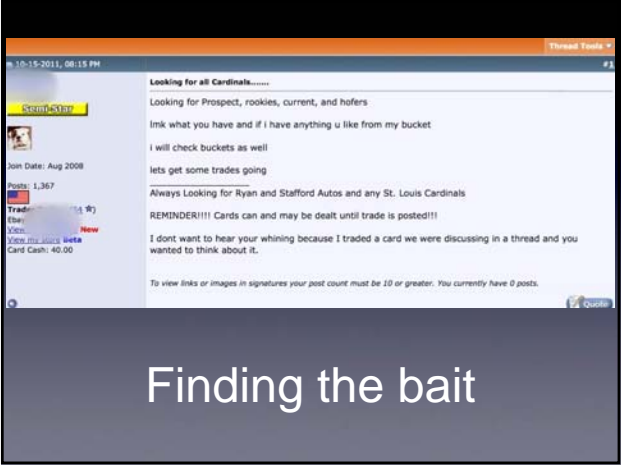
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## Finding the bait

The trap is set



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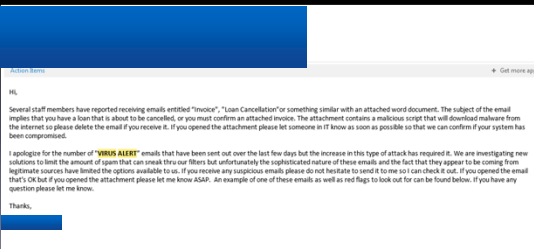
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Or Just Mass Spam

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## But We Have Virus Scanners?

- Virus Scanners are 20-40% effective (some sources say closer to 10%)
- Tens of thousands of viruses are written every day
- New malware will delete itself quickly after dropping payload or stealing data
- Gartner believes 97% of systems have been compromised



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## Social engineering prevention

- Don't post every detail about your life - No one cares...
- Change your passwords frequently
- Have an up-to-date Virus Scanner (think of it as a bullet proof vest)
- Use "false information" for password reminders
- Don't participate in Chain Letters
- Never use a work email for personal reasons
- Be a jerk

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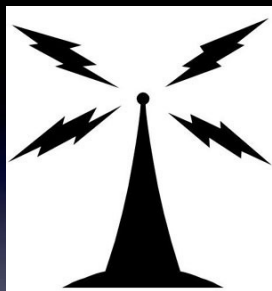
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## WiFi Hacking

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## Time it takes to break wireless security

- Open Air - None
- WEP - 60 Seconds
- WAP - 15 Minutes
- WAP2 - (2-10) Hours



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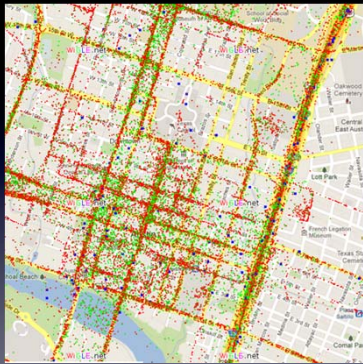
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Wireless Access Points within a few blocks of TAC

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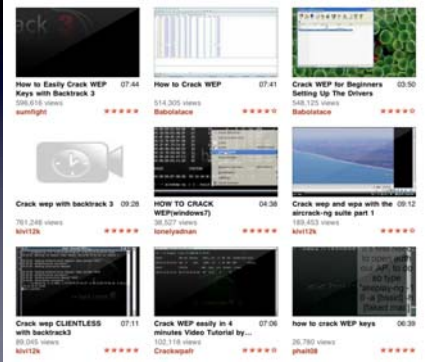
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## YouTube for the win...



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**Free Wi-Fi  
for everyone.**  
Now at Starbucks.

**Free public wifi**  
But what's the cost?

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Man in the Middle

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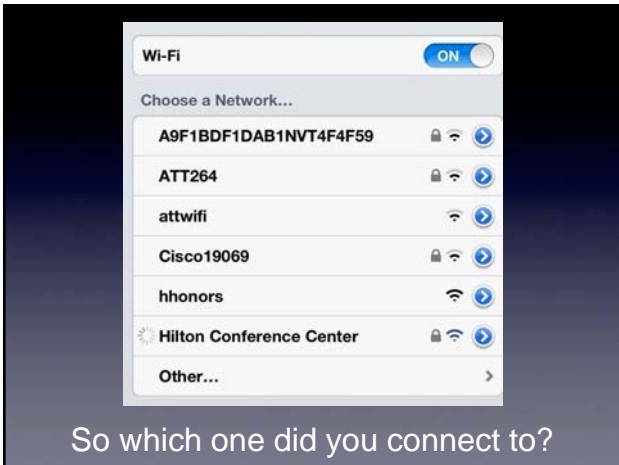
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So which one did you connect to?

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## Wireless security - prevention

- Use WPA or WPA2 Encryption
- Change your wireless key on a regular basis
- Change the routers default settings
- Avoid using public hotspots if possible
- Don't use if there is a security concern!!!

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Breaching the Gate

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Why would someone risk breaking in?

Whacha got?

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Why would someone risk breaking in?

- Whacha got?
- What are the risks?
- What are the chances of getting away with it?



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## You do the Work

Low cost Trojan Horse

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## Curiosity kills the cat

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## Recon

Google street view

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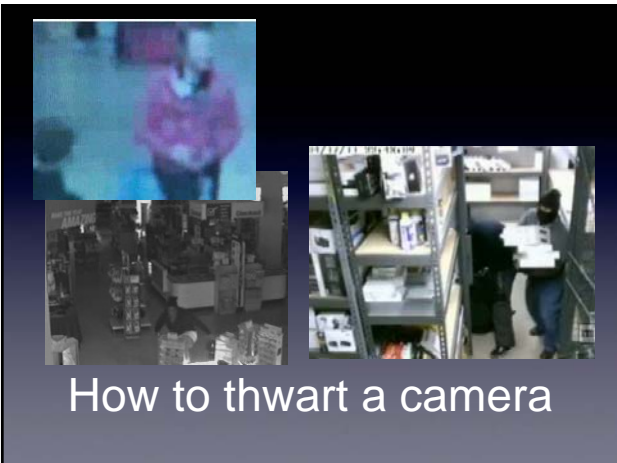
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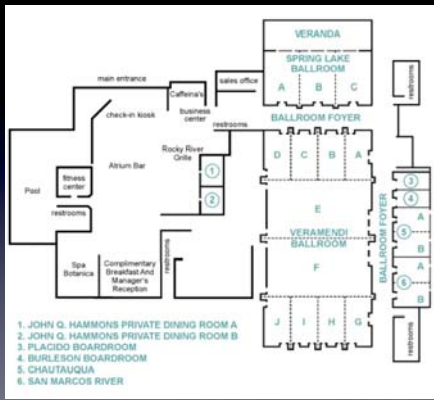
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So now what?

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Corporate vs. Spa

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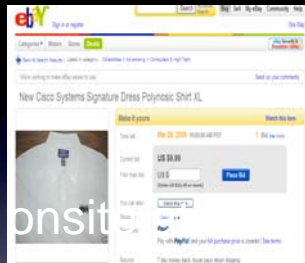
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Steps for an onsite



John  
Doe  
Cisco Infrastructure Manager  
Cisco International  
Austin, TX  
(512) 795-4679  
johnd@cisisco.com  
cisico.com

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Open Sesame

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The deadbolt



Solution:  
Bump key



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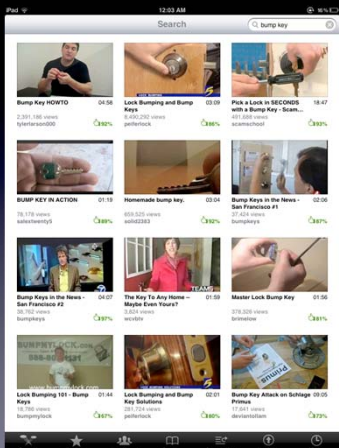
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# DEFCON



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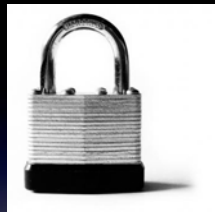
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## The Padlock



Solution:  
Shims



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## RFID Cards



Solution:  
RFID cloner



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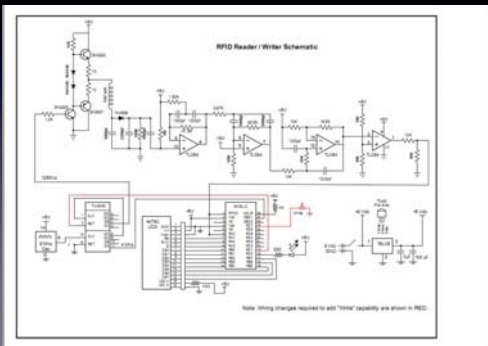
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So what? It's too complicated for your average thief right?



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## Craigslist: Hacker Outsourcing

[austin craigslist](#) > [services offered](#) > [small biz ads](#)

### PCB FPGA Design service

Date: 2010-08-15, 8:02PM CDT

Reply to: [serv-kstokn-1900782014@craigslist.org](mailto:serv-kstokn-1900782014@craigslist.org) [www.craigslist.org](http://www.craigslist.org)

Hardware Embedded engineer is looking for a Contract job  
Circuit, PCB, FPGA  
Cost effective, Fast prototyping

• it's NOT ok to contact this poster with services or other commercial interests

PostingID: 1900782014

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### Smart Card Deluxe

RFID CARDS, FOB and ELECTRONIC KEYS  
Duplicating Machine

HOME ABOUT SMARTCARD PRODUCTS / ORDERS DEMONSTRATION SUPPORT / DOWNLOADS CONTACT US

#### Smart Card Deluxe Starter Pack



#### Special Offer

Pack Includes:

- Machine
- 20 Cards
- 20 Fobs
- 10 Assorted Buttons

\$735

[Add To Cart](#)



#### Cards

Pack Includes:

- 100 Cards

\$180

[Add To Cart](#)



#### Fobs

Pack Includes:

- 100 Fobs

\$230

[Add To Cart](#)



#### Buttons

Pack Includes:

- 50 Buttons

\$125

[Add To Cart](#)

#### Shopping Cart

Product	Quantity	Amount
	Total:	\$0

All purchases include Post and Packaging

[Empty Cart](#)

[Buy Now](#)

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Magnetic card swipes

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The Keypad

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Or if that doesn't work...



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# Shoulder surfing techniques



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# Follow the leader



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# Biometrics

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## Preventing a physical security breach

- Purchase bump resistant dead-bolts
- Biometric readers
- On - Site security
- Monitored surveillance
- Layered Security
- Due diligence - There are no stupid questions

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Man on the inside

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## What's up for grabs?

- Confidential hard files
- Valuable equipment
- Computer Data

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## Computer Access

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What's the password again?

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# Your secrets safe with me

- Under keyboard
- Desk drawer
- Taped on monitor
- Taped in cabinet
- Laying out in the open



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Sometimes you get real lucky

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# Typical default passwords

- Guest
- Administrator
- Password
- "blank"



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# How can a hacker logon?

Install a key logger.



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# How can a hacker logon?

Use free speciality software available for download



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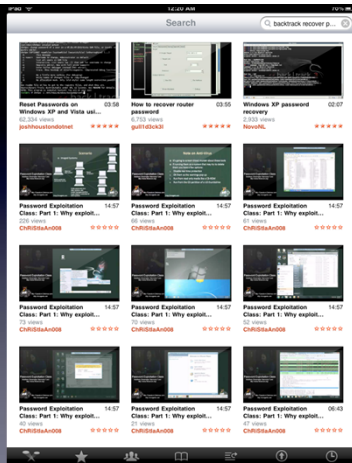
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5:19 PM

Google

Pwnie Express :: Wired, wireless, and 3G pentesting dropboxes



**PWN Plug 3G**  
The first-to-market 3G pentesting drop box.

- :: Includes all Standard & Wireless plug tools
- :: Includes external 3G & Wireless adapters
- :: Out-of-band SSH access over 3G/GSM cell networks!
- :: A Messenger if the plug loses wired connection
- :: Maintains a covert, encrypted, firewall-busting backdoor into your target network [\[Details\]](#)
- :: Includes "Plug UI" for simple web-based setup
- :: Tunnels through application-aware firewalls & IPS
- :: Sends an SMS message when SSH tunnel is activated
- :: Preloaded with Ubuntu, Metasploit, SET, Fasttrack, SSLstrip, nmap, dnmap, netcat, riko, nbscan, scapy, ettercap, JTR, medusa, & more!
- :: Unpingable and no listening ports in stealth mode
- :: NOTE: Mobile broadband plan sold separately.
- :: Includes stealthy decal stickers

Manuals: [\[Documentation\]](#)  
Additional Information: [PwnPlug Datasheet](#)  
[Pwn Plug Overview](#): [\[External Link\]](#)

Choose from the following 3G adapters:

1. Unlocked GSM adapter:
  - :: Compatible with AT&T, T-Mobile, Vodafone, Orange

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## How to mitigate the damage from a break in

- Use layered security
- Change passwords on a regular basis
- Question anomalies - Was my drawer left open? Why am I logged in?
- Audit access logs
- If possible, store files on the network

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## Let's sum it all up

### Ask yourself:

- Do they need to know?
- Do I know him or her?
- Was that always like this?
- Is this convenient or secure?
- What happens if it all goes wrong?




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Lastly, remember that nothing is 100% secure, because hackers will change the conditions of the test



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Thanks!

Morgan Holkesvik  
[morganh@county.org](mailto:morganh@county.org)

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