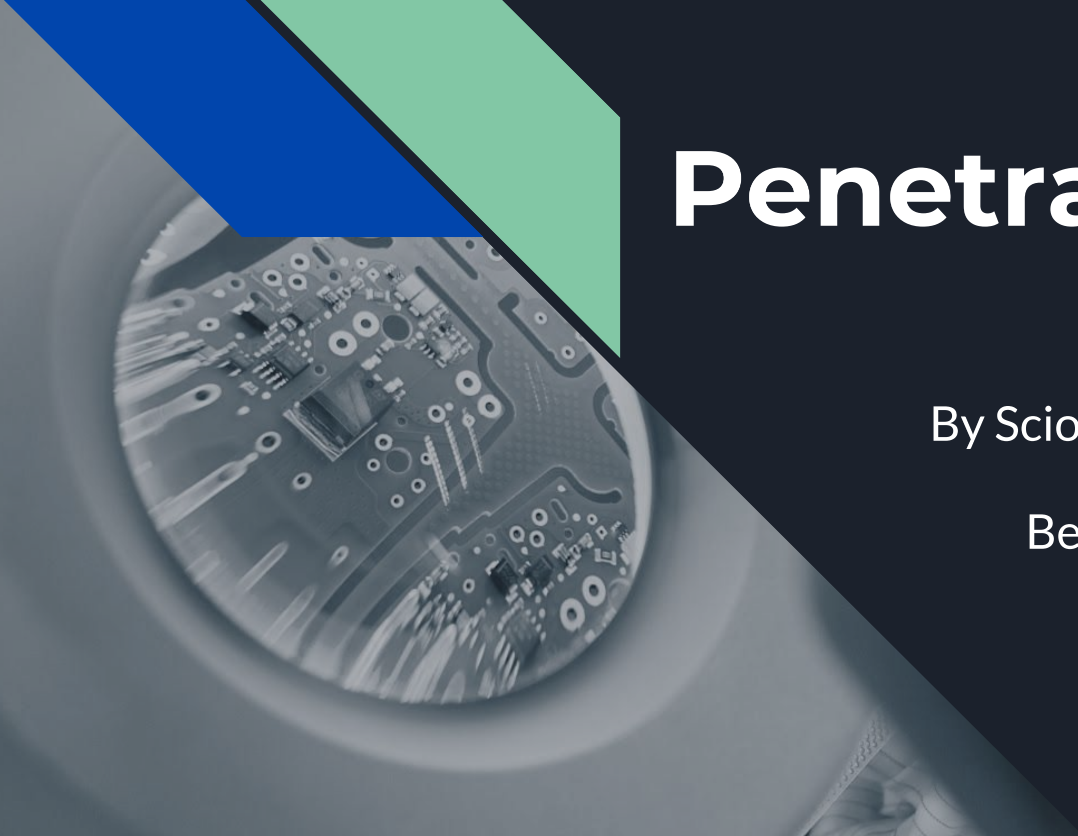

Penetration Testing

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IPM723

Agenda

I. Introduction

II. Purpose of Penetration Testing

III. The Importance of Penetration Testing

IV. Process of Penetration Testing

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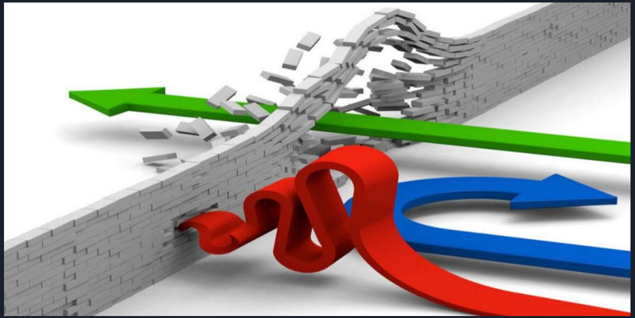
Introduction

What is Penetration Testing?

Penetration Testing is the practice of **simulating an authorized simulated attack** on a computer system, network or web application to find vulnerabilities that an attacker could exploit.



~ Since the Mid 1960's

James P. Anderson's 1972 report titled
"The Anderson Report"

Purpose of Penetration Testing

Protect your House!

The House Analogy

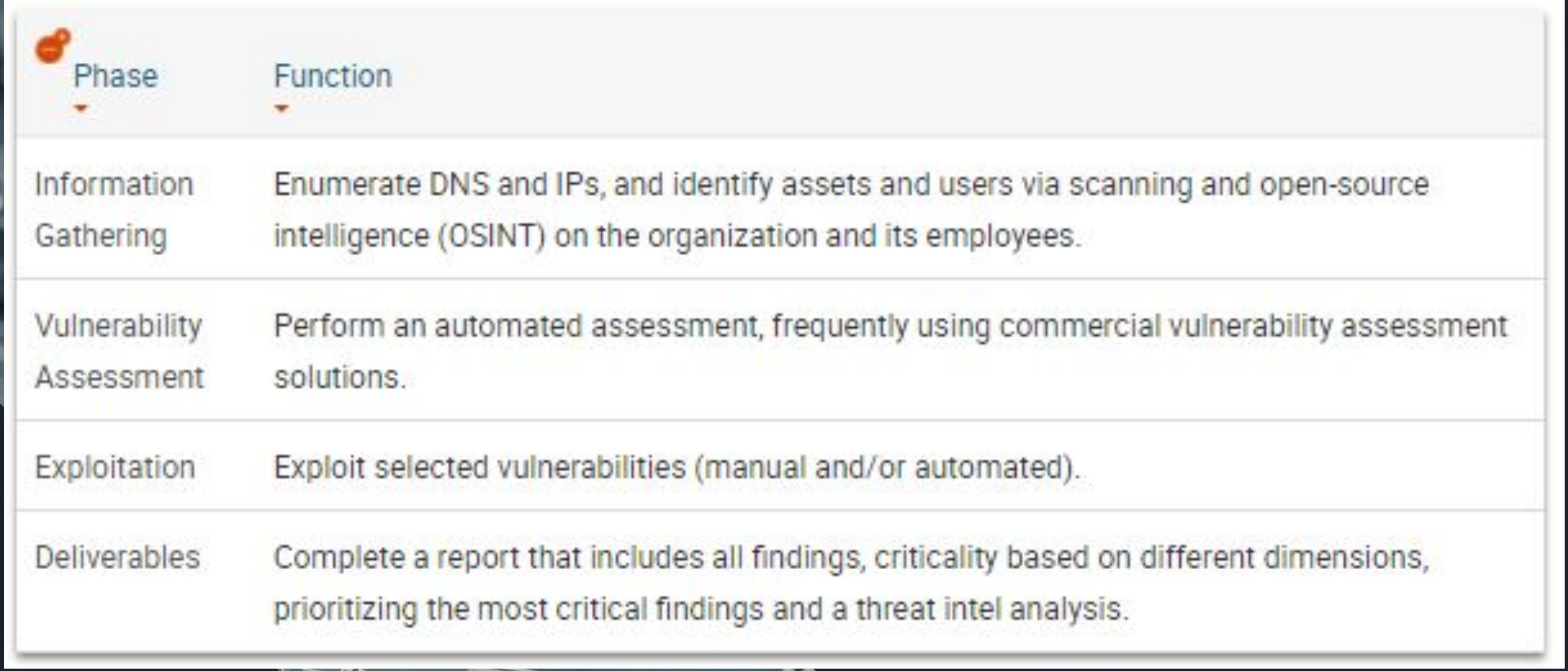
- Network/System/Assets = House
- Vulnerability Assessment = Home inspector
- Penetration Testing = Ninja

The Importance of Penetration Testing

Why is it important for organizations to use Penetration Testing?

- Prevent Data Breaches (protect data)
- Test security controls (see if they’re working)
- Ensure System Security (new systems)
- Baseline (CISOs, where spend security dollars)
- Compliance (PCI requirement)

Process of Penetration Testing



Phase	Function
Information Gathering	Enumerate DNS and IPs, and identify assets and users via scanning and open-source intelligence (OSINT) on the organization and its employees.
Vulnerability Assessment	Perform an automated assessment, frequently using commercial vulnerability assessment solutions.
Exploitation	Exploit selected vulnerabilities (manual and/or automated).
Deliverables	Complete a report that includes all findings, criticality based on different dimensions, prioritizing the most critical findings and a threat intel analysis.

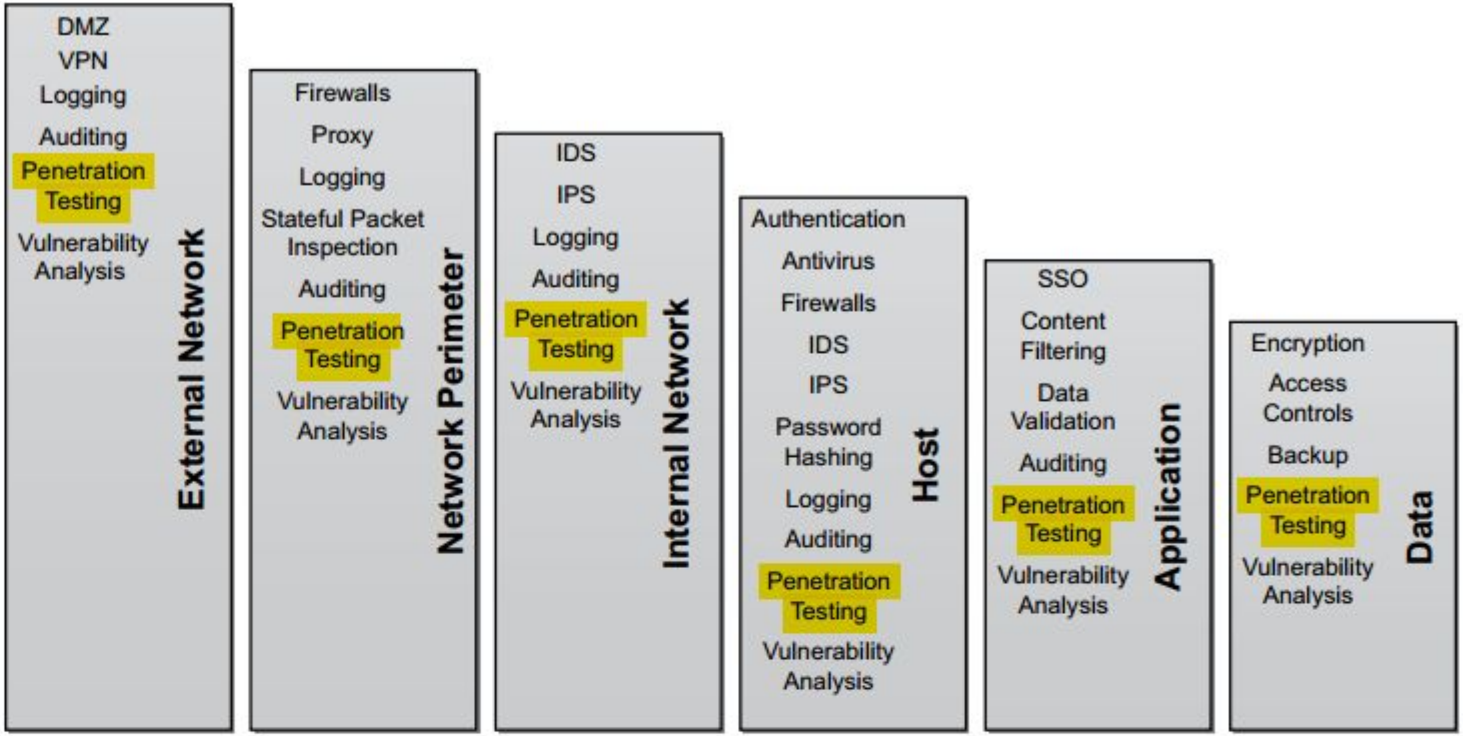


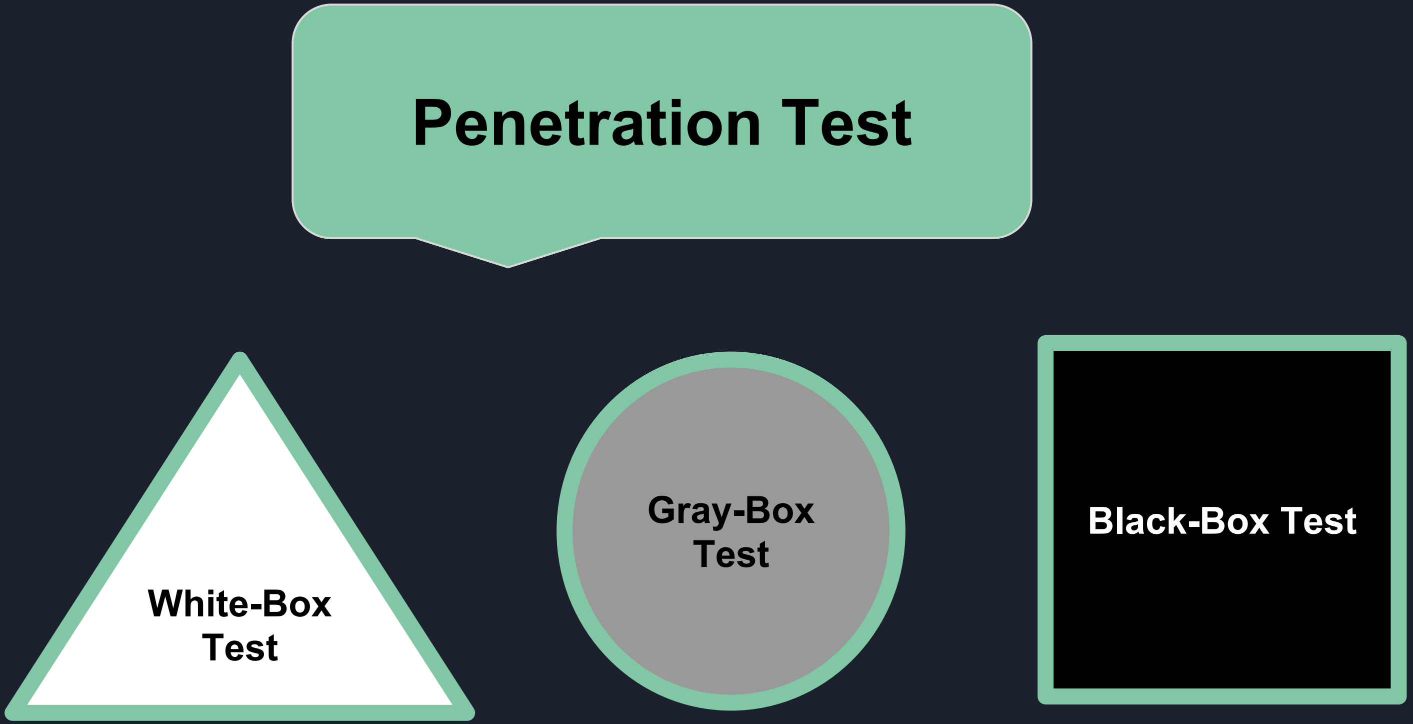
FIGURE 1.5
Defenses in Each Layer

Types of Penetration Testing

Penetration testing has three main use cases for businesses:

- Compliance - Control audits
- Risk Reduction - Gray-box, white-box and code review
- Attacker Simulation - Black-box and red team

Types of Penetration Testing



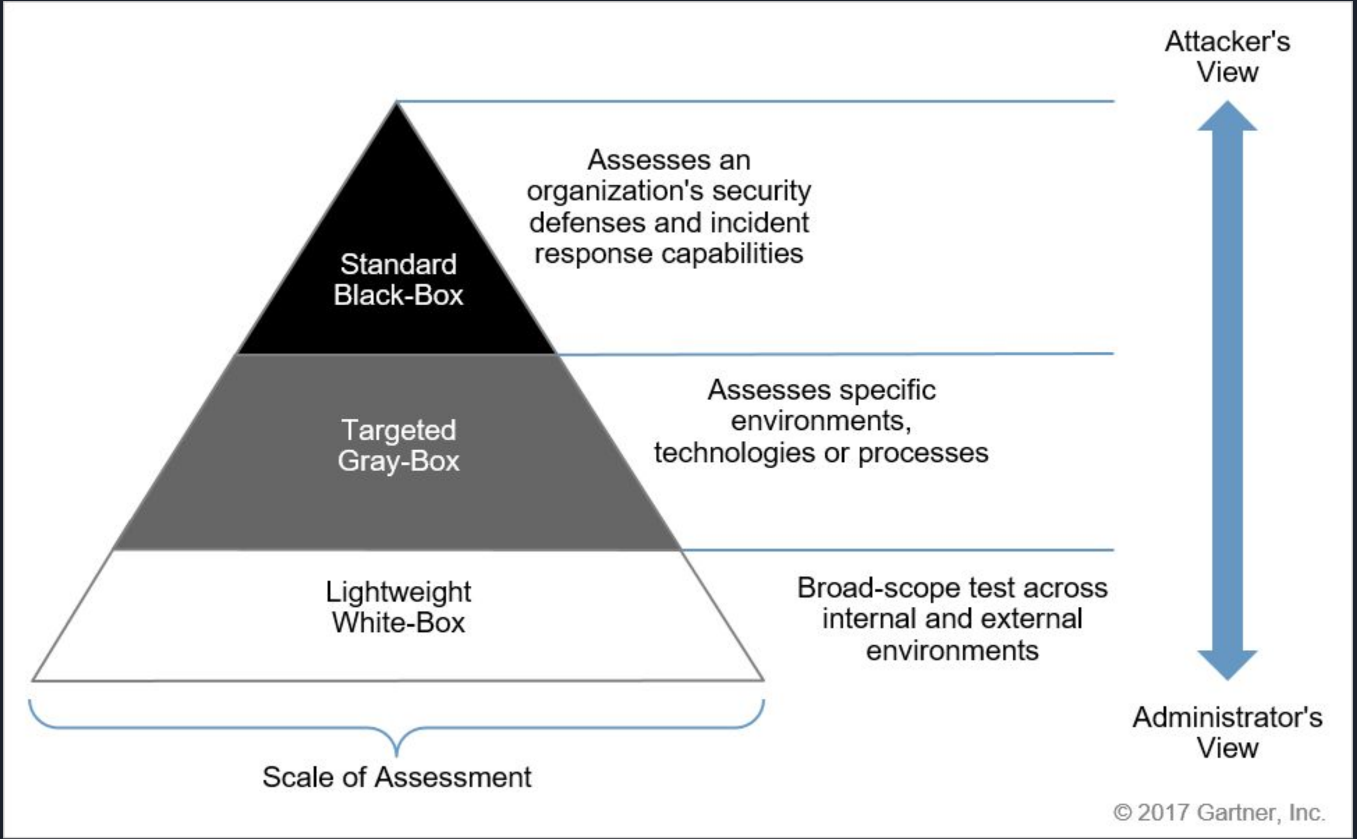
Penetration Test

White-Box Test

Gray-Box Test

Black-Box Test

Types of Penetration Testing



Attacker's View
Standard Black-Box
Assesses an organization's security defenses and incident response capabilities
Targeted Gray-Box
Assesses specific environments, technologies or processes
Lightweight White-Box
Broad-scope test across internal and external environments
Administrator's View
Scale of Assessment

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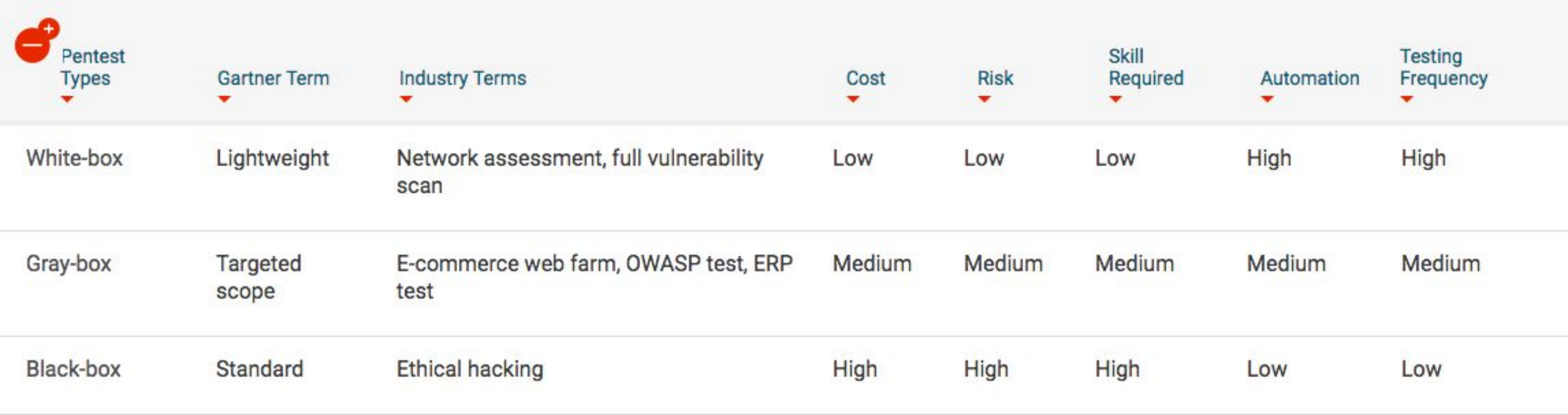
Types of Penetration Testing



Pentest Types	Gartner Term	Industry Terms	Cost	Risk	Skill Required	Automation	Testing Frequency
White-box	Lightweight	Network assessment, full vulnerability scan	Low	Low	Low	High	High
Gray-box	Targeted scope	E-commerce web farm, OWASP test, ERP test	Medium	Medium	Medium	Medium	Medium
Black-box	Standard	Ethical hacking	High	High	High	Low	Low

Best Practices for Penetration Testing

- Select the Right Type of Assessment
    - Differences between pentest and vulnerability scanning
- Differentiate Assets and Environments, and Prioritize Focus
- Use Alternate Pentest Vendors to Balance the Cost and Rotation of Pentesters
- Weigh the Benefits of Post-Test Remediation Against the Cost of Implementing Changes

Key Challenges of Penetration Testing

- ★ Organizations are not fully aware of the differences between a penetration test and a vulnerability assessment, which results in a mismatch of expectations.
- ★ There are many types of pentests in use, which can be confusing for security and risk management (SRM) leaders tasked with selecting the best option for their situation.
- ★ SRM leaders show a limited awareness of the various testing models and their relevance to specific security needs.
- ★ Bug bounty programs are now viable alternatives to a traditional pentest for organizations, but require identification of major issues from the less critical findings.

18 APR 2018 NEWS

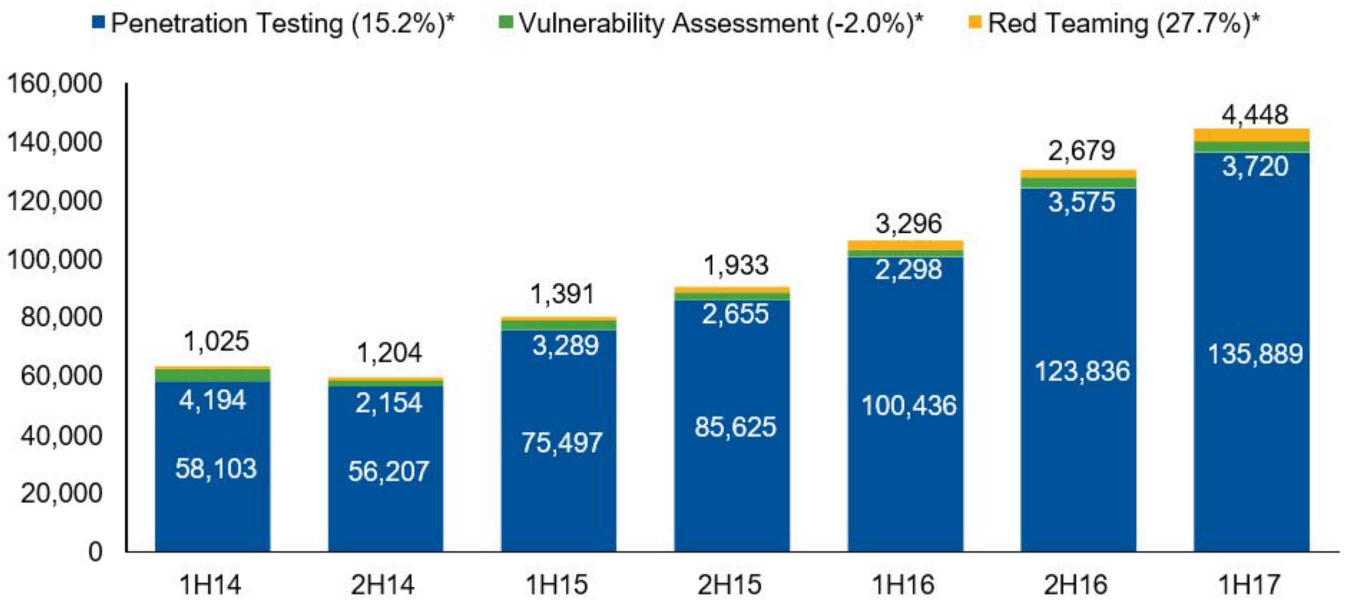
#RSAC: It's Time to Kill the Pen Test

At RSA 2018 in San Francisco today Adrian Sanabria, director of research at Savage Security, presented a session on why he believes it's time to kill the network pen test.

Pentest is not working because…

- ➔ Focus on symptoms, not root causes
- ➔ Focus on preventative controls, not detection
- ➔ Focus on depth, not breadth
- ➔ Focus on finding issues, not fixing them
- ➔ Have a lack of improvement metrics

The Future of Penetration Testing



* Represents CHGR Growth
Percentages in brackets represent the compounded Half-Yearly Growth Rate from 1 January 2014 through 30 June 2017.
Source: Social Media Listening Tool. Date Range: 1 January 2014 – 30 June 2017

The Future of Penetration Testing

FOREVER 21
BEST BUY
WHOLE FOODS MARKET
adidas
f
sears
GameStop POWER TO THE PLAYERS
DELTA
Panera BREAD
Arby's
UNDER ARMOUR
macy's
Lord & Taylor
Saks Fifth Avenue
kmart
SONIC
timehop
ticketfly

Closing Thoughts

How does Penetration Testing relate to our Information Security, Controls, & Ethics?

- Penetration Testing and information security is more important and relevant today than ever before, with increasing sophistication.
- We live in a world where ethical white hats and unethical black hats coexists.
- Social Engineering is also an important aspect of Penetration testing.
- Even with Penetration Testing, we will never be 100% safe.
- Companies need to take control and responsibility for the customer’s data to prevent exposure to personal and financial risk.

That is why penetration testing is so important.

Thank you!