Cybersecurity Assurance Program (CAP)

Red Team

May 2012

Importance of Red Teaming

- Challenge Organizational Thinking
- Unbiased view of network defense and security
- More realistic picture of security readiness than
  - Exercises
  - Role playing
  - Announced Assessments

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Traditional Red Teaming

- Incorporates testing the organization's:
  - Intelligence of the organization's threat
  - Physical Security (e.g., locks, physical access to network, dumpster diving)
  - Institutional Posture (e.g., SOPs, Policies)
  - Network Security (e.g., vulnerabilities)
- Can suffer from "Target Fixation"
- **Guaranteed maximum effort with potential for minimal return**

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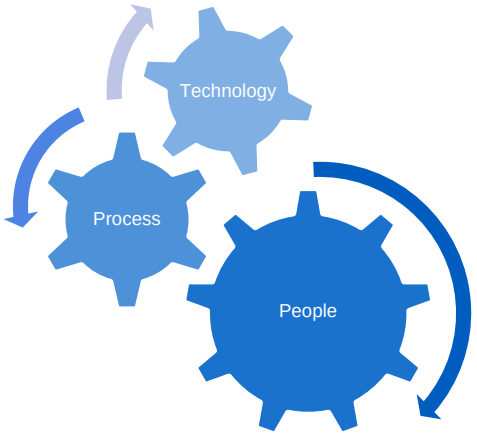
Our Red/Blue Team Approach

- Collaborate with the agency to optimize engagement ROI for the Agency
  - Identify high priority targets
  - Streamlined “Attack” Process
  - Emphasize Risk Based Mitigation
- Utilize multiple enterprise class tools
- Leverage team expertise
- Validates the integration of People, Process, and Technology



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Building a Bigger Picture

- Vulnerability and risk data gathered through Red Teaming will be non-attributable (stripped of any identifiers connected to specific agencies)
- Non-attributable data will then be aggregated and analyzed as a whole to reveal government-wide trends and most pressing vulnerabilities
- Aggregate data will be leveraged to benefit the entire Federal cybersecurity community

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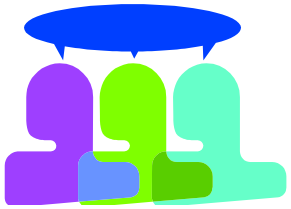
Future Opportunities

- Leveraging results for specific, actionable outreach projects
- Establishing an information exchange for Federal cybersecurity practitioners
- Address trending issues with immediate responses and mitigation tactics through a vulnerability and threat-specific help desk or hotline
- Providing guidance to organizations on establishing internal Red Teaming activities



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Case Study: RVA Assessment #1

- **Main Test:** Web Application
- Accessed through a SSL-VPN connection
- A few issues were identified with the Web Application
- Main issue turned out to be the SSL-VPN connection
- While watching the traffic to and from the Web Application, we were able to:

- It was manual testing that revealed the major problems
- **Agency Actions:** Immediately reviewed finding and remediated issue within 1 day. Requested additional testing to validate remediation, as assessment testing was still in progress.

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Case Study: RVA Assessment #2

- **Main Test:** Web Application
- Scanner picked up a few issues with Web Application
- Main issue with Web Application was identified by watching the traffic and noticing that the cookies were the same for all users and could use this information to:
  - Elevate privileges from user to administrator
  - Gain access to any administrator account (over 45 different administrator accounts for over 45 different agencies)
- Could obtain access to personnel information
- It was manual testing that revealed the major problems
- **Agency Actions:** Agency worked with RVA team during test phase to develop remediation strategies. Critical finding strategies deployed within a few weeks and RVA team requested to retest. Lower priority items addressed within a few months.

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Case Study: RVA Assessment #3

- Main Test: Most services were requested
- Social Engineering
  - 16% success rate with phishing emails
- Internal Scan revealed:
  - Unpatched systems & weak credentials to access Database (DB)
    - Identified user and passwords in DB
    - DB contained PII (Note: testing stopped on DB – the adversary would not have stopped)
- Piecing together findings, it would be relatively easy for an adversary to obtain access to critical systems through phishing
- Agency Actions: Agency was provided details of critical findings during assessment for their review and development of remediation plans.

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CM & RT/BT: Complementary, Not Exclusive

CM

- Assist in getting results faster
- Identify weaknesses in scanned assets
- Scan
  - Web Applications
  - Database(s)
  - Operating Systems
  - Network Devices
- Passive in nature

RT/BT

- Determine if vulnerabilities are exploitable
- Conduct interviews to understand customer's network
- Correlate business risk to vulnerability rankings
- Identify
  - human weaknesses, to include social engineering risks
  - Logic Flaws
  - Configuration Issues
  - Compound security issues
- Passive and Active in nature

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