

# Penetration Testing

Validating the target meets ISO/SAE 21434 Cybersecurity Goals - Vehicle, System, and Component

The automotive industry is undergoing cybersecurity standardization and regulation that enforces consistent analysis to provide work products to auditors. Requests for penetration tests to showcase the cybersecurity of products are being asked throughout the automotive supply chain.

## What is Penetration Testing?

Penetration testing is the act of identifying vulnerabilities and attempting to exploit a target using creative means within a defined scope. Often provided by a third party with a fresh set of eyes.

Penetration testing goes farther than standard validation and quality testing. Testing from the perspective of an adversary with malicious intent, **pentesting explores unique pathways to discover vulnerabilities which cannot be found through other types of testing.**

Penetration testing engagements end with a report of any discovered vulnerabilities which might need to be mitigated and document all attempts and testing methods used.



## Why Pentest?

After vehicle, system, or component cybersecurity design is complete, implemented, and functionally tested, penetration testing will confirm the cybersecurity goals were actually achieved. **Does the product have the security posture expected** from the design phase and is that enough to prevent unacceptable damages from malicious attackers?

Penetration tests offer insight into which channels your product is most at risk and thus what types of security controls you need to focus on in current and future products.

Many automotive companies and vehicle products have already been victims of cyber-attacks or security research publications that harm organizations.

Penetration testing has the potential to discover critical vulnerabilities, **that if left unchecked, can cause loss of life, recalls and severe financial and brand damage.** Providing the penetration test reports to auditors will prove your due diligence and achieve compliance with regulations .

## Why Block Harbor?

Block Harbor was founded in 2014 in Detroit providing services to automakers and automotive suppliers to keep vehicles safe, ranging from penetration testing to running a 24/7/365 Security Operation Center (SOC). We're on a mission to build great solutions to keep mobility safe.

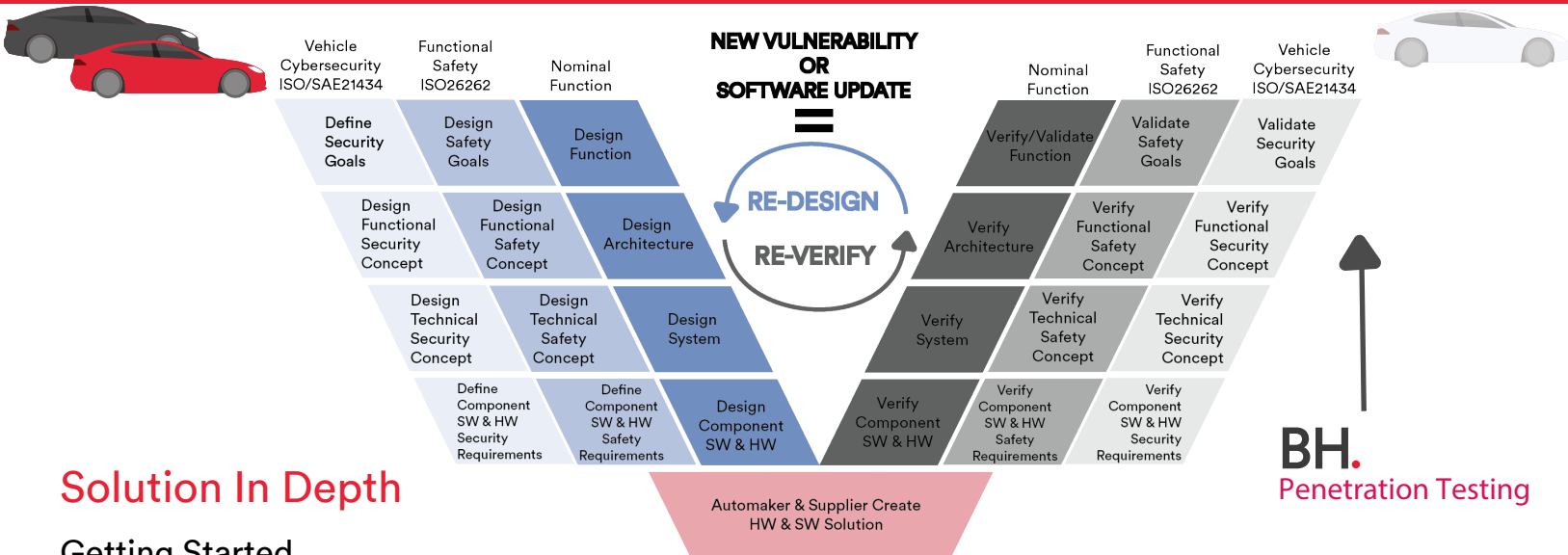
- Vehicle Cybersecurity Labs
  - Penetration Testing
  - Fuzzing
  - V&V-as-a-Service
  - Vehicle Cybersecurity Lab Buildout
- Vehicle Security Operations
  - Vehicle Security Operation Center (VSOC)
  - Threat Analysis and Risk Assessment (TARA)
  - Vehicle Cybersecurity Management System (CSMS)
- Vehicle Cybersecurity Consulting



To learn more about working with our team to meet your vehicle security needs, please visit [blockharbor.io](https://blockharbor.io)

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## Solution In Depth

### Getting Started

Each customer has a different device/application, architecture and set of security requirements. Block Harbor will work with you to understand the technical details of the penetration test target, identify the relevant attack surface, and define a perimeter to scope the project. A job well done in **scoping a penetration test is critical to ensure good value**. We will agree on a testing approach: black-box, grey-box or white-box, in which the amount of information provided to the penetration testers varies in detail. Furthermore, refining the scope to the highest priority assets and interfaces allow us to focus our time on areas of the target that are of strategic importance to you.

### Communication

Penetration testing is complex. To prepare for unexpected issues during testing we identify contacts between Block Harbor and the customer to communicate and solve road blocks. It is recommended to have a lead technical contact who can bring in other experts as necessary. In penetration testing engagements **we often interface with, security engineers, architects, developers, and managers**. Defining the network of technical supporters can help keep the engagement focused on providing the most valuable test results.

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Throughout the project Block Harbor hosts bi-weekly meetings to report status, share test results, and confirm forward direction in our testing efforts.

Once hardware is available in one of our vehicle cybersecurity labs, the Block Harbor team will set up and configure the hardware for testing. Then, we'll spend some time ensuring we have an in depth understanding of the functions and features of the target.

### Our Process

Block Harbor follows a standard process to ensure consistency and quality of our penetration testing. Our focus is on holistic assessments that ensure every basic security control is in place for interfaces in scope before we advanced to more complex testing.

#### We follow 6 steps:

- 1) **Threat Modeling**
- 2) **Attack Surface Enumeration and Passive Reconnaissance**
- 3) **Active Scanning and Vulnerability Research**
- 4) **Security Defense/Protection Check and Vulnerability Detection**
- 5) **Deep Testing and Attempt Exploitation**
- 6) **Assessment Reporting**

Finally, we'll walk you through the detailed report in a debrief meeting to ensure you have a complete understanding of the results. In addition, we can scope an add-on engagement to perform remediation testing to help you ensure that the issues were properly resolved through retesting.

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