SERVICE DESCRIPTION

SpiderLabs External Network Penetration Test

Service Scope

The Trustwave SpiderLabs Network Penetration Test service results in an in-depth test of the entire target environment and provides a detailed deliverable with both tactical and strategic recommendations to improve the security posture of the target environment. These recommendations are both actionable and advisory in nature and are presented to the customer.

The core ideal of the test is to methodically and iteratively test the target environment from the most general components to the most specific. In a large complex corporate environment, this is from the external network blocks presented to Trustwave at the beginning of the engagement down to the specific security controls utilized by external facing applications, as well as the effectiveness of ingress filtering, antivirus and other perimeter security systems.

The overarching philosophy of the engagement is to resemble expert adversaries utilizing intelligent attack techniques against systems, Clients, and networks. As such the entire testing process is primarily manual in nature to limit generic results, which would otherwise be returned by automated scanners or checklist methods used in more general vulnerability assessment.

The objective of the external network penetration test is to determine the resilience of the network perimeter against the threats that exists from remote attackers over the Internet. This is done by modeling the potential technical attack vectors with the goal of breaching the perimeter security and gaining unauthorized access to systems and sensitive data. Beyond traditional direct attacks at the network and operating system and application level attacks, certain client-side tests will be conducted to test the effectiveness of virus/malware screening systems and e-mail proxies.

The deliverable for this service is a report that documents the organization's existing security posture, identifies specific weaknesses and vulnerabilities, and provides purpose-built exploit code examples that tell a compelling story of risk associated with each vulnerability, and ultimately recommendations for their remediation.

The following illustrates some of the different vulnerability classes Trustwave covers during an external network penetration test. This list is not intended to be exhaustive and the actual testing performed depends on the specifics of the organization being tested.

VPN and Remote Access Systems

- Protocol weaknesses
- Configuration errors
- Default or insufficient authentication
- Authentication bypass

Network / Network Services Attacks

- Exposed administrative interfaces
- Published vulnerabilities
- Insufficient and/or lack of authentication
- Configuration and deployment weaknesses
- Information leakage

Logical Attacks

- Abuse of functionality
- Cryptography
- Algorithm
- Key management

Data Protection

- Transport
- Storage
- Insufficient Access Control

Buffer Overflow

- Stack-based
- Heap-based
- Format string

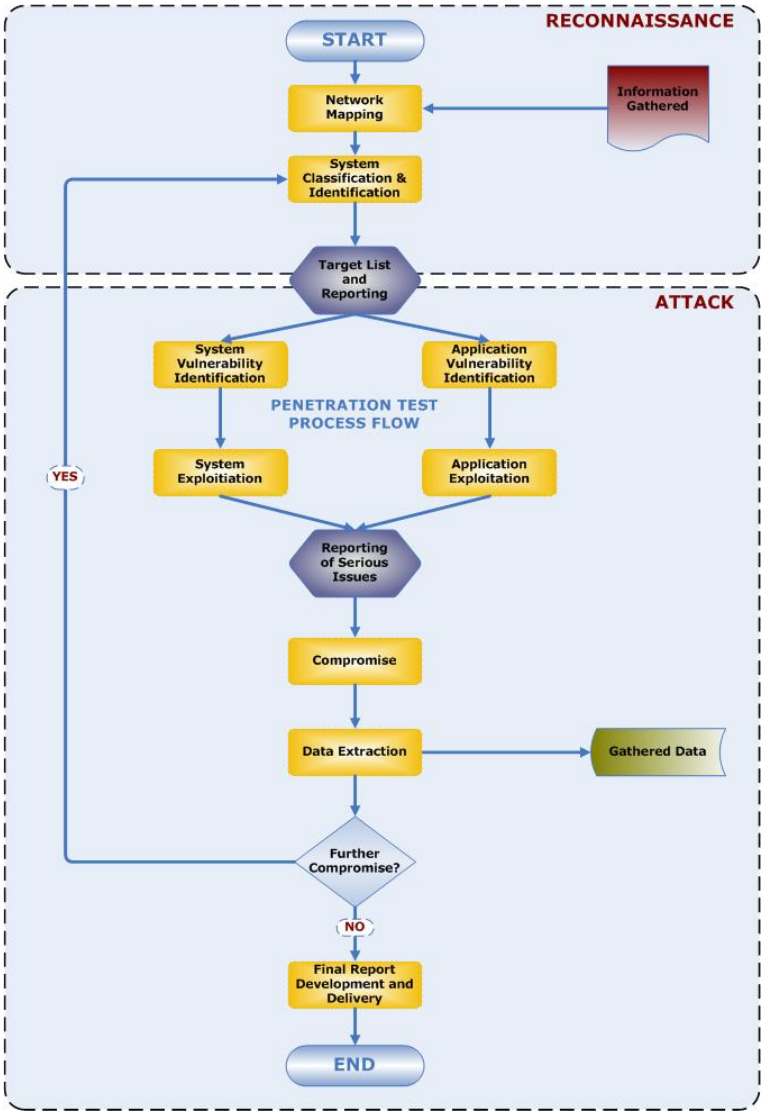
Protocol Fuzzing

Scope and Project Phases

All testing phases will be carefully coordinated to minimize the potential for any unintended impact. Trustwave recommends full-disclosure of the testing to all individuals responsible for the network environment and related services and devices. Trustwave takes a number of precautions to minimize the potential of causing service interruption or unscheduled downtime, however Trustwave does not guarantee against service interruption or unscheduled downtime due to the inherent risk of conducting such testing. Trustwave recommends that incident response procedures be well defined in the event that any adverse impact or disruption of network services

should occur. Trustwave is not responsible for ensuring adequate back-ups and/or other protections against data loss, damage or destruction are in place, either prior to or during any phase of the proposed services.

To visually depict our methodology for penetration testing, we have provided a process flow diagram followed by a narrative of each step.



Network Mapping

In the process of moving from general to specific, building an accurate network map of the externally facing devices is a critical task at the beginning of the penetration test.

Trustwave SpiderLabs will typically request the network blocks that are in scope for the purposes of the assessment from the authorized customer point of contact. This is typically in the form of a block of Internet addresses provided by one or many Internet Service Providers (ISPs). These addresses are then probed to see if they are in use (not for vulnerabilities at this time). The probes are executed three (3) times at different intervals during the first part of the engagement to ensure that no system is missed. The data gathered is used to create a network map of the external environment.

System Identification & Classification

The network map would not be very useful if the systems located on the network were not identified and classified. Another probe is performed of the systems identified, this time using TCP finger printing, service fingerprinting, and various methods to identify and classify systems and services. The data gathered is used to classify the systems by function. Data gathered about the system helps to determine the classification. For example, a system running a particular version of the Apache Web Server as well as BEA Web logic is most likely a web application server. After each system is classified the network map is updated to reflect each system's functionality and operation system. Before the next testing phase begins, Trustwave SpiderLabs will provide an update on material findings thus far, as well as request confirmation of the intended target list to be used in subsequent phases.

Network & Systems Tests

System Vulnerability Identification

Each in scope host and all associated listening services are probed to locate potential vulnerabilities. Using a large working knowledge of exploit techniques, public information, and extensive private vulnerability research, the Trustwave SpiderLabs consultants catalog all the potential attack vectors that may be exploitable. Trustwave SpiderLabs consultants will then devise several attack strategies as planning step prior to the subsequent phases.

System Vulnerability Exploitation

TCP finger printing, service fingerprinting, and various methods to identify and classify systems and services are utilized to more completely understand the environment in question. The data gathered is used to classify the systems by function. Data gathered about the system helps to determine the nature and business purpose of each system. After each system is classified the network map is updated to reflect each system's functionality and operating system. Before the next testing phase begins, Trustwave SpiderLabs will provide an update on material findings thus far, as well as request confirmation of the intended target list to be used in subsequent phases.

Web Application Layer Test Cases (pre-authentication only)

Application Architecture Identification

Trustwave SpiderLabs will map specific applications within the target test environment. When an application server is identified, other related systems will be identified within an application server group. This grouping will help identify potential flaws in application trust relationships. This information is vital to the successful identification of application vulnerabilities. In addition to identifying applications, Trustwave SpiderLabs will attempt to discover Trojans and Backdoors that may be present in the environment.

Application Exploitation

Each application layer component will be targeted using a subset of application penetration testing techniques. These tests are not considered to constitute a full application penetration test as they only address the pre-authentication components of an application for the following classes of issues:

- Input Validation
- Buffer Overflow
- Cross-Site Scripting
- URL Manipulation
- SQL Injection
- Hidden Variable Manipulation
- Cookie Modification

System Compromise

As systems are compromised, key security contacts will be notified. When purpose-built exploits or potentially risky exploit code is required to exploit a system, the authorized point of contact(s) are given the opportunity to decide if the particular system should undergo additional tests. Upon granting such permission Trustwave SpiderLabs will utilize additional techniques to further penetrate the target system and the environment as a whole. This can include password cracking tools, network sniffers, remote management tools, etc. Successful execution establishes a new vantage point (pivot point) for additional attacks against the environment.

Data Extraction

Each system that is compromised will be examined for the existence of critical, sensitive or confidential data and files. If Trustwave SpiderLabs finds such data to be accessible, a sample of this data will be downloaded from the system and securely stored by Trustwave SpiderLabs for evidential purposes until the presentation of deliverables.

Further Compromise

Once a system has been compromised, there are many trust relationships that can be potentially exploited, or data exposed through a compromise might lead to the compromise of additional systems and applications. Taking an iterative approach to this methodology, Trustwave SpiderLabs will launch a new stage of discovery against the environment. For example, if a web server is compromised, that system may provide access to a system on the internal network that would otherwise not have been directly accessible.

Deliverables

Following the conclusion of the engagement, findings will be made available via the Trustwave SpiderLabs TrustKeeper Portal. The deliverables will be both strategic and tactical in nature, presented in a drill down format that will be highly accessible to both management and operational staff. Each finding will have a risk scoring associated with it as well as contain detailed technical information pertaining to the nature of the finding. Each finding will also be presented with clear guidance on how to remediate the issue.