Cyber Security

Knowledge and Suitable Tools
should be part of a Powerful, Smart Defense System

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Cyber Security

Definition (Wikipedia)

- **Cybersecurity**: is information security as applied to computing devices such as computers and smartphones, as well as computer networks such as private and public networks, including the whole Internet.
- **Computer crime, or Cybercrime,**
  refers to any crime that involves a computer & network
- **Netcrime**
  is criminal exploitation of the Internet.

Computer crime

Classification (Wikipedia)

- Fraud & Financial Crimes
- Drug trafficking
- Cyber terrorism
- Cyber warfare
- Harassment
- Obscene or offensive content
- Threats

Cybercrime

Classification (cont)

FBI

high-tech crimes, including cyber-based terrorism, espionage, computer intrusions, and major cyber fraud

Interpol

- Attacks against computer hardware and software (exemple: botnets, malware and network intrusion,etc.);
- Financial crimes, such as online fraud, penetration of online financial services and phishing;
- Abuse

Cybercrime

Meaning to Commercial Companies

Where are targeting the cyber criminals?

Cybercrime can endanger governmental institutions, private organizations and individuals alike.

The attack vectors are materialized into :

- Stolen financial resources
- Information loss or theft / Knowledge/ Secrets /Trade Advantages /Tangible & Intangible (Intellectual Capital Assets, Intellectual Property & Personally Identifiable Information - PII)
- Financial resources required to fix business disruption, equipment damage, collateral damages, claims, etc.
- Revenue loss, reputational damage.
- Etc.

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Status

McAfee sponsored report.... June 2014

- "Cyber crime costs global economy $445 billion a year! (estimates of the annual damage)

KPMG Report.... Aug. 2014

- revealed > 96% organizations experienced a significant IT security incident in 2013
- majority of IT organizations are aware that some of their security measures are immature or ineffective
- only 33 percent have high confidence in the likelihood that their organizations will improve their less mature security controls.

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Company Issues

Objective Problems

KPMG Study Sweden 2014 identified that traditional defense become almost ineffective for today's malware.

- 43 security incidents/day => average of 2 infected hosts/day
- 93% of the organizations were breached
- 79% were "data exfiltration"
- 49% of the detected malware was unknown
- 52% of identified malware were unknown to AV
- 83% of the callbacks were related to data exfiltration (sensitive info!!)
- Increase of Multi-Vector, MultiStage Attacks Type APT Attacks
- Increase of Multi-flow 'Watering Hole' Type APT Attacks
- New type attack class is emerging (System Hopping Malware...)

Cybercrime

Cybercrime Economy

New Realities:

- **Nasdaq** - Data Leak (NDAQ Oct 2010) - Detected by FBI
- **RSA** - Security Breach (March 1, 2011) with large implications for other security measures and tools;
- **JP Morgan** - Massive bank hack (summer 2014, >90 servers Affected and >83m account holders);
- **Home Depot** investigating 'massive' hack (compromised 56 million payment cards)
- **Target** investigating 'massive' hack (40m Stolen Credit Card Numbers: How Target Blew It)
- 1.2 billion Internet credentials stolen by A Russian crime ring CyberVor
- 5 million Gmail passwords leaked
- Four teenage hackers breaking into the systems of the US Army and Microsoft (to steal over $100 million in intellectual property)

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Cybercrime Economy

Lesson learned?
Do we prefer to think we’re not a target?.. Are we?

- Break-ins are faster then ever, everyday more sophisticated
- Successful attack rate is continuously increasing.. are we ready?
- Although failed, Target had a large security team, state-of-the-art security tools, available IR plan & team
- Data breach preparedness is a 'live system', a team sport, not a 'compliance exercise';
- Do we rely on 'operational tools', proper standard & framework implementation, Are yours measure ready?
- Is yours business ready for a data breachable? Is it ready to react?
- Many time the evidence of an attacks is in front of us ...
- Are we prepared to improve attitude?   .. preparedness?
- A new Mindset is a 'must have' !

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Company Issues

The impact of being not aware:

KM-Trends 2013: Attack the Security Gap

- 243 days to discover
- 69% organizations learn from an external source

Undetected Presence (**KPMG Report**)

- 229 days – Average presence on victim's system.
- 2 287 days longest presence (14 less then 2012)

Last major succesful attack

- **JP Morgan** : undiscovered 2 month attack
- "**Home Depot" Retailer** US/Canada: cca 5month 'massive hack 56 mil. Payment cards compromised'..'estimated costs of $62 mil..' specific crafted attacks tools (hadn't been previously used);
- "**Target Retailer**" US/Canada: cca 20 days 'massive hack 40 mil. payment cards compromised'..'incurred costs of >$200 mil.' ("Backoff" malware attack tool)

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Company Issues (Cont)

The impact of being not aware: (cont)

Gartner research note Feb 2014

- Most enterprises are ‘overly dependent’ on blocking & prevention firewalls, anti-virus which are ‘decreasingly effective’
- Advised "to take a more *pro-active* rather than *reactive* approach
- Assume that their systems are under a state of constant compromise that requires *continuous monitoring and remediation*
- Put greater resources & investment into building out
  - threat detection, response and predictive capabilities.

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Compulsory Requirement for Change

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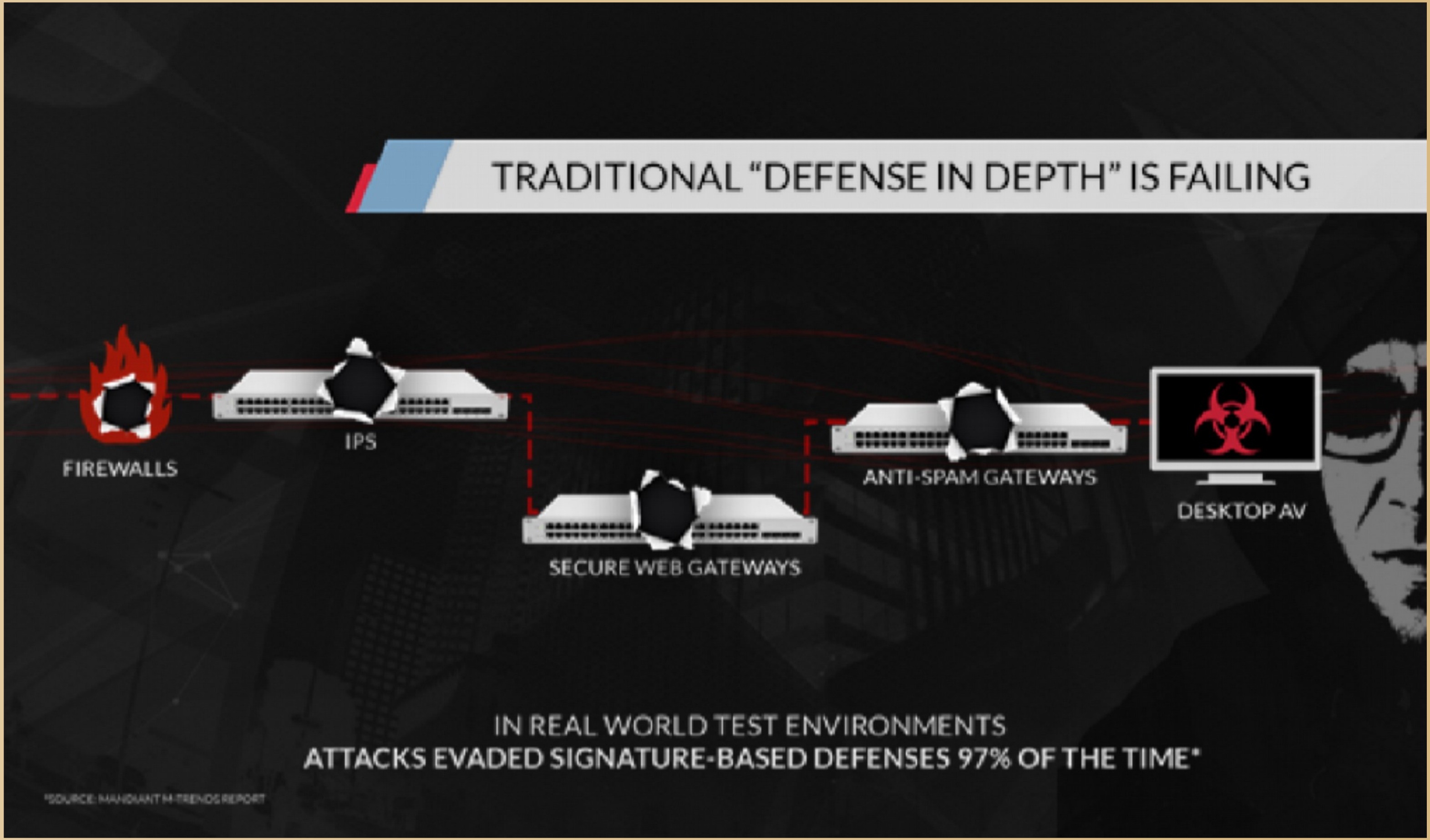
Extreme Events Think-Tank



TRADITIONAL "DEFENSE IN DEPTH" IS FAILING

IN REAL WORLD TEST ENVIRONMENTS
ATTACKS EVADED SIGNATURE-BASED DEFENSES 97% OF THE TIME*

*SOURCE: MANDIANT M-TRENDS REPORT

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Is Cybersecurity Actually Broken?

- Recent (known) retail breached entities,
- KPMG Report,
- Gartner Report,
- CIO Report,
- RSA case,
- etc.

are validating the weaknesses of our current cybersecurity methodologies and solutions

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Compulsory Requirement for Change

Different Type Approach:

Realistic:

- 100% "security status" is not achievable..

Pessimistic:

- *We are NOT winning!*
- *“In 2020, enterprises will be in state of continuous compromise.”* Gartner
- *“There are two kinds of companies: those that have been breached and those that don’t know about it yet”*

CIO Fortune 100 company..

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Building a new security system / Building Preparedness

The process could start from the failure's roots:

- Improper security operational tools (effectiveness to be increased)
- Inappropriate standards and frameworks implementation
- Company Culture - improving company security culture (awareness, training, etc.)
- Authorities: lack of involvement, mismanagement lack of preparation, and suitable strategies,
- Improve security attitude and preparedness
- Etc.

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Compulsory Requirement for Change

ISEE
Extreme Events Think-Tank

Compulsory Counter Measures / Improvement Areas with direct Impact :

- Develop & switch to a new Security Mindset
- Better Standard Framework Implementation
- Adopting a 'Resilient Type Approach'
- Increased effectiveness by advanced cyberforensics
  'Operational' Security Tools
- Deal quick with a new incident (fast, high-performance..)

  “Response is the closest thing we have in IT with ‘dogfighting”’

  Bruce Schneider, Blackhat 2014
- Extension Use of Encryption
- Surface the Intangible
- BBB – Better Ballanced Budget
- IT & Company culture
- Better Awareness / Security Intelligence Sharing & Analisys,
- Etc..

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Company Preparedness

Security and Standard Framework (Information security):

- ISO/IEC 27001-8
- ISO/IEC 24762:2008
- ISO/IEC 27031:2011
- ISO/IEC 27035
- ISO 31000:2009
- ISO/IEC 38500:2008
- BS 7858:2006+A2:2009
- BS 25999-1
- ISO 22301
- BS 25999-2
- BS 25777:2008
- PD 25111:2010
- PD 25666:2010
- NIST SP 800-55
- NIST SP 800-61
- COBIT
- ITIL v.3 (International)
- ISO/IEC 20000
- NFPA 1600
- PAS 200:2011
- PCI DSS v3
- NIST

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Company Preparedness

Security and Standard Framework:

Usual Implemented Standards

- ISO/IEC 27001 (control point based)
- SANS TOP 20 CSC (procedure based)
- PCI DSS (global payment)
- NERC-CIP (Energy Infrastructure)
- ISO 22301 (Business Continuity)

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Company Preparedness

ISO 27001 strengths

- A "would be best choice" for yours main core CyberSecurity system;
- A minimum standard for an effective information security
- Internationally accepted, and a mature one;
- A fast growing international adoption /No.1. Romania 291%
- A “best practices” framework
- Flexibile – 'Control point' based
- Scalable – to be easily adopted by (and fit) small but big organizations as well.

to be in the meantime or later complemented by SANS CSC 20, NERC-CIP, PCI-DSS, NIST, ISO 22301.

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Company Preparedness

Why ISO 27001 Implementation Fails

- In general frameworks and security controls can be misused, underused, or not used at all.
- Poor implementation (many organizations do not fully understand the standard implementation, missing proper consultancy, etc.);
- Formal implementation with few points in common to a real "management system"
- "Checkbox security"= Security ! – an approach that undermines the real Security
- Continuous pressure increase due to the ever compliance increase
- "Permissive" paper-based system implementation that shift its purpose
- Misunderstood that ISO 27001 is a starting point towards security, a benchmark and not the final solution.
- No real correlation process - (approved) specific system & management Documents
- Development of 'Organizational islands' or 'Organizational silos'

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Company Preparedness

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ISO/IEC 27001 Why Implementatio Fails

- Too many standards, building employee confusion
- Registrars play both the auditor and implementation consultant role creating hereto a major conflict of interest.
- The minimum acceptable level of control varies between registrars
- Lots of misinformation concerning the level of effort, documentation
- Fail to use an intangible approach and tools specific in identifying and quantifying intangibles.
- Insider Threat: People known as organization’s “greatest assets” are also its greatest threat.
- Missing a "Continuous monitoring” strategy,
- Missing a proper "disaster recovery / business continuity planning

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Security Maturity Framework & Tools

Systemic Implementation Tool Requirements:

- An useful groupware to diminish 'organizational silos' effect
- Minimize the gaps, allow building bridges between “management layers” & “system islands”
- Better system management improve “system compliance” and its effectiveness
- Easier to improve and implement "continuos monitoring"
- "process implementation" vs "solution"
- Easier to deal with the "human side" (groupware)
- Easier to access and use statistics
- Easier to deal with multiple standards and frameworks
- Easier to deal with system assessment, also self-assessment
- A perfect Complement to a SIEM

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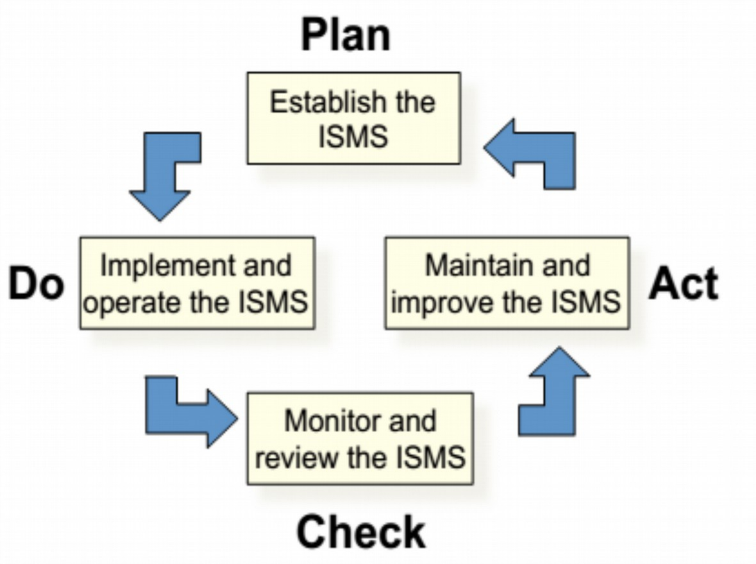
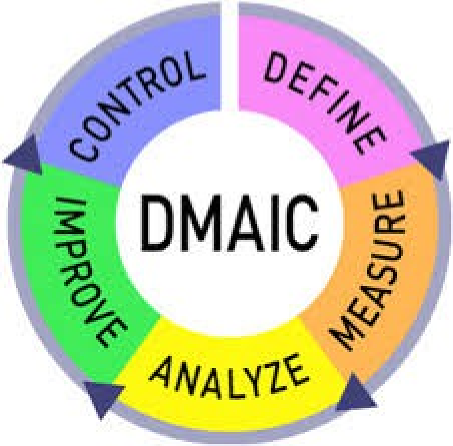
Security Maturity Framework & Tools

Systemic Implementation Tool (cont)

Enable barely used PDCA/ DMAIC to be 'back on track'


Plan
Establish the ISMS
Do
Implement and operate the ISMS
Maintain and improve the ISMS
Act
Monitor and review the ISMS
Check



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Thank you!