

WHITE PAPER

# THE 7 MISTAKES OF EXTERNAL PENETRATION TESTING

(AND HOW TO AVOID THEM)



## EXECUTIVE SUMMARY

### Cyber Security is an Exponential Problem

Penetration Testing (PT) has become standard for global enterprises and SMB's trying to reduce the risk of a security breach by evaluating the security level of their systems or trying to identify security vulnerabilities in their applications.

For best results, and to avoid conflicts of interest, it is also standard to use external contractors to conduct the testing. However, by giving external contractors authorization and access to internal systems, organizations risk being harmed by the very people hired to protect them.

In this white paper, we outline what your external penetration team should not be doing and what you can do to protect your organization.

## **1. PENETRATE OUT-OF-SCOPE APPLICATIONS**

Since penetration teams are given access to networks and applications, they can use this to "go beyond" the scope of the test. In other words, they can try and penetrate applications without prior authorization. This could compromise organizational systems that were not in the original scope of the penetration test, potentially resulting in unintended detrimental results.

To avoid this, a penetration test must have a clear, preliminary scoping procedure that defines what should and should not be tested as part of the project.

## **2. USE UNAUTHORIZED TOOLS**

An external pentest team can create or install a tool containing a backdoor that may expose your organization to risks. While automated scanning tools, off-the-shelf exploits, and hacking platforms are legitimate tools in the hands of a white-hat hacker, they are not always handled with care.

Make sure to assess and approve all tools used throughout the test to make sure they were created by credible sources. Also, only hire an external pentesting company with a reputation for using tools that come from a trusted community and a legitimate source.

## **3. IGNORE THE BUSINESS LOGIC OF THE SYSTEM**

Whenever an application penetration test is conducted, pentesters often look for common vulnerabilities such as XSS, SQL Injections, buffer overflows, and others. This is very important; However, they do not always check for vulnerabilities



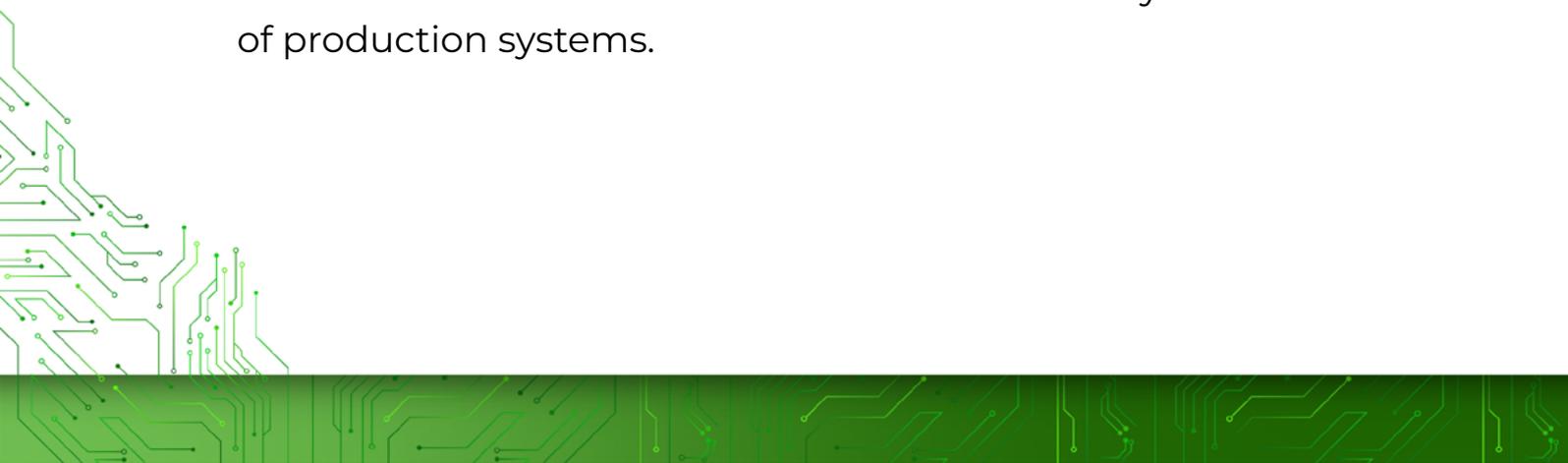
whilst taking into consideration the application's business logic. Sometimes, understanding this logic requires research and considerable knowledge of fields outside pentesters' expertise such as finance, banking, insurance, etc. In these cases, pentesters often fail to recognize serious security vulnerabilities that can arise from manipulating the business processes.

It is therefore essential that pentesters have a good understanding of the business logic behind the application. This is something that needs to be dealt with in the advance training of your pentesters, to make sure they grasp at least the essentials of your applications' business logic, in order to allow them to effectively test their flaws.

#### **4. INTERFERE WITH PRODUCTION SYSTEMS**

The attack arsenal of an experienced pentester is usually excellent. Today, the number of security tools, exploits, scanners and frameworks is larger than ever before. However, not all pentesters launching these tools on your systems have a good understanding of how to use them responsibly. All too often, a security tool will cause the system to crash or behave unpredictably. When this happens on production systems, the results can lead to severe financial loss.

It is vital to establish the scope and boundaries of the pentest and to validate that the testing team can act accordingly under these circumstances in order to avoid costly downtimes of production systems.



## **5. STOP AFTER FIRST SUCCESSFUL PENETRATION**

It is not uncommon for pentesters to discover a critical vulnerability bug in the very early stages of the test, often leading to a complete takeover of the server or data. Some testers believe that once a “game-ending” vulnerability has been discovered, the test is over since they managed to completely compromise the system. This approach is incorrect as 9 times out of 10 the goal of the test is not to show that an attacker can gain complete access to the system, but to find as many vulnerabilities as possible!

Make sure that your testers do not stop after discovering the first high-risk issue or after gaining access to the system. They might miss other critical vulnerabilities that won't be mitigated unless discovered.

## **6. MISUNDERSTAND THE RISK OF CERTAIN VULNERABILITIES**

After the pentest is said and done, it is time to write the final report. Most penetration reports contain an assessment of the risk of each vulnerability — usually low, medium, high or critical. Some pentesting companies exaggerate the risk they assign to each vulnerability in order to emphasize their achievements.

In other cases, a risk may be underestimated. For example, say a client is PCI DSS-compliant and a bug is found in his system, which exposes a single credit card number. We might assign a vulnerability of “low” or “medium” if we were trying to examine the risk of a single credit card number being exposed. But, since this vulnerability breaches the PCI- compliance, it has a huge professional impact on the client's reputation and should be flagged as “high”



To accurately assess the risk of vulnerability, make sure your testers take into account factors such as the probability of a successful attack, the value of the vulnerability to the attacker, and the business impact of the bugs found.

## **7. PUBLISH SENSITIVE TESTING RESULTS**

The results of a successful pentest on a system can be a very strong marketing tool for the pentesting company as it culminates many hours of hard work and research. Often, exposed vulnerabilities also raise curiosity in the security community. Since most pentests reveal sensitive information about the organization, such as discovered internal networks, IP addresses, and security bugs, most organizations would not knowingly reveal these results to the general public.

For this reason, it is vital that the pentest provider contractually guarantees that no information regarding the pentesting will ever be published or exposed to unauthorized parties — whether deliberately or accidentally.

In conclusion, while pentesting is a common and necessary practice for many organizations, it is essential to understand the pitfalls and how to avoid them. If any of the above behaviors are demonstrated by your pentesting company, it might be time to reconsider your contractor.





## ABOUT US

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- Cyber Security Consulting since 2011
- Founded by leading consulting experts with decades of experience
- Team consists of:
  - Seasoned security specialists with worldwide information security experience
  - Military intelligence experts
- Provide services across multiple verticals – banking, insurance, hi-tech, automotive, energy, communication, critical infrastructures, healthcare, and international mega-brands

# VALUES

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# SERVICES

We Help Our Clients Identify Their Weaknesses

## Infrastructure and Application Security



PENETRATION TESTING



RED-TEAM



APPLICATION SECURITY



CLOUD SECURITY

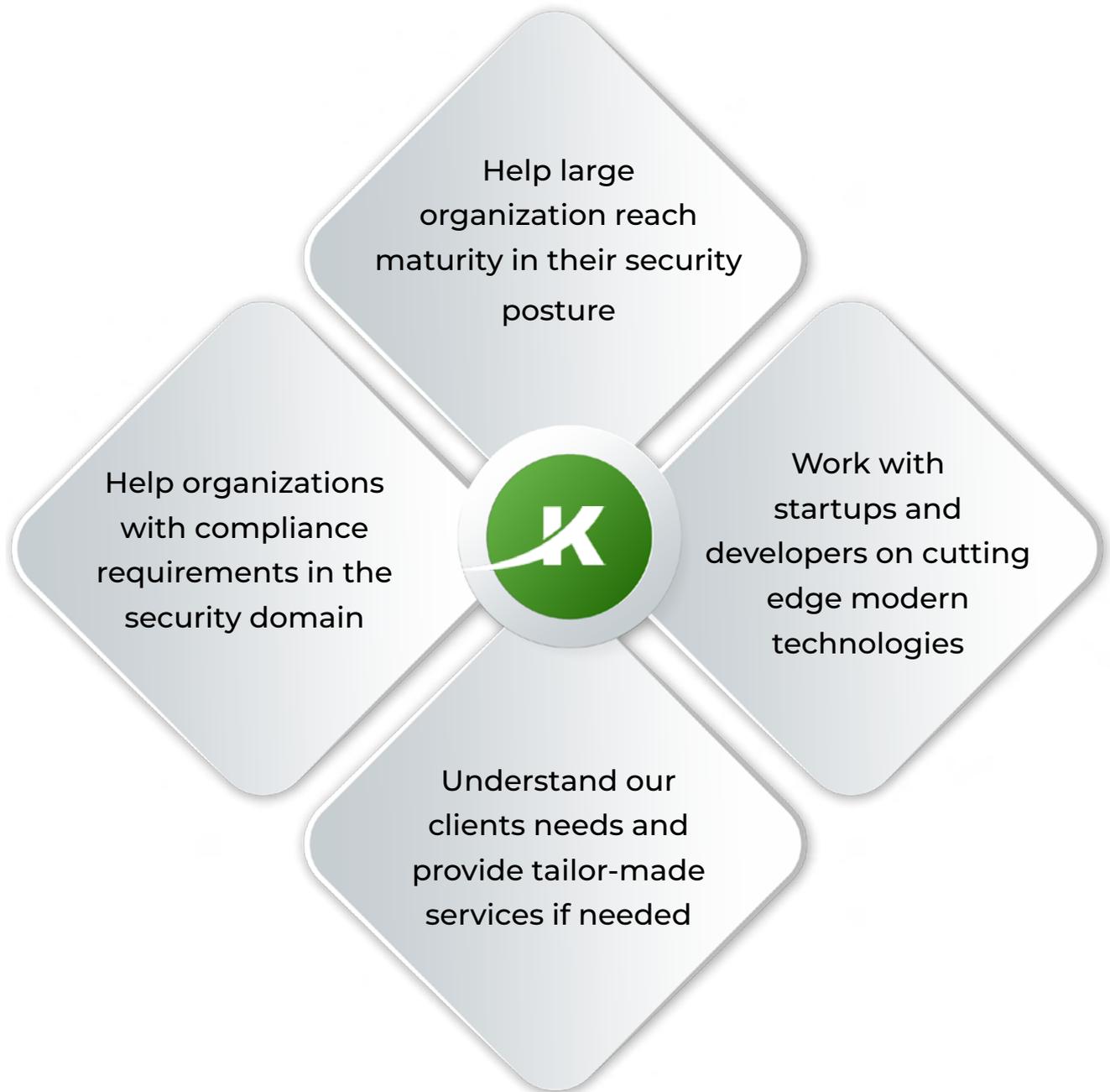


SECURITY DUE DILIGENCE



INCIDENT RESPONSE/FORENSICS

## OUR EXPERTISE



# OUR CLIENTS

We are Trusted by the World's Best Companies

## Finance / Insurance / Fintech



## Hitech / Cyber Security / Startups



## Global Brands



## Automotive



## Government



## WHAT OUR CLIENTS SAY

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### **Komodo provides us with peace of mind**

As an organisation constantly targeted by malicious attacks, Komodo provides us with peace of mind both by securing our applications before they go into production and by acting as our incident response team at the most critical moments when we need them.

Amnon Cohen, CIO, Safecharge



### **First-class application and cyber security services**

We've been working with Komodo, our trusted advisers on application security and penetration testing, for over six years now. They consistently provide us with invaluable insights, briefings, and value. I wholeheartedly recommend them to any company in need of first-class application and cyber security services.

Amir Levi, CTO, Harel Insurance



### **Komodo presents valuable insights and advice**

Work with Komodo Consulting has always been a streamlined, efficient process. Results are always to the point and right on time, accompanied by valuable insights and advice.

Eldan Ben-Haim, CTO, Trusteer (IBM)

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