



**EXTRA, EXTRA! Read all about
Cybercrime and your Bank!**



SECURE BANKING SOLUTIONS

**Presented by:
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SBS



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 - www.protectmybank.com



My Experience



- 9 Years Information Security
- Information Security Program Design and Implementation
- IT Risk Assessment
- Penetration Testing
- Vulnerability Assessments
- Awareness Programs
- Vendor Management
- Business Continuity
- Technology Selection
- Info Security Consulting
- IT Audit
 - ISP audit
 - Controls audit
 - Wire transfer audit
 - Internet banking audit
- Anything else you can imagine!



Dakota State Nationally Recognized



- National Security Agency
- Department of Homeland Security
- 4,000 universities in the country
- Only 100 named national centers in the past 10 years
- National Center of Excellence in Information Assurance
- www.dsu.edu

Cybersecurity State of the Union



- Trends (new tech, greater adoption)
- 2014 – Year of the Data Breach
- New and widespread vulnerabilities
- Cybercrime – increasing rapidly!
- Commercial Account Takeover
- New Regulatory Guidance
 - Two new Joint Statements
 - Cybersecurity Assessments



Why are we talking about this?



- Where's your data?
- Who's ultimately responsible for your data?
- Where is information trending?
- Is this whole “world wide web” thing a fad?



Technology Trends



- Remote Banking
 - Consumer Online Banking
 - Commercial Online Banking
 - Mobile Banking
- Mobile Payments
 - Mobile Deposit Capture
 - Commercial Mobile Deposit
 - P2P Payments
- Interactive Teller Machines
- Contactless Payments
- Increased Outsourcing
- Data Breaches...

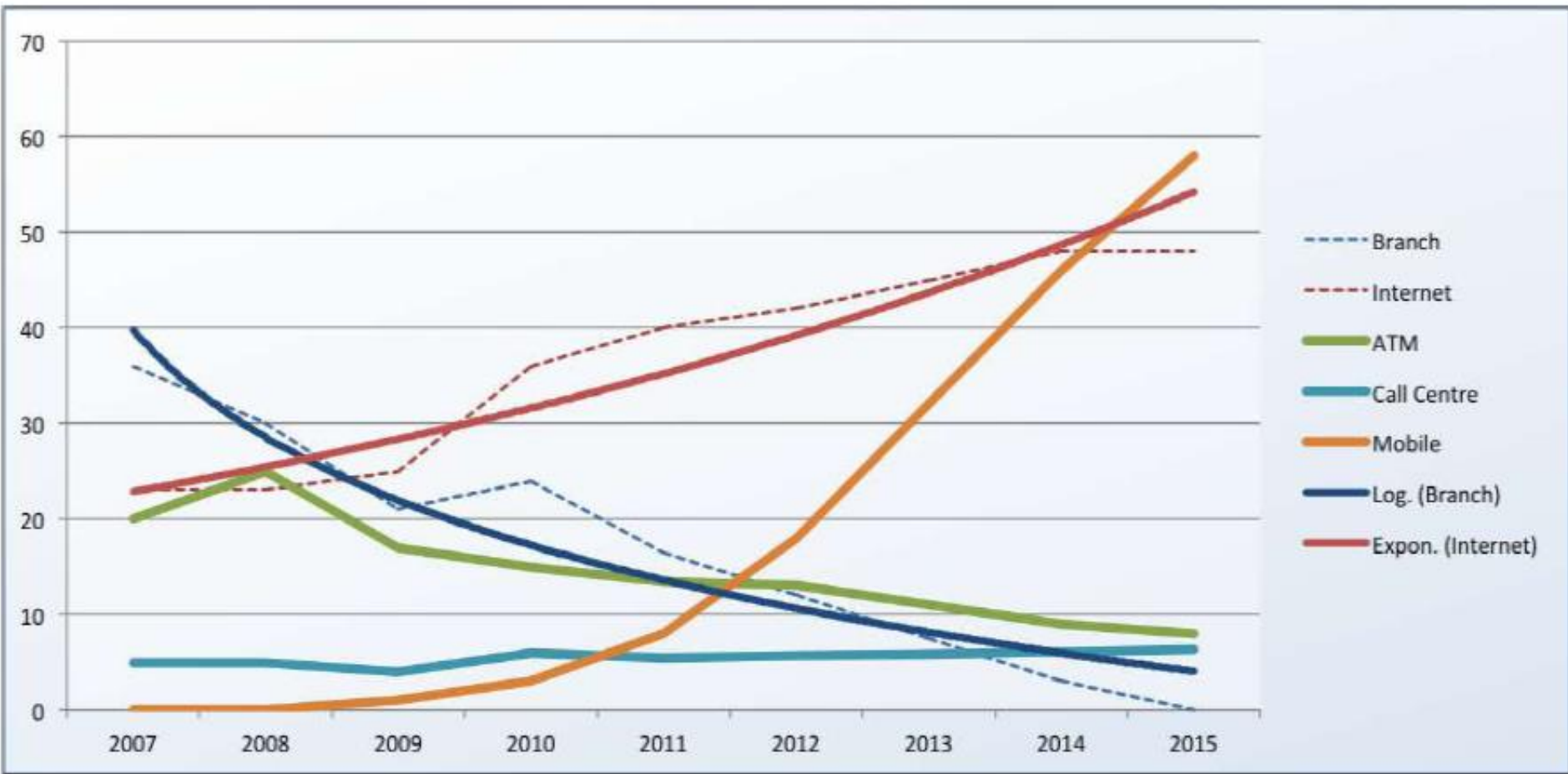


Digital Banking Trends



- More or less access to money digitally?
 - \$96,000 of sales are made on Amazon every minute
 - \$612,000 is spent online by consumers every minute
 - <http://www.retail.com/info/retail-in-real-time/>
- More or less in-person customer interaction?
- Greater or fewer brick-and-mortar locations?
- More or less employees?
- More or less investment into technology?

Banking Method Trends



Changes in the Paradigm



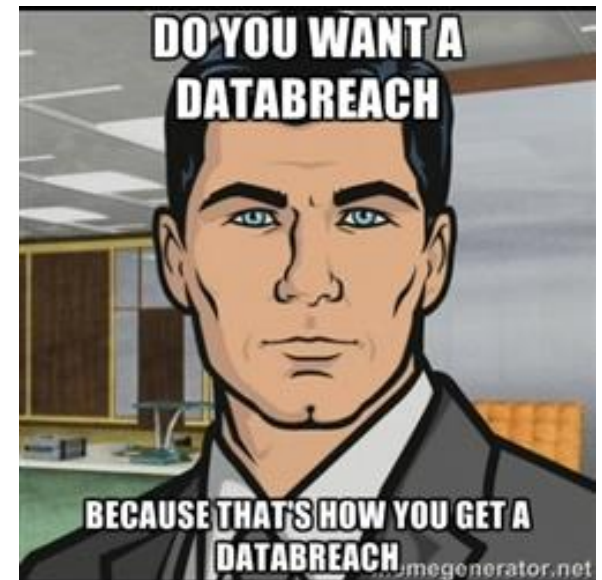
“Banking is quickly changing from a place you go to something you do everyday,” stated Brett King, author of bestselling “Bank 2.0” and “Bank 3.0,” as well as founder of mobile banking start-up Movenbank



Data Security Issues



- Data Breaches
 - Target, Home Depot, so many more
- Widespread Vulnerabilities
- Cybercrime – who are the new bad guys?
 - Social Engineering using (Malware/Phishing)
 - DDOS
- ATM Security Issues
- Wire Fraud
 - Fraud from within the Bank
- Corporate Account Takeover
 - Fraud from outside the Bank



Verizon DATA BREACH INVESTIGATIONS REPORT (DBIR)

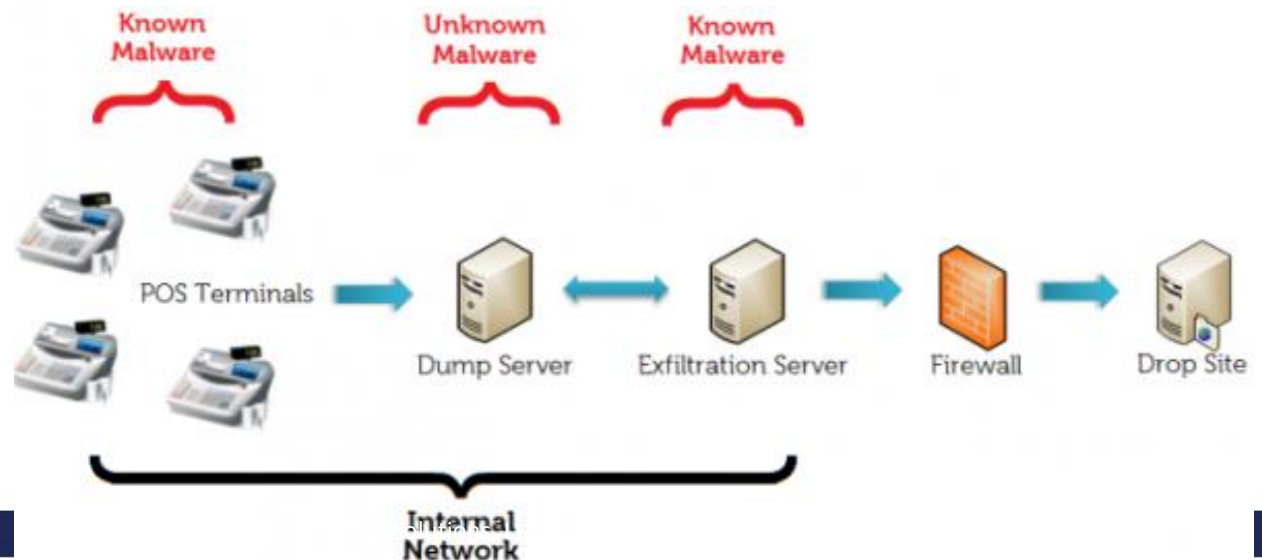


- 1367 confirmed data breaches (2014)
- 63,437 security incidents (2014)
- 92% stemmed from **external agents**
 - Organized criminal group 55%
- 55% utilized some form of **hacking**
- 29% utilized some form of **social engineering**
- 40% incorporated **malware**
- 75% of victims were **opportunistic attacks**
- 97% of breaches were avoidable through simple or intermediate controls (*2012)

Target (Nov/Dec 2013)



- 40M Credit/Debit Cards
 - Card data for sale online.
- 70M Customer Records
 - names, mailing addresses, phone numbers or email addresses
- Malware-laced email phishing attack sent to employees at an HVAC firm (which supported Target)
- From HVAC company, accessed Target's "Vendor Portal"
- Jumped inside the network and infected many Point of Sale systems



Home Depot (April/Sept 2014)



- Up to 56,000,000 customer records exposed
- Ongoing investigation (full extent not yet known)
- Target = 18 days; Home Depot = 6 months
 - Heartland/TJX = 18 months; 6 months to report
- 2,200 physical store locations affected
- Reportedly the same malware and the same (Russian) cybercrime group responsible

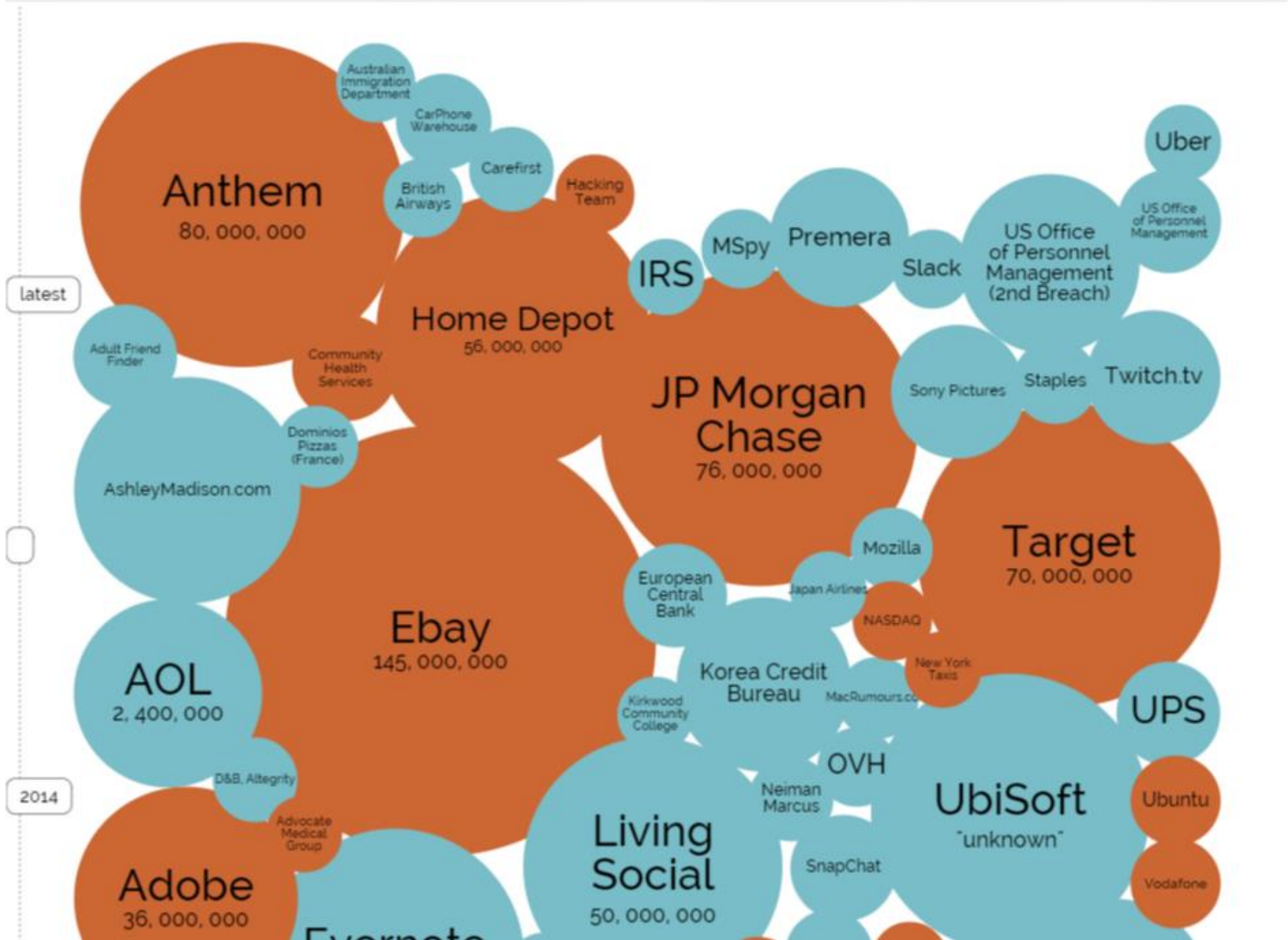
World's Biggest Data Breaches

Selected losses greater than 30,000 records

(updated 11th August 2015)

interesting story

YEAR BUBBLE COLOUR YEAR METHOD OF LEAK BUBBLE SIZE NO OF RECORDS STOLEN DATA SENSITIVITY SHOW FILTER



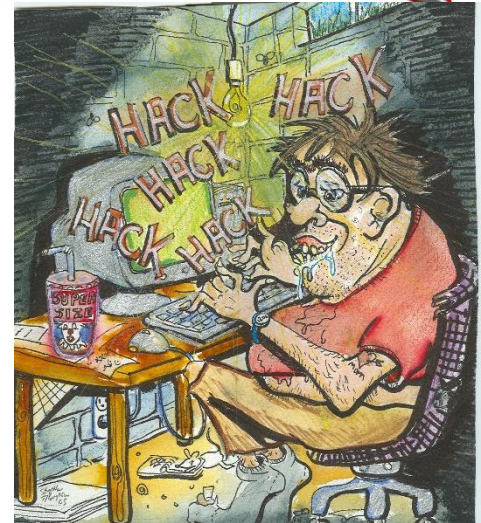
The future of vulnerabilities...?



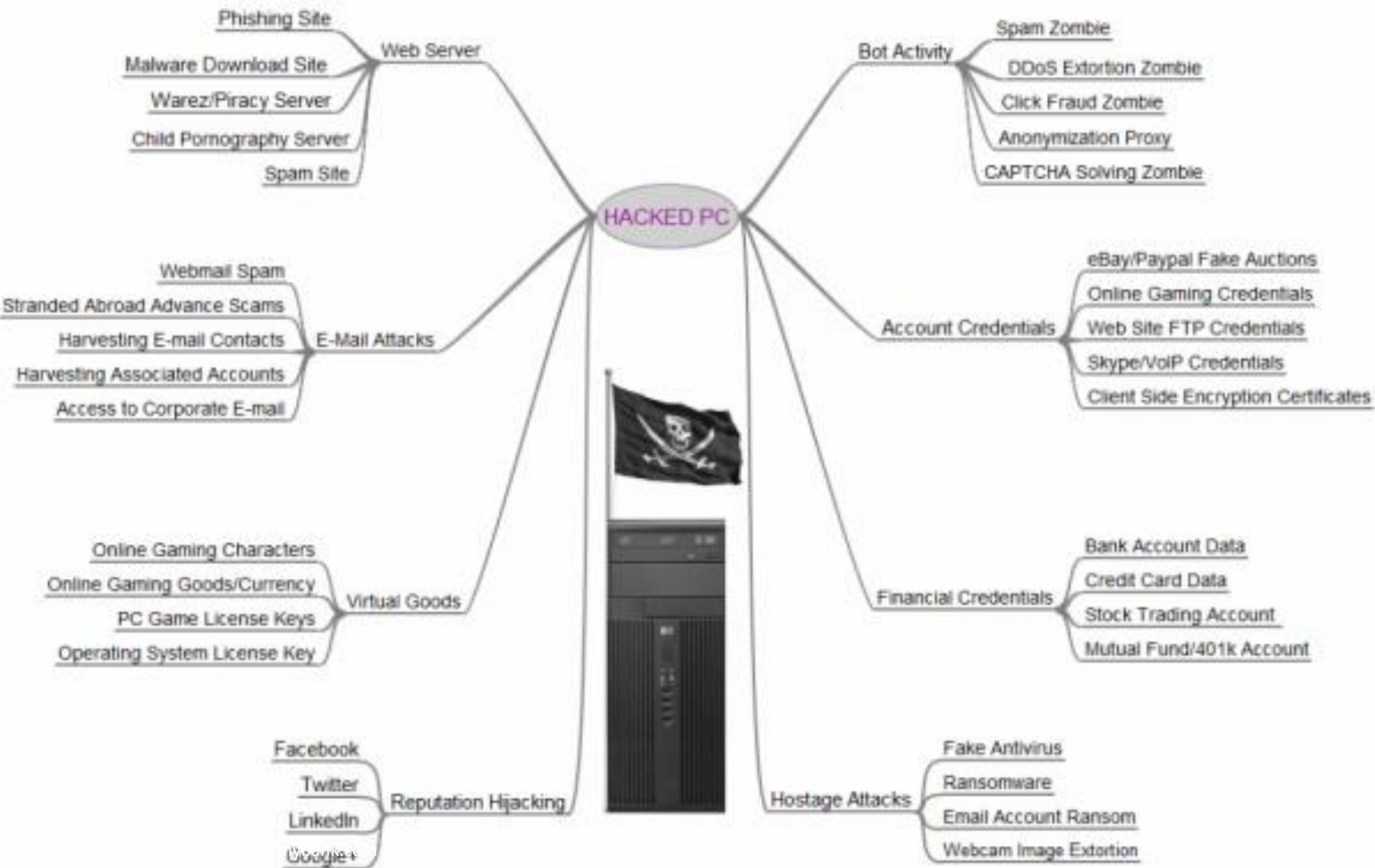
The evolution of Cyber Crime



- Used to be the “hacker”
- Now, it’s Organized Crime
 - Overseas operations
 - Want \$\$\$ to fund their organization
 - Using Low Tech Attacks
 - Target PEOPLE
 - They purchase specialized software
 - Marketing Material



Value of Hacked PC



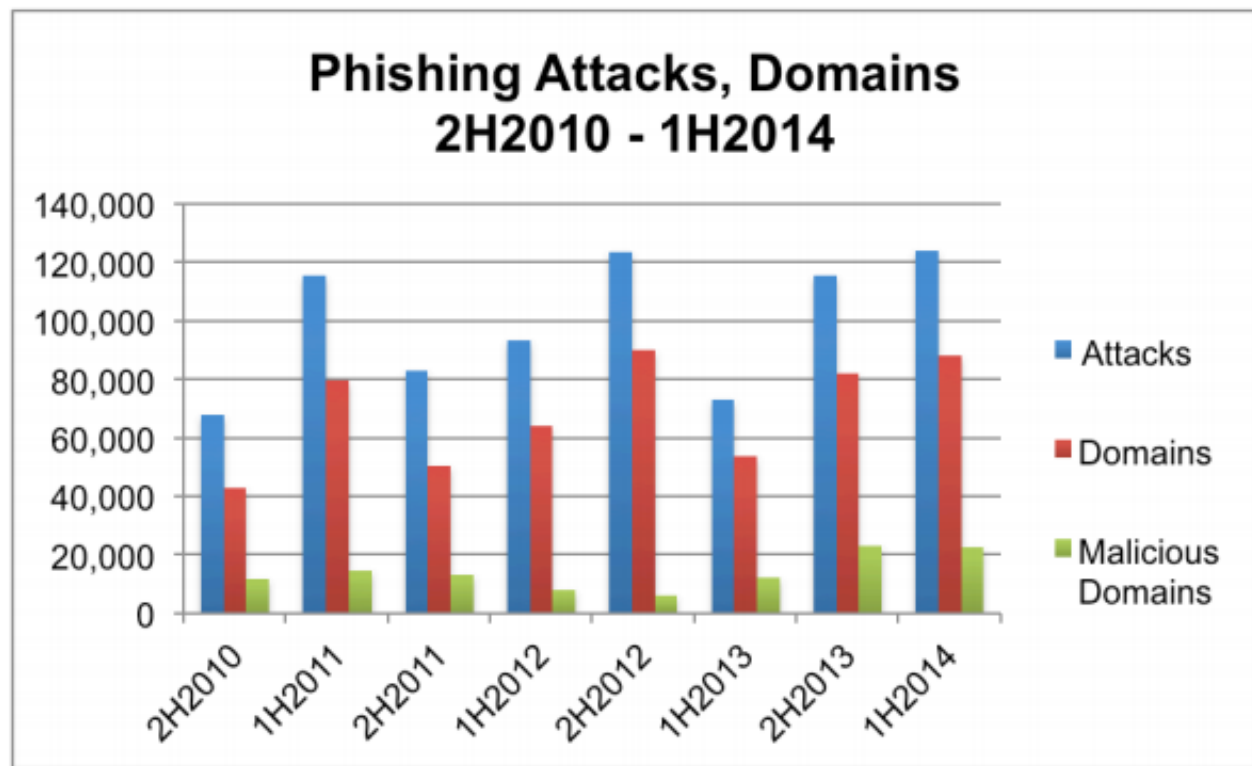
DDoS



Phishing Trends



91% of cyberattacks and the resulting data breach begin with a “spear phishing” email –
Trend Micro



Phishing... for “low hanging fruit”



From: "[Andrea Keith@irs.gov](mailto:Andrea_Keith@irs.gov)" <Andrea_Keith@irs.gov>
To:
Sent: Friday, 10 February, 2012 6:42:03
Subject: Rejected Federal Tax transfer



Your Tax transaction (ID: 152757344464), recently sent from your checking account was returned by your Bank.

Rejected Tax transaction	
Tax Transaction ID:	152757344464
Return Reason	See details in the report below
FederalTax Transaction Report	tax report 152757344464.pdf (Adobe Acrobat Reader Document)

Important Information for Home-care Service Recipients

If you are a home-care service recipient who has a previously assigned EIN either as a sole proprietor or as a household employer, do not apply for a new EIN. Use the EIN previously provided. If you can not locate your EIN for any reason, follow the instructions on the Misplaced Your EIN? Web page.

If you are a home-care service recipient who does not have an EIN, do not use the online application to apply for one. You must apply for your EIN using one of the other methods (phone, fax or mail). For additional information, visit the How to Apply for an EIN Web page.

Spear Phishing



Your Wire fund transfer

File Edit View Tools Message Help

From: ach_rejects@nacha.org
Date: Monday, June 20, 2011 8:23 AM
To: ak [redacted]@ [redacted].us
Cc: mc [redacted]@ [redacted].us
Subject: Your Wire fund transfer

Board of Governors of the Federal Reserve System
The Federal Reserve, the central bank of the United States, provides the nation with a safe, flexible, and stable monetary and financial system.

?

The outgoing Wire fund transfer , a short time ago sent from your banking account , was not processed by the Federal Reserve Wire Network.

Please [click here](#) to view further information

This service is provided to you by the Federal Reserve Board. Visit us on the web at <http://www.federalreserve.gov>.

<http://irs-reports.com/federalreserve.report.pdf.exe>

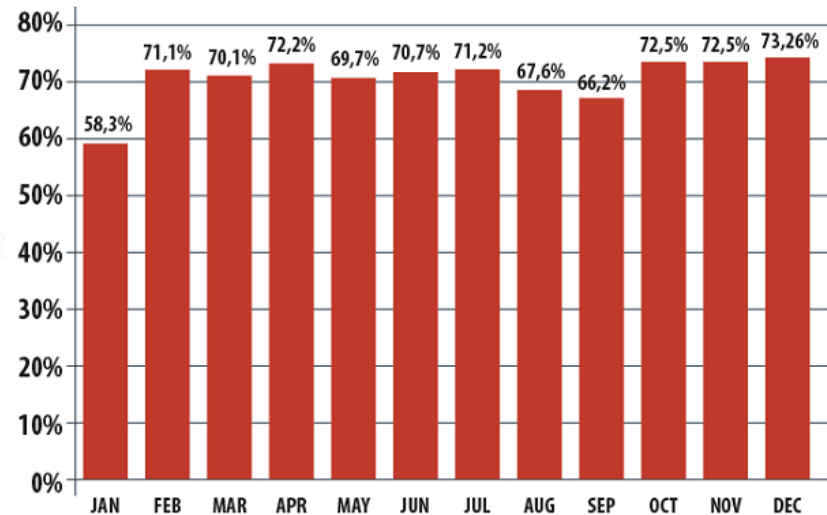
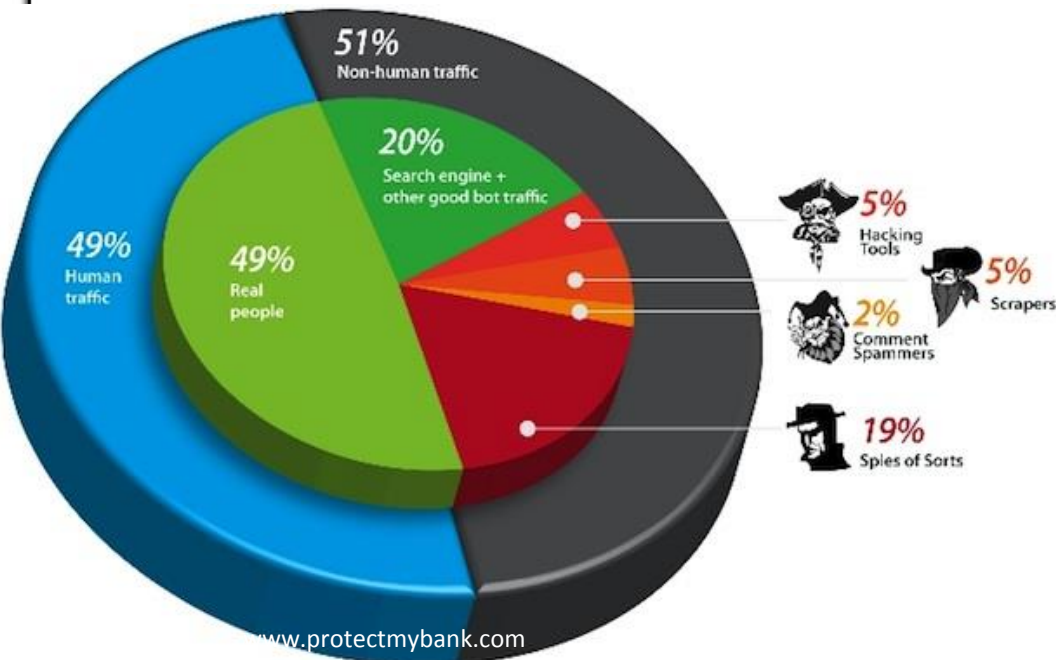


Threats to Small Businesses



Q2: Scanned Computers	18,321,456	
Infected Computers	9,215,692	50.30%
Non Infected Computers	9,105,764	49.70%
Banking Trojans / Password	3,220,911	17.58%
Downloaders	1,533,506	8.37%

“if you click a malicious link or open an attachment in one of these emails, there is less than a **one-in-five chance your antivirus software will detect it as bad.**” - Krebs



Wire Fraud vs. CATO



Wire Transfer Fraud – INTERNAL

- a new trend in which cyber criminals are using spam and phishing e-mails, keystroke loggers, and Remote Access Trojans (RAT) to compromise financial institution networks and obtain employee login credentials.
- Amounts varied between \$400k and \$900k
- Raised the wire transfer limit on the customer's account to allow for a larger transfer
- Most of the identified wire transfer failures, the actor(s) were only unsuccessful because they entered the intended account information incorrectly

Wire Fraud vs. CATO



Commercial Account Takeover - EXTERNAL

- Cyber criminals are targeting small businesses
- Small businesses don't have security controls in place!
- Small businesses are using Internet Banking - Cash Management systems
 - Bill Pay, Wire Transfers, Direct Deposit, Mobile Capture, etc.
- Cyber criminals take over small business internet banking accounts and transfer money
- CATO = bad news bears for everyone involved



Commercial Banking Fraud



- **Chelan County Public Hospital (WA)** lost \$1.03 Million after attackers accessed payroll accounts and transferred the money into 96 different bank accounts
- **JT Alexander & Son**, a North Carolina fuel distributor lost \$800,000 in May 2014 due to fraudulent ACH transfers initiated via Commercial Online Banking
- **Experi-Metal Inc.** of Sterling Heights, MI had \$1.9M stolen, of which \$560,000 was not recoverable due to 47 wires in one day to foreign and domestic accounts which EMI never wire to before
- **PATCO Construction** of Maine lost more than \$500,000 due to Commercial Account Takeover in 2009 (probably the most public and infamous case, due to the lawsuits and outspoken owner)
- **Choice Escrow and Land Title** of Missouri lost \$440,000 due to fraudulent wire transfers in 2009; courts ruled in favor of Bank in March of 2013, stating that the Bank had offered “commercially reasonable security” to Choice Escrow, but the business turned down the additional security features.
- So many more!

ATM Security



- ATM security is SO HOT right now.
- Do your ATMs use Windows XP?
- Have you addressed other ATM threats?
 - Skimming
 - Cash-out
 - Malware
 - Physical Security



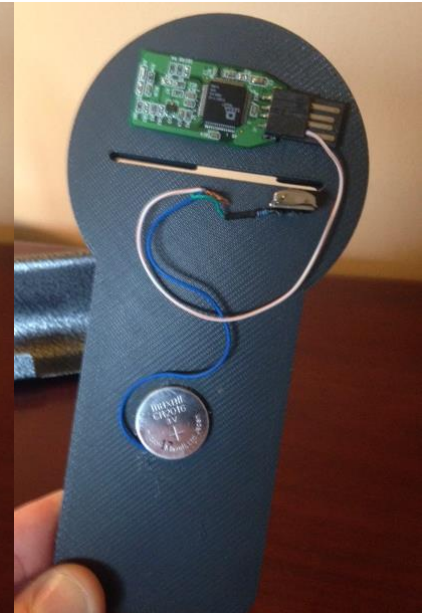
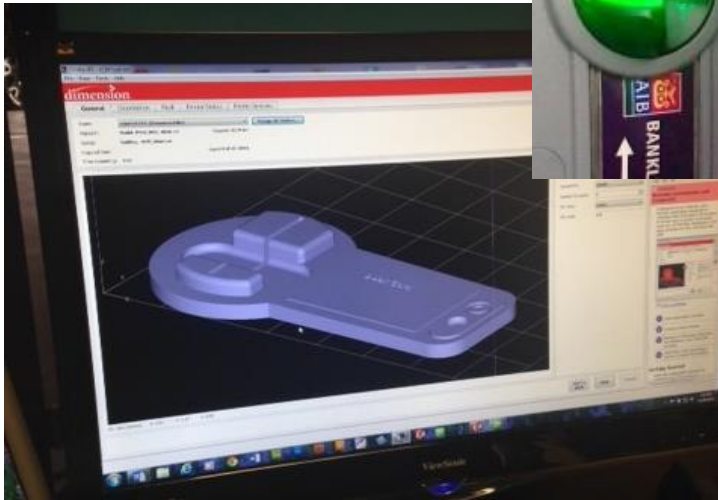
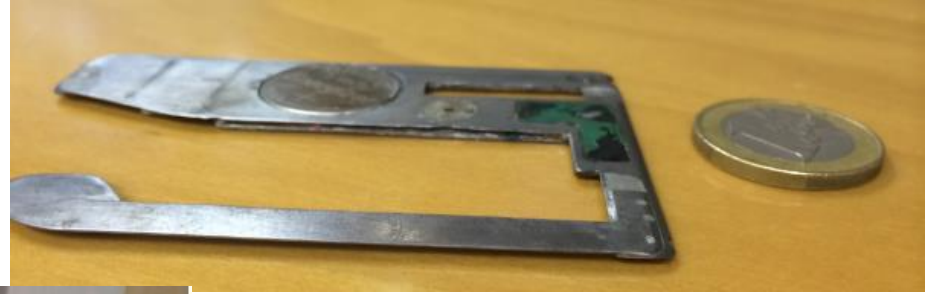
Latest Skimming Techniques



- Completely Fake ATM's and ATM covers.
- Keypad overlay instead of camera's.
- Transmission devices: cell phone, Wi-Fi, Bluetooth...
- Gluing down the physical 'enter', 'cancel' and 'clear' keys. Allowing hacker to capture PIN and get the card.
- Card/Cash Trapping
- <http://krebsonsecurity.com/all-about-skimmers/>



Skimming examples...





What does the Wi-Fi Pineapple do?



Infusions Notifications {13} Clients: {0}

AutoSSH [-]

- AutoSSH
- Autostart

Pineapple Bar [-]

Refresh this tile to check for system updates.

Configuration [-]

- DNSSpoof
- Cron

Evil Portal II [-]

NoDogSplash Disabled.	Start
Autostart Disabled.	Enable
Live Portal Preview	Show
Dev Portal Preview	Show
Forum Support Topic	Open

WiFi Pineapple MK5 [-]

Firmware Version: 2.2.0

Refresh this tile to check for firmware upgrades.

Logs [-]

No log file is being followed. To follow a custom logfile here, open the large tile.

Network [-]

- wlan0
- wlan1

Internet IP: [Show](#)

LAN: 172.16.42.1
Wlan1: N/A
Mobile: N/A

PineAP [-]

- MK5 Karma Autostart
- PineAP
- Dogma
- Beacon Response
- Harvester

Resources [-]

	total	used	free
Mem:	61804	39840	21964
-/+ buffers:		33872	27932
Swap:	0	0	0

sslstrip [-]

sslstrip | [Start](#) Verbose

sslstrip is not running...

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sslstrip is not running...

What does the Wi-Fi Pineapple do?



Intelligence Report **PineAP** Karma Karma Log

PineAP Configuration [?]

General

Source: 00:13:37:A5:3B:C0
Target: ff:ff:ff:ff:ff:ff

Beacon Interval: Normal (Currently normal)
Response Interval: Normal (Currently normal)

Save Settings

SSID Management - Clear SSIDs

- Ramkota
- Verizon-MiFi5510L-5002
- Greyskull
- Wireless G Router 523431
- coombaj
- crewwifi
- GambitnRogue
- charity
- DVRLink
- bowman
- SweetwaterGolf
- Latchstring
- Zorbaz_Public
- TwinsWiFi



```
Intelligence
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against k-link
Feb 13 20:45:28 KARMA: Checking ESSID SBS2 against k-link
Feb 13 20:45:28 KARMA: Probe Request from f0:d1:a9:cf:50:67 for SSID 'k-link'
Feb 13 20:45:28 KARMA: Checking ESSID Greyskull against k-link
Feb 13 20:45:28 KARMA: Checking ESSID SBS against k-link
Feb 13 20:45:28 KARMA: Checking ESSID SBS2 against k-link
Feb 13 20:45:28 KARMA: Checking ESSID SBS2 against k-link
Feb 13 20:45:28 KARMA: Checking ESSID SBS2 against k-link
Feb 13 20:45:27 KARMA: Probe Request from 40:b0:fa:65:68:ba for SSID 'BK-Guest-WIFI'
Feb 13 20:45:27 KARMA: Checking ESSID Greyskull against BK-Guest-WIFI
Feb 13 20:45:27 KARMA: Checking ESSID SBS against BK-Guest-WIFI
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against BK-Guest-WIFI
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against BK-Guest-WIFI
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against BK-Guest-WIFI
Feb 13 20:45:27 KARMA: Probe Request from 40:b0:fa:65:68:ba for SSID 'BioLife WiFi'
Feb 13 20:45:27 KARMA: Checking ESSID Greyskull against BioLife WiFi
Feb 13 20:45:27 KARMA: Checking ESSID SBS against BioLife WiFi
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against BioLife WiFi
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against BioLife WiFi
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against BioLife WiFi
Feb 13 20:45:27 KARMA: Probe Request from 40:b0:fa:65:68:ba for SSID 'This_one!'
Feb 13 20:45:27 KARMA: Checking ESSID Greyskull against This_one!
Feb 13 20:45:27 KARMA: Checking ESSID SBS against This_one!
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against This_one!
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against This_one!
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against This_one!
Feb 13 20:45:27 KARMA: Probe Request from 40:b0:fa:65:68:ba for SSID 'comtrend104-4'
Feb 13 20:45:27 KARMA: Checking ESSID Greyskull against comtrend104-4
Feb 13 20:45:27 KARMA: Checking ESSID SBS against comtrend104-4
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against comtrend104-4
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against comtrend104-4
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against comtrend104-4
Feb 13 20:45:27 KARMA: Checking ESSID SBS2 against comtrend104-4
Feb 13 20:45:27 KARMA: Probe Request from 40:b0:fa:65:68:ba for SSID 'BioLifeWiFi'
```

The results...



Intelligence Report PineAP Karma Karma Log [X]

PineAP Configuration [?]

General

Source: 00:13:37:A5:3B:C0
Target: ff:ff:ff:ff:ff:ff

Beacon Interval: Normal (Currently normal)
Response Interval: Normal (Currently normal)

Save Settings

SSID Management - Clear SSIDs

Megatron
DSU-Guest
Guest
Fatboy's Guest
Wade-Wireless
comtrend104-4
UofM Guest
k-link

SSIDs with signal strength indicators:

- SBSz
- SBS-Guest
- Free Open WiFi (do not connect)
- Megatron
- comtrend104-4
- k-link
- DSU-Guest
- Fatboy's Guest
- Wade-Wireless
- Guest

Intelligence Report PineAP Karma Karma Log

Intelligence Report [?]

HW Address	IP Address	hostname	SSID
f0:d1:a9:cf:50:67	172.16.42.181	Ds-iPhone	k-link
78:7e:61:79:5d:61	172.16.42.183	iPhone	Guest
40:b0:fa:65:68:ba	172.16.42.144	android-70e75cd2b02022d	BioLife WiFi



How to manage these risks?



- How should you manage the risk to your institution on a go-forward basis?



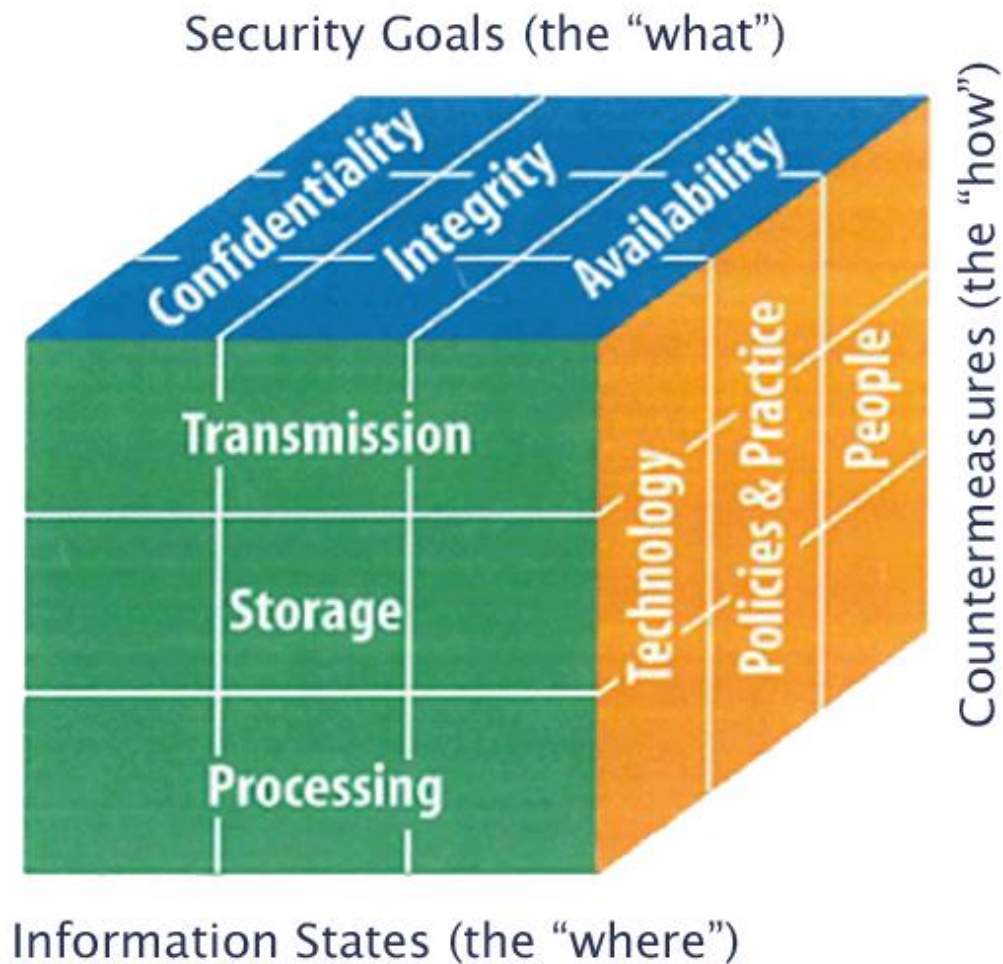
Answers!



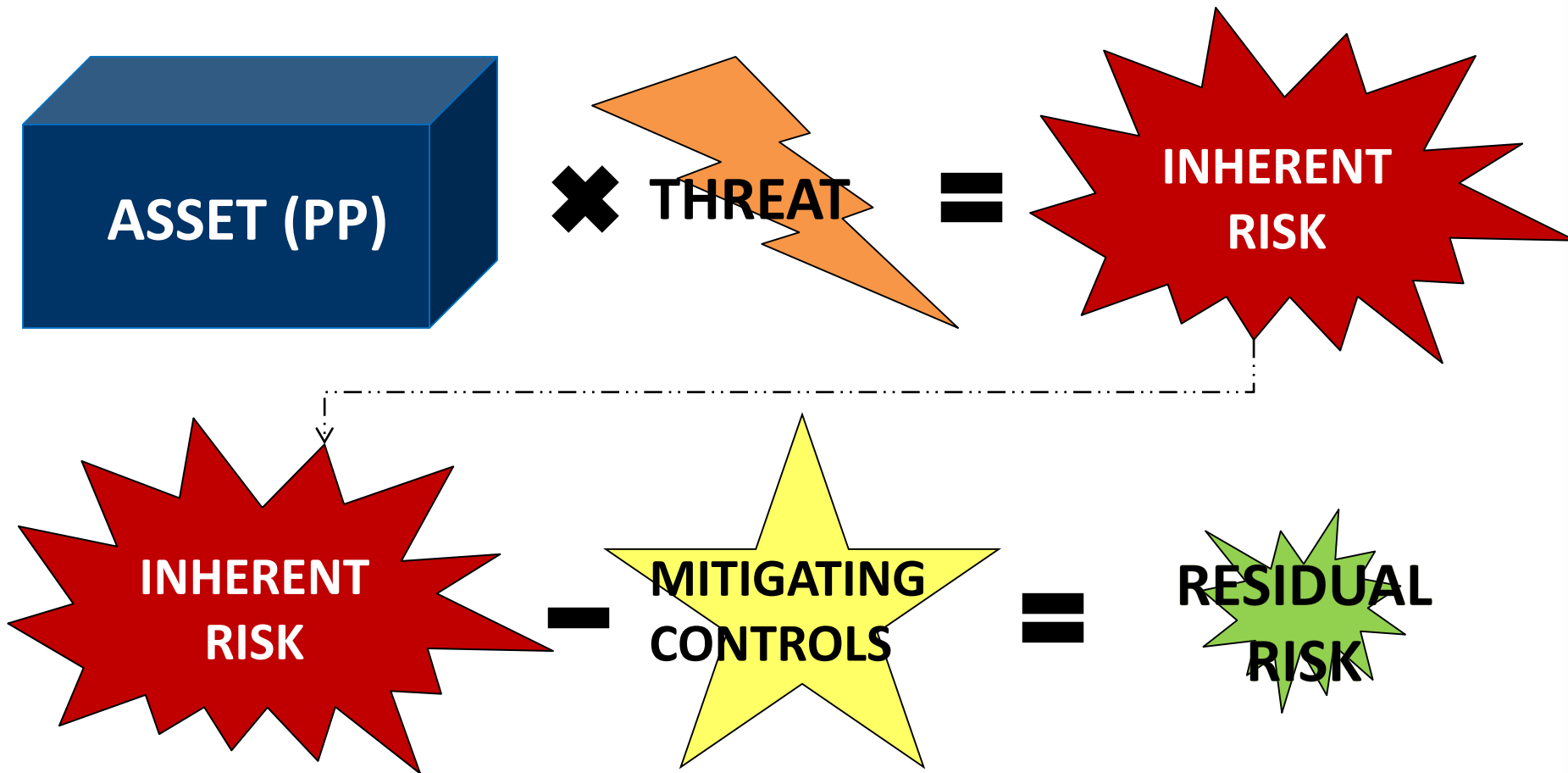
- **Plan**
 - Assess your risk
 - No, REALLY assess it
- **Do**
 - Build your ISP
 - Implement controls
- **Check**
 - Test your people
 - Test your process
 - Test your technology
- **Act**
 - Apply lessons learned
 - Continuously improve!



The McCumber Cube!



How does Risk Assessment work?



Keys to assessing your Risk (Plan!)



- Get rid of your subjectivity... it's time to QUANTIFY your risk
- If you can't quantify your risk, how can you measure it? How can you improve?
- Set goals!
- Know your Acceptable Levels of Risk
- Not just IT Assets, but for other areas
 - Business processes
 - Vendors
 - Enterprise Risk

Build your ISP (Do!)



What does your
Risk Assessment
tell you?
(Identify Risk)

How will you
mitigate risk?
(Make Decisions)

Document risk
mitigating actions
in your ISP
**(Document
decisions)**

Operationalize
your decisions
**(Implement
controls)**

ISP for Community Banks

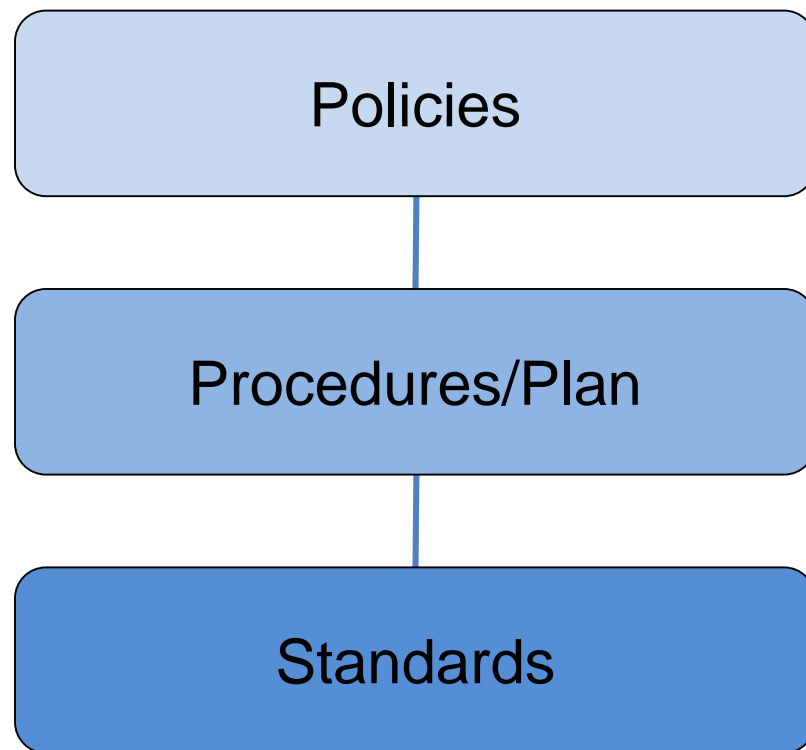


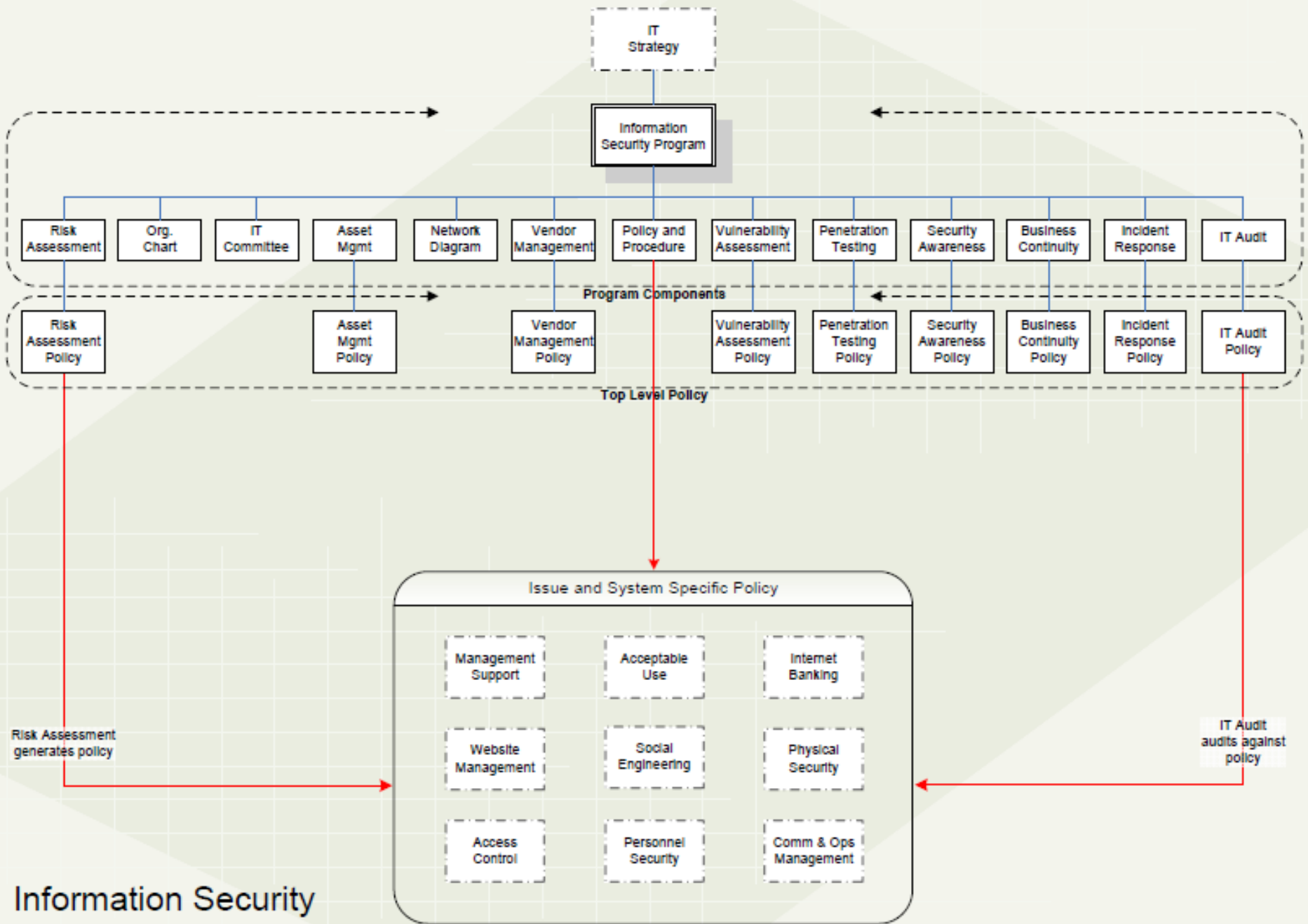
- Information Security Program Blueprint

- I.T. Risk Assessment
- Asset Management
- Vendor Management
- Penetration Testing
- Vulnerability Assessment
- Security Awareness
- Business Continuity
- Incident Response
- I.T. Audit

Support Structures

- Organizational Chart
- I.T. Committee
- Network Diagram





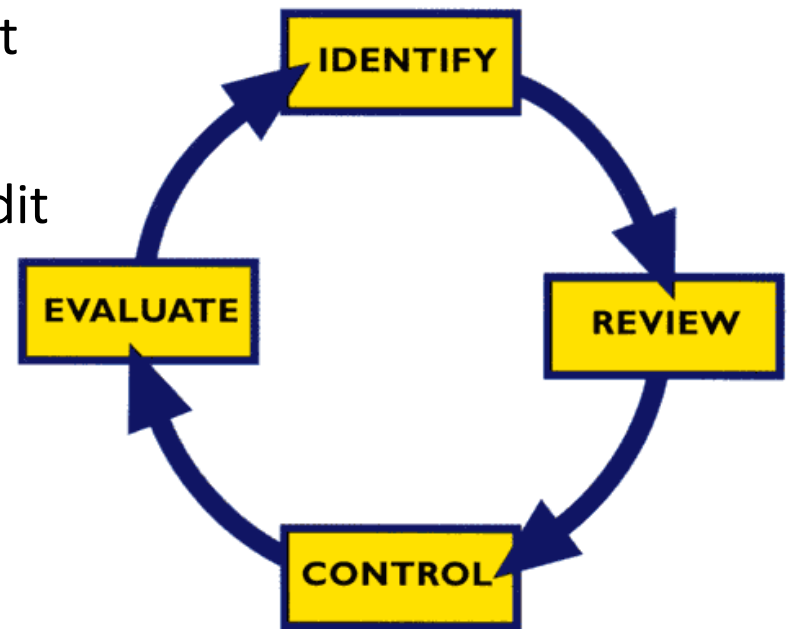
Information Security Program - Flow

Version: 1.04 [dcbmybank.com](http://www.dcbmybank.com)

Test your Program (Check!)



1. Assess Risk
2. Implement Controls
3. Audit Controls
 - People
 - Social Engineering Assessment
 - Process
 - Info Technology / Security Audit
 - Technology
 - Vulnerability Assessment
 - Penetration Testing



Info Technology / Security Audit



- Check your overall security program
- Identify other risk you may not have considered
- Outline basic components specific to your business
- Highlight best practices

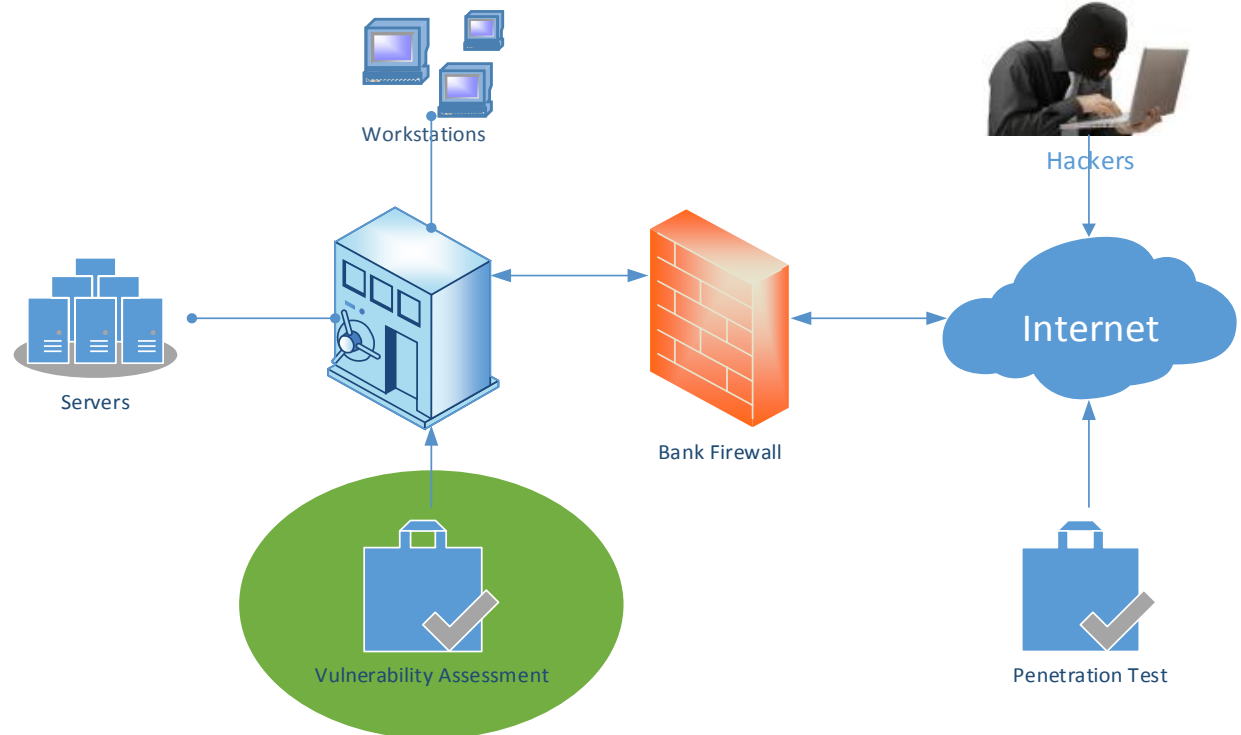


© 2011, NoNonsense.com

Vulnerability Assessment



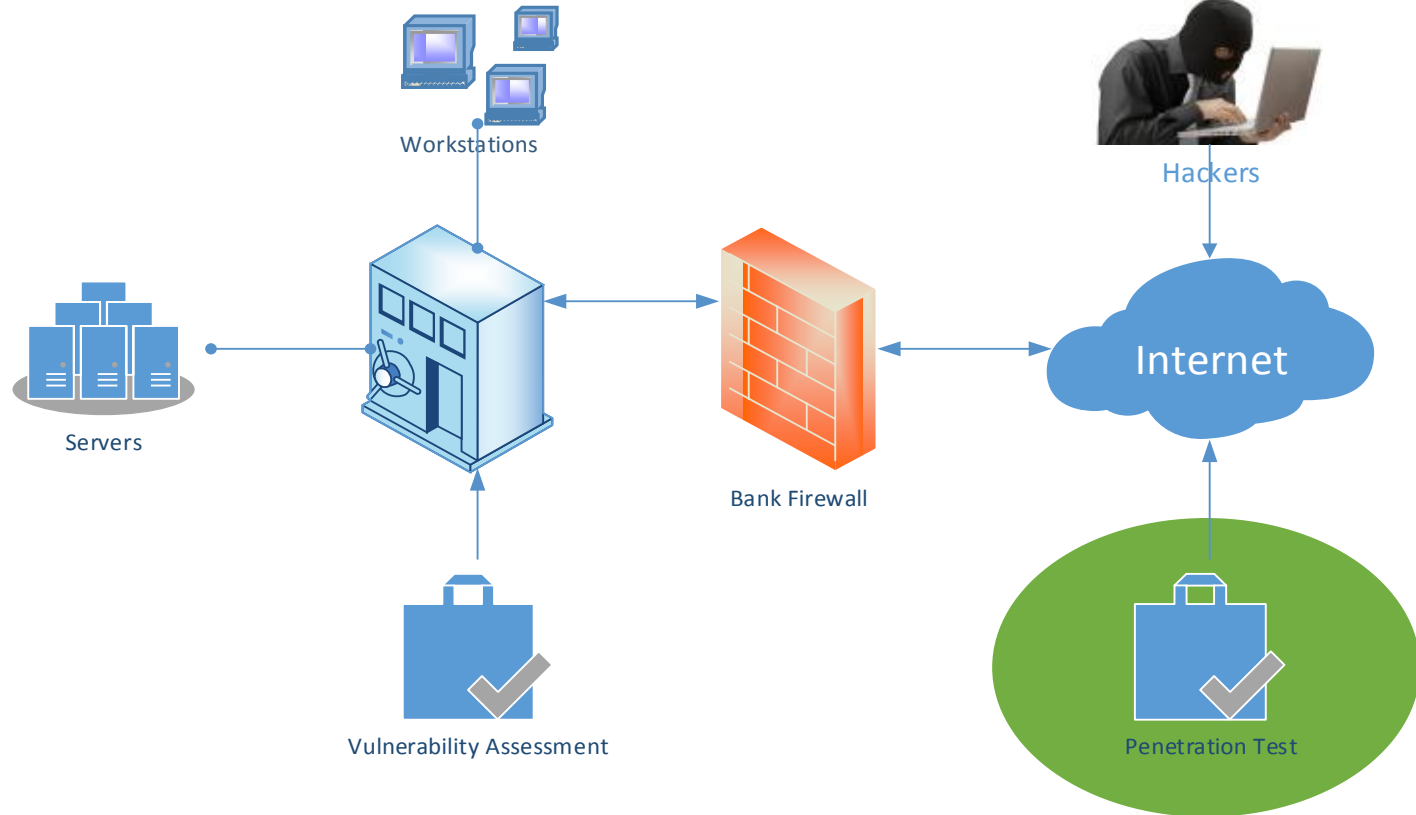
- Check Software Patching
- Check Malware
- Check Default Security Settings



Penetration test



- Replicates a Hackers Actions to Break-in
- Check Hardware Firewall



Social Engineering



- Test your people
- Check effectiveness of training program
- Types Include:
 - Phishing Emails
 - Phone Impersonation
 - Physical Impersonation
 - Dumpster Diving



Social Engineering



DISCOVERY

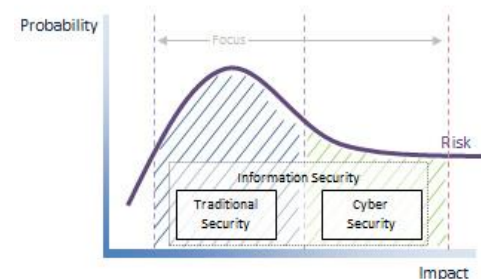
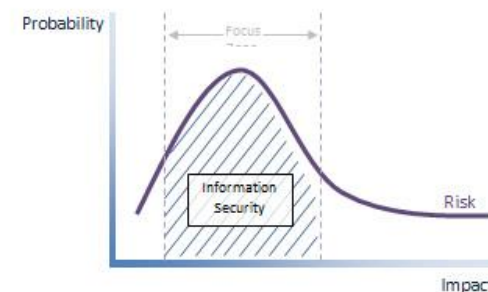


Sometimes, the greatest treasures
are found beneath piles of trash.

What is “Cybersecurity”?



- **Cyber Risk**
 - the increased probability that the very-high-impact, internet-based risks and threats we once thought were improbably will harm our networks
- **Cybersecurity**
 - the controls and processes in place to protect our networks and customer information from cyber risk
- **How does it relate to Information Security?**
 - discipline of Information Security, which not only encompasses Cybersecurity, but also all of the traditional things we’ve done to protect our confidential customer information, including IT Risk Assessment, Vendor Management, Business Continuity Planning, Vulnerability Assessment, IT Audit, and much more



What's up with Cybersecurity Assessments?



- FFIEC Cybersecurity Assessment Tool released on Tuesday June 30th, 2015
- Not really a “tool,” as we have traditionally defined software or hardware
- More of a process to help banks perform a self-assessment on their Cybersecurity Preparedness
- Based on size-and-complexity
- Resulting from the 2014 Cybersecurity Assessment lessons-learned

FFIEC CA Tool (3 parts)



- Three (3) major components
 1. Rating your **Inherent Risk** for Cybersecurity threats based on your size and complexity
 2. Rating your **Cybersecurity Maturity** regarding how prepared you are to handle different Cybersecurity threats
 3. **Interpreting and analyzing** your results by understanding how your Inherent Risk ties to your Cybersecurity Maturity, and where you **SHOULD** be regarding risk vs. maturity.

Cybersecurity Inherent Risk



- Very PRESCRIPTIVE
- Really getting to the Size and Complexity issue originally stated by GLBA
- Allows organizations to determine how much Inherent Risk (before controls) their institution faces regarding these new Cybersecurity threats



Cybersecurity Inherent Risk



- Five Inherent Risk Areas
 1. Technologies and Connection Types
 2. Delivery Channels
 3. Online/Mobile Products and Technology Services
 4. Organizational Characteristics
 5. External Threats



Cybersecurity Maturity



Measure Maturity in 5 Domains (+ Assessment Factors)

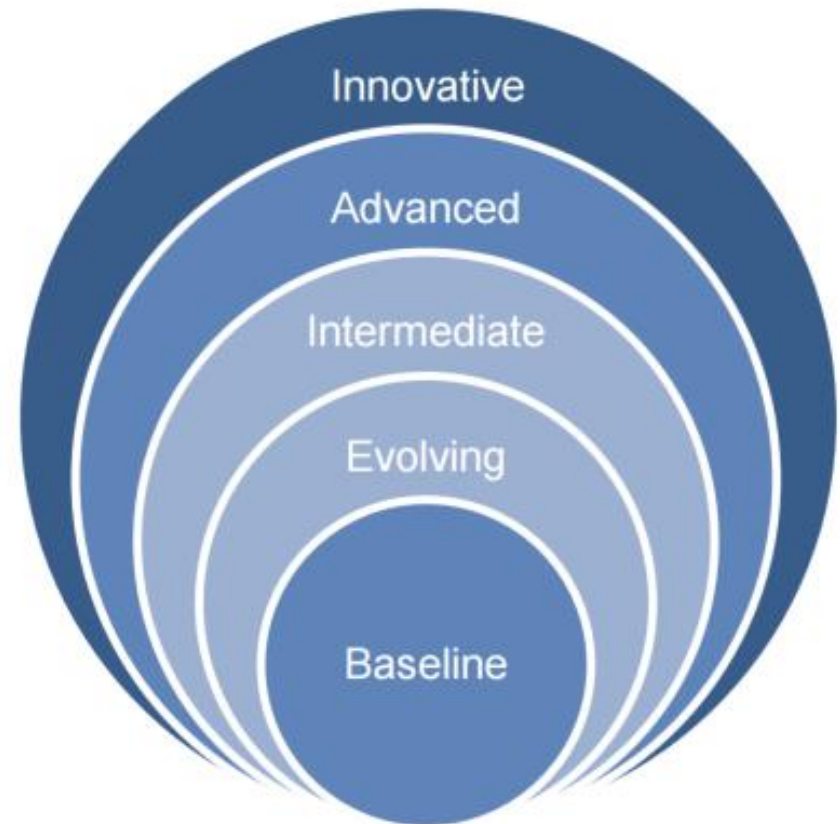
1. Cyber Risk Management and Oversight
 - Governance, Risk Management, Resources, and Training
2. Threat Intelligence and Collaboration
 - Threat Intelligence, Monitoring & Analyzing, and Info Sharing
3. Cybersecurity Controls
 - Preventative, Detective, and Corrective controls
4. External Dependency Management
 - External Connections and (Vendor) Relationship Management
5. Cyber Incident Management and Resilience
 - Incident Resilience Planning, Detection, Response, & Mitigation, and Escalation & Reporting

How does Cybersecurity Maturity work?

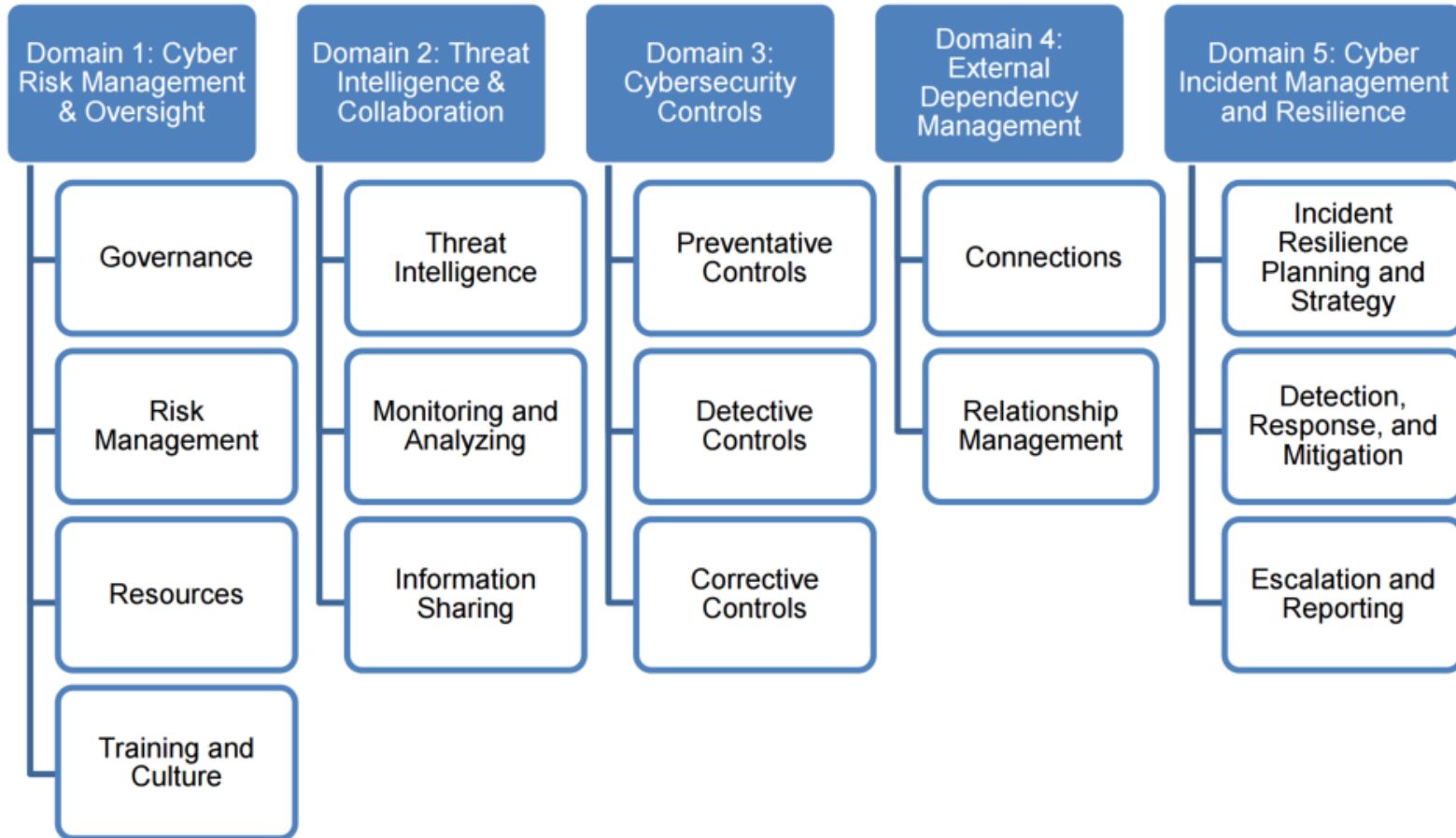


Measured by 5 Cybersecurity Maturity Levels

1. Baseline
2. Evolving
3. Intermediate
4. Advanced
5. Innovative



Domains and Assessment Factors



Inherent Risk vs. Maturity



- All good Risk Management processes help make decisions and set goals
- How does one determine Inherent Risk versus Cybersecurity Maturity?
- And more importantly, what is the right Inherent Risk vs. Maturity level?

Increasing Maturity



Table 3: Risk/Maturity Relationship

		Inherent Risk Levels				
		Least	Minimal	Moderate	Significant	Most
Cybersecurity Maturity Level for Each Domain	Innovative					
	Advanced					
	Intermediate					
	Evolving					
	Baseline					

Domain 1: Cyber Risk Management and Oversight

Domain 2: Threat Intelligence and Collaboration

Domain 3: Cybersecurity Controls

Domain 4: External Dependency Management

Domain 5: Cyber Incident Management and Resilience

SBS FREE Cyber-RISK Tool



- Goals of the FREE Cyber-RISK[™] tool:
 1. Automate the Cybersecurity Assessment Tool
 2. Save you from creating your own spreadsheet
 3. Make your life easier and more efficient
 4. Provide you with one-click reports
 5. Improve the process by tying the Inherent Risk and Cybersecurity Maturity processes together more intuitively
 6. Get you peer comparison data (down the road)
 7. Access to your own personal Information Security Expert if you need us!

Additional Cyber Security Resources



- SBS Cybersecurity Assessment Blog:
 - <https://www.protectmybank.com/ffiec-cybersecurity-assessment-resources/>
- Register for the Cyber-RISK tool:
 - <https://cyber-risk.protectmybank.com/>
- SBS Institute Certifications:
 - <https://www.protectmybank.com/sbsinstitute/>

That's all she wrote...



- Any questions, comments, or concerns?
- Automate your IT Risk Assessment – TRAC!
- Also, for a much deeper dive on Information Security specifically for Community Banks, check out our new Community Bank Certification Programs!
 - CCB Vendor Manager (CCBVM)
 - CCB Security Professional (CCBSP)
 - CCB Technical Professional (CCBTP)
 - CCB Ethical Hacker (CCBEH)
 - CCB Incident Responder (CCBIH)
 - Ask us about it!
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