Insider Threat Metrics and Measures of Effectiveness

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Approaches for Insider Threat Metrics

- Leverage multidisciplinary nature of Insider Threat and identify metrics from:
  - Human Resources
  - Legal
  - Physical Security
  - Information Technology
  - Information Security
- Contextualize Insider Threat Program activities within existing metrics frameworks – whether open source or proprietary

ITIL Framework for Metrics – Insider Threat Examples

Technology

- Impact or lack thereof of employee monitoring programs on performance
- Availability of data sources for processing by Insider Threat program

Process

- Number of capability gaps identified or improved
- Average incident resolution time per month
- Number of inquiries completed per month

Service

- Management feedback or engagement with Insider Threat program
- Cost of inquiry
- Time to complete an inquiry

More information on ITIL can be found at: https://www.itlibrary.org/

Other Metrics to Consider

Coverage

- percentage of systems covered by a host-based user activity monitoring system
- process reviews
- gap assessments
  - Increasing data insights where there was previously no visibility.
  - Identifying gaps in administrative, physical and technical controls.

Latency

- average time between malicious activity and discovery by insider threat team
- risk avoidance and ability to proactively identify any issues where the risk can be mitigated

Compliance

- percentage of recommended / required (NIST SP 800-53, NITTF Minimum Standards) controls implemented
- pre-employment screening
- code of conduct
- Data Loss Prevention (DLP)
- mandatory vacation policies
- investigation teams

Impact

- number of incidents identified or prevented
- incidents that result in action
  - e.g., escalated to management or law enforcement, leads, inquiries, investigations, cases closed
- reduction in time to resolve allegations
- reduction in number of incidents over time
- value of any data targeted for exfiltration, or documents / IP recovered
  - aggregate of estimated value per incident in a reporting period
  - multiply average incident by value to estimate financial impact for future incidents
- policy changes and improved work behaviors that followed.
  - e.g., significant drop in non-work related internet activity when monitored staff were required to sign a User Activity Monitoring Acknowledgement

Measures of Effectiveness

Qualitative

- Security culture
- Training and awareness leading to increased reporting
- Identification of broken processes
- Case study
- Incident severity / criticality

Quantitative

- Referrals and reports from staff
- Investigations
- Incidents detected
- Incidents referred to law enforcement
- Sites blocked
- Assets recovered
- Loss prevented

Time Management Matrix

	Urgent	Not Urgent
Important	**Quadrant I - Manage** • Crisis • Pressing problems • Deadline-driven projects, meetings, preparations	**Quadrant II – Focus** • Preparation • Prevention • Values clarification • Planning • Relationship building
Not Important	**Quadrant III – Avoid** • Interruptions, some phone calls • Some mail, some reports • Many proximate pressing matters • Many popular activities	**Quadrant IV – Limit** • Trivia, busywork • Junk mail • Some phone calls • Time wasters • "Escape" activities

- Where is time being spent by analysts? At the program management level?
- Are you able to move from *Manage* to *Focus* activities?

7 Metrics to Prove the Value of an Insider Threat Program

- **Cases opened:** Number and types of cases reviewed by the program
- **Internal requests for information:** Number and types of RFIs to organizational stakeholders
- **Internal escalation and triage:** Number and types of cases escalated and triaged within the organization
- **External escalation and triage:** Number and types of referrals to external law enforcement agencies
- **Risk mitigation actions:** Number and type of risk mitigating actions
- **Documents retrieved:** Number of document prevents from leaving a secure environment
- **Investigative productivity:** Average reduction in investigative timelines

From *Insider Threat: Prevention, Detection, Mitigation, and Deterrence* by Michael Gelles

What's in a False Positive?

High false positive rates can potentially

- waste analyst / investigative resources
- alienate employees
- exacerbate threats
- reduce morale
- repel good employees
- increase claims of privacy violations and lawsuits
- erode support for the InTP across the organization and among senior leadership

Moore et al. "Effective Insider Threat Programs: Understanding and Avoiding Potential Pitfalls", available online at http://resources.sei.cmu.edu/asset_files/WhitePaper/2015_019_001_446379.pdf

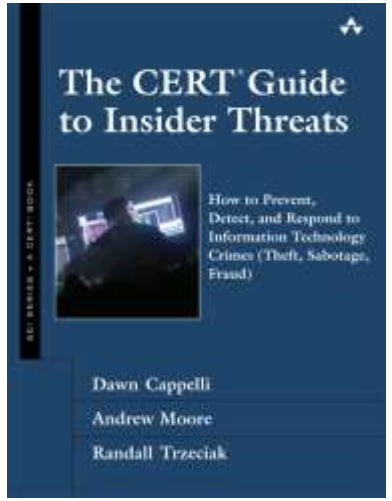
Questions for Consideration

- What resources have you found valuable in developing metrics?
  - Were these resources internal or external to your organization?
  - Were the external resources open source or proprietary?
- What kinds of metrics has your organization used in the last 12 months?
  - What type of use case was it used for?
  - Was the metric reliable? Valuable? Useful?
- What metrics failed to make an impact on stakeholders?
- How are measures for Insider Threat success or value different from those used for a Security Operations Center (SOC)?
  - How could they be the same?
  - What lessons learned for developing SOC metrics can be used for Insider Threat?
- To what extent could (or should) other organizational units help to demonstrate the value of the Insider Threat program?

NITC Resource Highlights

- Building an Insider Threat Program
  - Insider Threat Program Manager Certificate (ITPM-C)
- Insider Threat Vulnerability Assessment
  - Insider Threat Vulnerability Assessor Certificate (ITVA-C)
- Evaluating an Insider Threat Program
  - Insider Threat Program Evaluator Certificate (ITPE-C)
- Insider Threat Control/Indicator Development / Deployment
- Insider Threat Data Analytics Hub Development / Deployment
- Insider Threat Training (1/2 day, 1 day, and 2 day interactive workshops)
- Customized Insider Threat Research
  - Ontology Development and Maintenance
  - Sentiment / Linguistic Analysis
  - Insider Threat Tool Evaluation Criteria Development

NTIC Publications and References



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For More Information

National Insider Threat Center	http://www.cert.org/insider-threat/
National Insider Threat Center Email	insider-threat-feedback@cert.org
National Insider Threat Center Blog	http://insights.sei.cmu.edu/insider-threat/
SEI Digital Library	https://resources.sei.cmu.edu/library/

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