Assuming a state of compromise.
A best practice approach for SMEs on incident response management.
May 2014
Agenda

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• Problems and Challenges of SMEs
• A New Cyber Security Philosophy
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Motivation

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To be effective, security must be integral to the way people think and work, not just another item to be checked off a list.

Source: The Global State of Information Security® Survey Question 35 - “How confident are you that your organization has instilled effective information security behaviors into the organizational culture?” (Not all factors shown. Totals do not add up to 100%.)
What makes SMEs prone to Cyber-Attacks?

- IT infrastructure is growing without concept
- Lack of monetary budget for IT infrastructure and trainings
- SMEs rarely involved in IT security initiatives
- Internal monitoring is lacking maturity
- No specified responsibilities like CISO
- No own IT department

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Characterization of Risks

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The Cyber Threat Landscape

Cybercrime is committed by a multitude of offenders with diverse motives.

- **Foreign intelligence services**
  - Espionage to gain military, political, or economic advantage
  - Disruption of critical infrastructures

- **Transnational criminal enterprises**
  - Converting stolen data into currency
  - Leveraging access to wire transfer accounts/systems to steal currency

- **Corrupt Competitors**
  - Espionage to gain an economic advantage

- **Lone wolf (often insider)**
  - Converting stolen data into currency
  - Leveraging access to accounts/systems to steal currency
  - Disruption of IT services
  - Leaking data to cause reputational harm in public

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**Targets**

- Trade secrets
- Sensitive business information
- Emerging technologies
- Critical infrastructure

- Critical infrastructure
- Operational technologies
- Highly visible venues

- Financial / payment systems
- Personally Identifiable Information
- Payment Card Information
- Protected Health Information

- Corporate secrets
- Sensitive business information
- Information related to key executives, employees, customers & business partners

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Problems and Challenges for SMEs
Recognizing Breach Indicators

- Unauthorized web pages created on an Internet-facing web server
- Log entries on domain controllers capturing the execution of unauthorized programs
- Data transmitting outbound over unlikely protocols
- Large compressed files being transmitted outbound
- Unusual connections between a user systems using native operating system networking features

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Common mistakes observed...

Assigning the organization’s IT operations department to investigate the incident

Incident response becomes a technically centric endeavor

Investigative actions are not forensic

Collaboration and sharing information between companies is extremely important in cybersecurity but requires trust, which is still not available
Why are especially SMEs susceptible to cyber threats?

- Generic user accounts are used for administrative tasks
- No segregation of rights is practiced because of convenience reasons
- The aim of an IT department respectively the management is just the faultless operation of the IT infrastructure
- Technological sentinels remain critical assets for managing cyber risk.
- A cybercrime investigators mindset to daily cyber security operations is a much needed capability
A New Cyber Security Philosophy

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Assuming a state of compromise

Our approach assumes:

• an active and perpetual state of compromise,
• seizing all opportunities to gather cyber threat intelligence,
• transformation of the IT environment into a treasure trove of digital evidence,
• assessment of the state of security of its interconnected vendors,
• recognition of the authorized insider as a cyber threat,
• a forensic incident response capability.
The need for change

The future of cyber security is going to require an evolved philosophy that assumes a never-ending state of compromise.
A New Cyber Security Philosophy

Cyber Incident Management Lifecycle

Planning/Training → Response/Resolution → Lessons learned/Remediation → Post-incident threat assessment → Cyber threat intelligence

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**Emerging Cyber Security Methods**

**Historical cyber security**

Use signature-based monitoring technology such as firewalls, intrusion detection/prevention systems, proxy servers, and anti-virus (AV) systems to detect suspicious activity.

- Reduce the number of human staff.
- Focus detection on critical data stores and network perimeter.
- Minimize logging on user systems.
- Let AV software secure user systems.
- Let IT configure monitoring technology.
- Let IT investigate suspicious events.
- Treat security assessments as a series of one-time events, or ‘checking a box.’

**Emerging cyber security**

- Enhance signature-based technologies with custom rules and alerts informed by a cybercrime mindset.
- Collect and maintain all logs from monitoring technology and systems.
- Focus detection on all systems, not just on critical data stores and external-facing computers.
- Increase operating system logging on all systems.
- Have a systematic method to collect and analyze live memory on systems.
- Collect and maintain all network traffic.
- Minimize Internet-access points.
- Baseline network traffic.
- Use a limited set of system configurations and baseline them.
- Analyze all phishing emails.
- Analyze all malware.
- Have a cyber incident response framework that relies upon experienced cybercrime and cyber forensics resources.
- Have an all source cyber intelligence program.
- Have an ongoing security assessment program and immediately address areas of risk.
- Have a program to assess and identify high risk insiders.
Conclusion

Assuming a state of compromise.

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Conclusion

- Cybercrime and those who commit it are always evolving, focused on accessing sensitive information and maintaining persistent remote access for as long as possible.
- In our approach we showed methods and tools for SMEs, to get knowledge about their state of compromise.
- As well, we want to highlight that this paper is not intended to be the silver bullet for fighting cybercrime.
- The future of cyber security is going to require an evolved philosophy that assumes a never-ending state of compromise.
Thank you.