



Reviewing NuGet Packages security easily using OpenSSF Scorecard

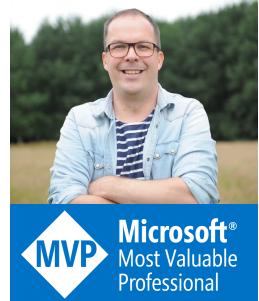
Niels Tanis
Sr. Principal Security Researcher



Who am I?

- Niels Tanis
- Sr. Principal Security Researcher
 - Background .NET Development, Pentesting/ethical hacking, and software security consultancy
 - Research on static analysis for .NET apps
 - Enjoying Rust!
- Microsoft MVP – Developer Technologies

VERACODE

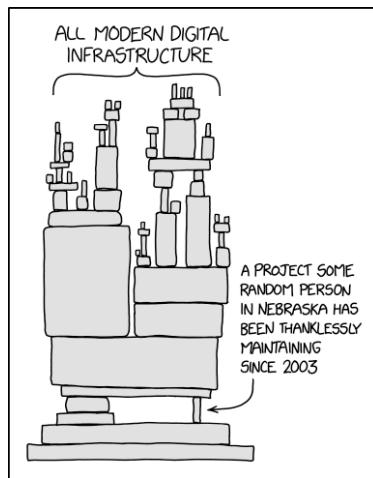


MVP Microsoft®
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Modern Application Architecture XKCD 2347



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<https://xkcd.com/2347/>

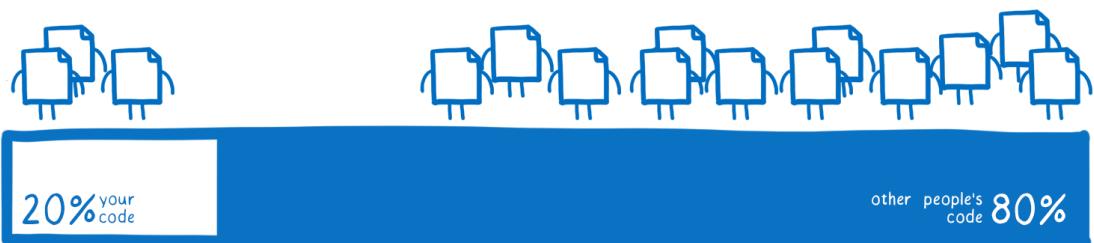
Agenda

- Risks in 3rd party NuGet Packages
- OpenSFF Scorecard
- Measure, New & Improved
- Conclusion - Q&A



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Average codebase composition



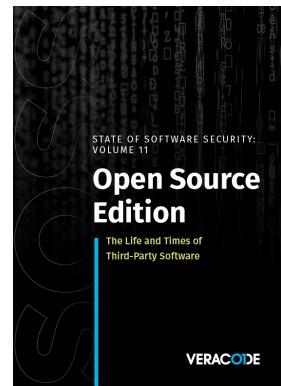
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<https://hacks.mozilla.org/2019/11/announcing-the-bytecode-alliance/>

State of Software Security v11

"Despite this dynamic landscape, 79 percent of the time, developers never update third-party libraries after including them in a codebase."



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State of Log4j - 2 years later

- Analysed our data August-November 2023
 - Total set of almost 39K unique applications scanned
- 2.8% run version vulnerable to Log4Shell
- 3.8% run version patched but vulnerable to other CVE
- 32% rely on a version that's end-of-life and have no support for any patches.



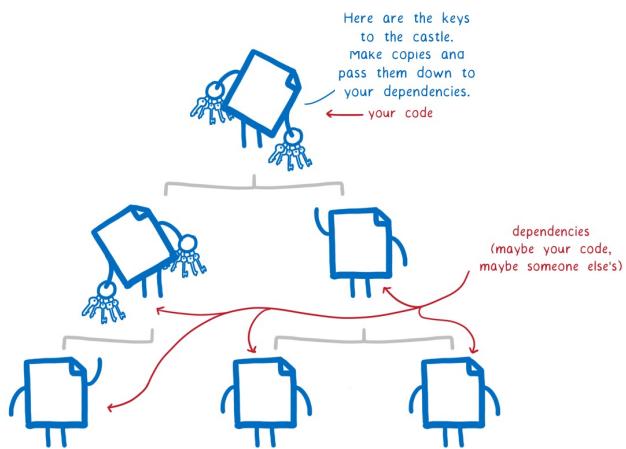
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<https://www.veracode.com/blog/research/state-log4j-vulnerabilities-how-much-did-log4shell-change>

Average codebase composition

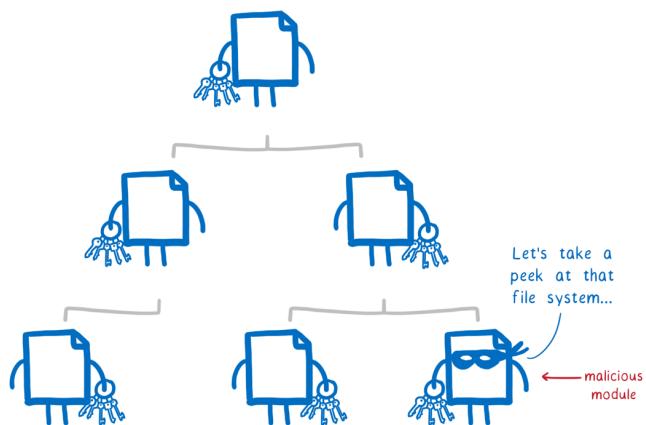
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<https://hacks.mozilla.org/2019/11/announcing-the-bytecode-alliance/>

Malicious Assembly



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<https://hacks.mozilla.org/2019/11/announcing-the-bytecode-alliance/>

The screenshot shows a news article titled "Hackers target .NET developers with malicious NuGet packages" by Sergiu Gatlan. The article discusses threat actors targeting .NET developers with cryptocurrency stealers delivered through the NuGet repository. It mentions three packages downloaded over 150,000 times. Researchers Natan Nehorai and Brian Moussalli spotted the campaign. The attack involved typosquatting and inflating download counts. The article is dated March 20, 2023, at 03:22 PM. The URL of the article is visible at the bottom.

Malicious Package

Hackers target .NET developers with malicious NuGet packages

By Sergiu Gatlan

March 20, 2023 03:22 PM 0

Threat actors are targeting and infecting .NET developers with cryptocurrency stealers delivered through the NuGet repository and impersonating multiple legitimate packages via typosquatting.

Three of them have been downloaded over 150,000 times within a month, according to JFrog security researchers Natan Nehorai and Brian Moussalli, who spotted this ongoing campaign.

While the massive number of downloads could point to a large number of .NET developers who had their systems compromised, it could also be explained by the attackers' efforts to legitimize their malicious NuGet packages.

"The top three packages were downloaded an incredible amount of times – this could be an indicator that the attack was highly successful, infecting a large amount of machines," the [JFrog security researchers said](#).

"However, this is not a fully reliable indicator of the attack's success since the attackers could have automatically inflated the download count (with bots) to make the packages seem more legitimate."

The threat actors also used typosquatting when creating their NuGet repository profiles to impersonate

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[https://www.bleepingcomputer.com/news/security/hackers-target-net-developers-with-malicious-nuget-packages//](https://www.bleepingcomputer.com/news/security/hackers-target-net-developers-with-malicious-nuget-packages/)

Malicious Package

The screenshot shows a web browser displaying a blog post from ReversingLabs. The title of the post is "Malicious NuGet campaign uses homoglyphs and IL weaving to fool devs". The post discusses how malware authors used homoglyphs and IL weaving to inject malicious code. The sidebar on the right lists various topics such as Threat Research, All Blog Posts, AppSec & Supply Chain Security, Dev & DevSecOps, Threat Research, Security Operations, Products & Technology, and Company & Events. The URL of the post is <https://www.reversinglabs.com/blog/malicious-nuget-campaign-uses-homoglyphs-and-il-weaving-to-fool-devs>.

<https://www.reversinglabs.com/blog/malicious-nuget-campaign-uses-homoglyphs-and-il-weaving-to-fool-devs>

Hypocrite Commits

The screenshot shows a web browser displaying an article from The Verge. The title of the article is "How a university got itself banned from the Linux kernel". The article is categorized under "TECH". Below the title, there is a brief description: "The University of Minnesota's path to banishment was long, turbulent, and full of emotion". The URL of the article is visible at the top of the browser window: <https://www.theverge.com/2021/4/30/22410164/linux-kernel-university-of-minnesota-banned-open-source>. The page also features the The Verge logo and navigation links for Tech, Reviews, Science, Entertainment, AI, and More.

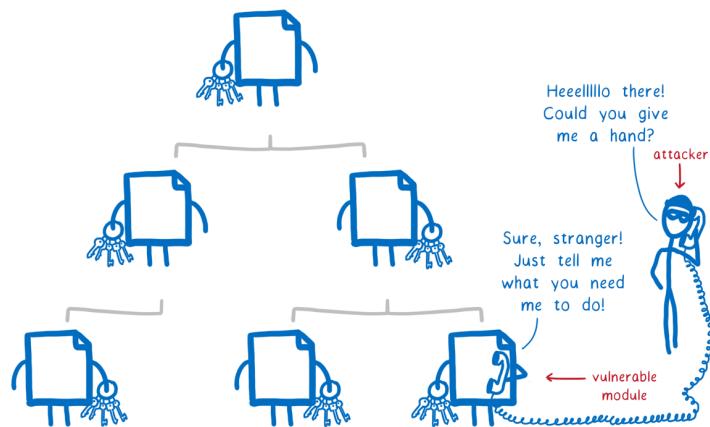
<https://www.theverge.com/2021/4/30/22410164/linux-kernel-university-of-minnesota-banned-open-source>

XZ Backdoor

The screenshot shows a web browser window displaying an Ars Technica article. The title of the article is "Backdoor found in widely used Linux utility targets encrypted SSH connections". The article is categorized under "SUPPLY CHAIN ATTACK". Below the title, it says "Malicious code planted in xz Utils has been circulating for more than a month." The author is listed as "DAN GOODIN - 3/29/2024, 7:50 PM". The Ars Technica header includes the logo, "SUBSCRIBE", "SIGN IN", and search icons. The page has a dark blue header and a white main content area.

<https://arstechnica.com/security/2024/03/backdoor-found-in-widely-used-linux-utility-breaks-encrypted-ssh-connections/>

Vulnerable Assembly



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<https://hacks.mozilla.org/2019/11/announcing-the-bytecode-alliance/>

Vulnerabilities in Libraries

A screenshot of a web browser displaying a GitHub repository page. The URL in the address bar is <https://github.com/dotnet/announcements/issues/320>. The page title is "Microsoft Security Advisory CVE-2024-38168 | .NET Denial of Service Vulnerability #320". A green button labeled "Open" is visible. Below the title, it says "rbhanda opened this issue 2 weeks ago · 0 comments". A comment from "rbhanda" is shown, reading "Microsoft Security Advisory **CVE-2024-38168 | .NET Denial of Service Vulnerability**". On the right side, there are sections for "Assignees" (No one assigned) and "Labels" (Security). The browser interface includes standard navigation buttons like back, forward, and search.



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<https://github.com/dotnet/announcements/issues/320>

DotNet CLI

```
nelson@ghost-m2 ~/research/consoleapp $ dotnet list package
Project 'consoleapp' has the following package references
[net8.0]:
Top-Level Package      Requested    Resolved
> docgenerator          1.0.0        1.0.0

nelson@ghost-m2 ~/research/consoleapp $ dotnet list package --vulnerable

The following sources were used:
https://f.feedz.io/fennec/docgenerator/nuget/index.json
https://api.nuget.org/v3/index.json

The given project `consoleapp` has no vulnerable packages given the current sources.
nelson@ghost-m2 ~/research/consoleapp $
```



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DotNet CLI

```
nelson@ghost-m2:~/research/consoleapp $ dotnet list package --include-transitive
Project 'consoleapp' has the following package references
[net8.0]:
Top-level Package      Requested   Resolved
> docgenerator        1.0.0       1.0.0

Transitive Package                               Resolved
> itext7                                         7.2.2
> itext7.common                                     7.2.2
> Microsoft.CSharp                                4.0.1
> Microsoft.DotNet.PlatformAbstractions           1.1.0
> Microsoft.Extensions.DependencyInjection             5.0.0
> Microsoft.Extensions.DependencyInjection.Abstractions 5.0.0
> Microsoft.Extensions.DependencyModel            1.1.0
> Microsoft.Extensions.Logging                     5.0.0
> Microsoft.Extensions.Logging.Abstractions        5.0.0
> Microsoft.Extensions.Options                   5.0.0
> Microsoft.Extensions.Primitives                5.0.0
```



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DotNet CLI

```
nelson@ghost-m2 ~/research/consoleapp $ dotnet list package --vulnerable --include-transitive
The following sources were used:
https://f.feedz.io/fennec/docgenerator/nuget/index.json
https://api.nuget.org/v3/index.json

Project `consoleapp` has the following vulnerable packages
[net8.0]:
Transitive Package      Resolved    Severity    Advisory URL
> Newtonsoft.Json        9.0.1       High       https://github.com/advisories/GHSA-5crp-9r3c-p9vr

nelson@ghost-m2 ~/research/consoleapp $
```



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Do you know what's inside?

The screenshot shows a web browser window with the following details:

- Title Bar:** Third-party code comes with some baggage
- Address Bar:** https://www.reversinglabs.com/blog/third-party-code-comes-with-some-baggage
- Header:** REVERSINGLABS (with a red RL logo)
- Section:** Threat Research | July 7, 2021
- Title:** Third-party code comes with some baggage
- Subtext:** Recognizing risks introduced by statically linked third-party libraries
- Author:** Karlo Zanki, Reverse Engineer at ReversingLabs. [READ MORE...](#)
- Footer:** elia group logo, Twitter icon (@nielstanis), and email (@infosec.exchange)

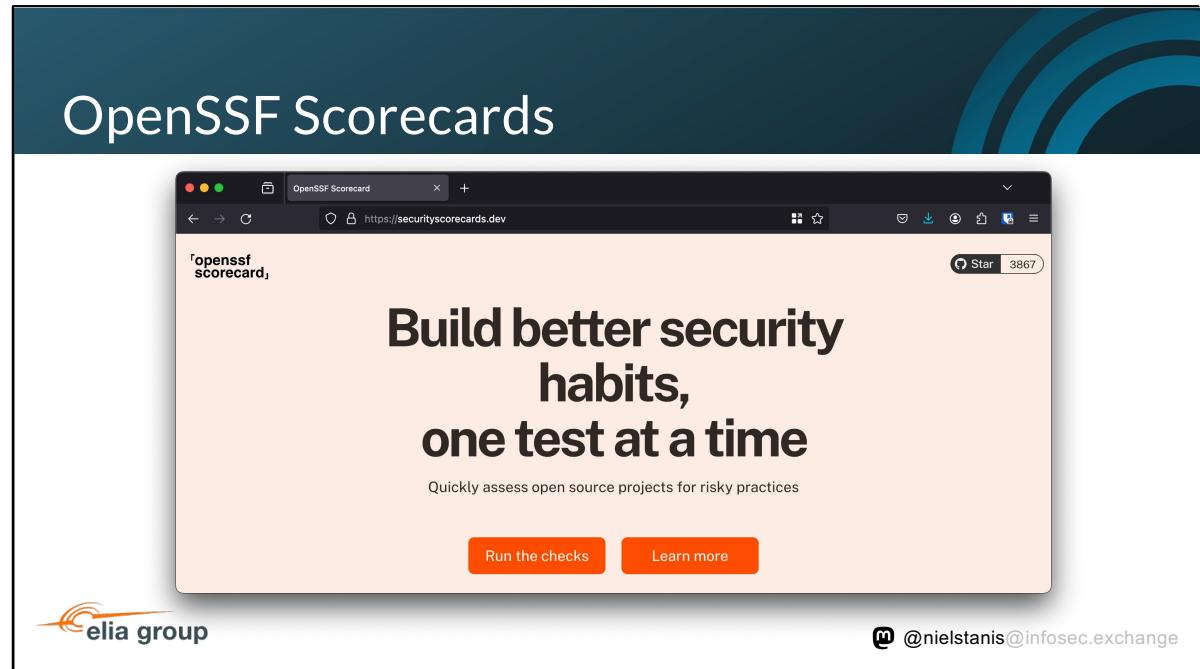
<https://www.reversinglabs.com/blog/third-party-code-comes-with-some-baggage>

Nutrition Label for Software?



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<https://securityscorecards.dev/>



<https://securityscorecards.dev/>

The screenshot shows a web browser window with the title "OpenSSF Security Scorecards". The main content area displays the "What is OpenSSF Scorecard?" page. On the left, there is a sidebar with sections for "Run the checks" (Using the GitHub Action, Using the CLI) and "Learn more" (The problem, What is OpenSSF Scorecard?, How it works, The checks, Use cases, About the project name, Part of the OSS community, Get involved). The main content area has a heading "What is OpenSSF Scorecard?" followed by text explaining its purpose: "Scorecard assesses open source projects for security risks through a series of automated checks. It was created by OSS developers to help improve the health of critical projects that the community depends on. You can use it to proactively assess and make informed decisions about accepting security risks within your codebase. You can also use the tool to evaluate other projects and dependencies, and work with maintainers to improve codebases you might want to integrate. Scorecard helps you enforce best practices that can guard against:" Below this text are two small icons: a red circle with a white dot and a grid of squares.

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<https://securityscorecards.dev/>

The screenshot shows a web browser window titled "OpenSSF Scorecard" with the URL <https://securityscorecards.dev/#how-it-works>. The page has a dark blue header with the text "OpenSSF Security Scorecards". Below the header is a light orange section titled "How it works". On the left side of this section, there are two columns of links:

| Run the checks | Learn more |
|-------------------------|----------------------------|
| Using the GitHub Action | The problem |
| Using the CLI | What is OpenSSF Scorecard? |
| | How it works |
| | The checks |
| | Use cases |
| | About the project name |
| | Part of the OSS community |
| | Get involved |

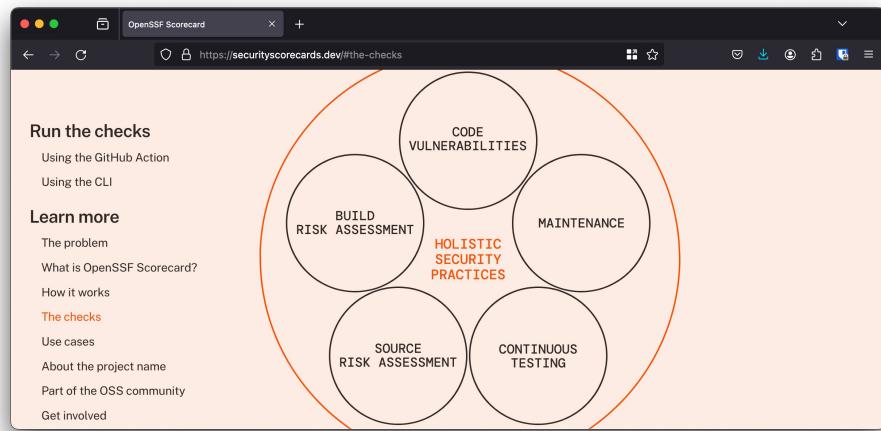
The right side of the "How it works" section contains text explaining the scorecard's functionality, mentioning automated checks for vulnerabilities across the software supply chain, and how it provides remediation prompts. Below this text are three horizontal bars representing risk levels:

| Risk Level | Score |
|---------------|-------|
| CRITICAL RISK | 10 |
| HIGH RISK | 7.5 |
| MEDIUM RISK | 5 |

At the bottom left of the page is the "elia group" logo, and at the bottom right is the Twitter handle "@nielstanis@infosec.exchange".

<https://securityscorecards.dev/>

OpenSSF Security Scorecards



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<https://securityscorecards.dev/>

Code Vulnerabilities (High)

- Does the project have unfixed vulnerabilities?
Uses the OSV service.

| ID | Packages | Summary | Published | Attributes |
|---------------------|--|--|-----------|---|
| GHSA-hrwv-x3fq-vcv7 | NuGet/Umbraco.Cms | Umbraco CMS Improper Access Control vulnerability | 20 Aug | Fix available Severity - 6.3 (Medium) |
| GHSA-77gj-chp-39yx | NuGet/Umbraco.Cms.Api.Management | Umbraco CMS vulnerable to Generation of Error Message Containing Sensitive Information | 20 Aug | Fix available Severity - 5.3 (Medium) |
| GHSA-7qrv-8f9x-3h32 | NuGet/Microsoft.AspNetCore.App.Runtime.win-arm NuGet/Microsoft.AspNetCore.App.Runtime.win-arm64 NuGet/Microsoft.AspNetCore.App.Runtime.win-x64 NuGet/Microsoft.AspNetCore.App.Runtime.win-x86 | Microsoft Security Advisory CVE-2024-38168 .NET Denial of Service Vulnerability | 13 Aug | Fix available Severity - 8.7 (High) |



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<https://osv.dev/list?ecosystem=NuGet>

Maintenance Dependency-Update-Tool (**High**)

- Does the project use a dependency update tool?
For example Dependabot or Renovate bot?
- Out-of-date dependencies make a project vulnerable to known flaws and prone to attacks.



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Maintenance Security Policy (Medium)

- Does project have published security policy?
- E.g. a file named **SECURITY.md** (case-insensitive) in a few well-known directories.
- A security policy can give users information about what constitutes a vulnerability and how to report one securely so that information about a bug is not publicly visible.



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Maintenance License (**Low**)

- Does project have license published?
- A license can give users information about how the source code may or may not be used.
- The lack of a license will impede any kind of security review or audit and creates a legal risk for potential users.



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Maintenance CII Best Practices (**Low**)

- OpenSSF Best Practices Badge Program
- Way for Open Source Software projects to show that they follow best practices.
- Projects can voluntarily self-certify, at no cost, by using this web application to explain how they follow each best practice.



openssf best practices passing



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<https://www.bestpractices.dev/en/criteria/0>

Continuous testing CI Tests (**Low**)

- Does the project run tests before pull requests are merged?
- The check works by looking for a set of CI-system names in GitHub CheckRuns and Statuses among the recent commits (~30).



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Continuous testing Fuzzing (Medium)

- This check tries to determine if the project uses fuzzing by checking:
 - Added to [OSS-Fuzz](#) project.
 - If [ClusterFuzzLite](#) is deployed in the repository;
- Does it make sense to do fuzzing on .NET projects?



 [@niestanis](https://twitter.com/niestanis) @infosec.exchange

Continuous testing Static Code Analysis (Medium)

- This check tries to determine if the project uses Static Application Security Testing (SAST), also known as static code analysis. It is currently limited to repositories hosted on GitHub.
 - CodeQL
 - SonarCloud
- Definitely room for improvement!



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Source Risk Assessment Binary Artifacts (**High**)

- This check determines whether the project has generated executable (binary) artifacts in the source repository.
- Binary artifacts cannot be reviewed, allowing possible obsolete or maliciously subverted executables.
- There is need for **reproducible builds!**



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Source Risk Assesement Branch Protection (**High**)

- This check determines whether a project's default and release branches are protected with GitHub's branch protection or repository rules settings.
 - Requiring code review
 - Prevent force push, in case of public branch all is lost!



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Source Risk Assesement Dangerous Workflow (**Critical**)

- This check determines whether the project's GitHub Action workflows has dangerous code patterns.
 - Untrusted Code Checkout with certain triggers
 - Script Injection with Untrusted Context Variables
- <https://securitylab.github.com/research/github-actions-preventing-pwn-requests/>



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Source Risk Assesement Code Review (**Low**)

- This check determines whether the project requires human code review before pull requests are merged.
- The check determines whether the most recent changes (over the last ~30 commits) have an approval on GitHub and merger!=committer (implicit review)



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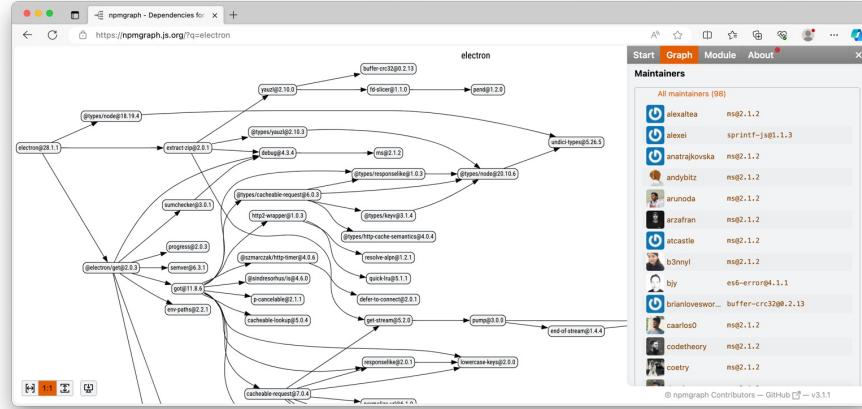
Source Risk Assessment Contributors (Low)

- This check tries to determine if the project has recent contributors from multiple organizations (e.g., companies).
- Relying on single contributor is a risk for sure!
- But is a large list of contributors good?



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Source Risk Assesement Contributors (Low)



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Build Risk Assessment Pinned Dependencies (**High**)

- Does the project pin dependencies used during its build and release process.
- **RestorePackagesWithLockFile** in MSBuild results in **packages.lock.json** file containing versioned dependency tree with hashes
- If Workflow is present what about the Actions used?



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Build Risk Assessment Token Permission (**High**)

- This check determines whether the project's automated workflows tokens follow the principle of least privilege.
- This is important because attackers may use a compromised token with write access to, for example, push malicious code into the project.



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<https://securitylab.github.com/research/github-actions-preventing-pwn-requests/>

Build Risk Assessment Packaging (Medium)

- This check tries to determine if the project is published as a package.
- Packages give users of a project an easy way to download, install, update, and uninstall the software by a package manager.



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Build Risk Assessment Signed Releases (**High**)

- This check tries to determine if the project cryptographically signs release artifacts.
 - Signed release packages
 - Signed build provenance



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Demo OpenSSF Scorecard Fennec CLI

Running checks



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Measure?



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<https://www.bestpractices.dev/en/criteria/0>

OpenSSF Annual Report 2023

OpenSSF Scorecard project
has **3,776 stars** on GitHub,
and runs a **weekly automated**
assessment scan against
software security criteria
of over **1M OSS projects**



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<https://openssf.org/download-the-2023-openssf-annual-report/>

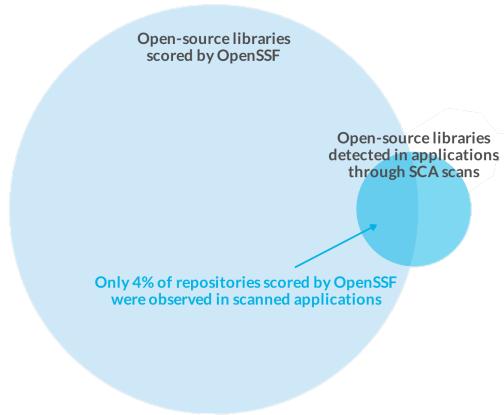
SOSS & OpenSSF Scorecard



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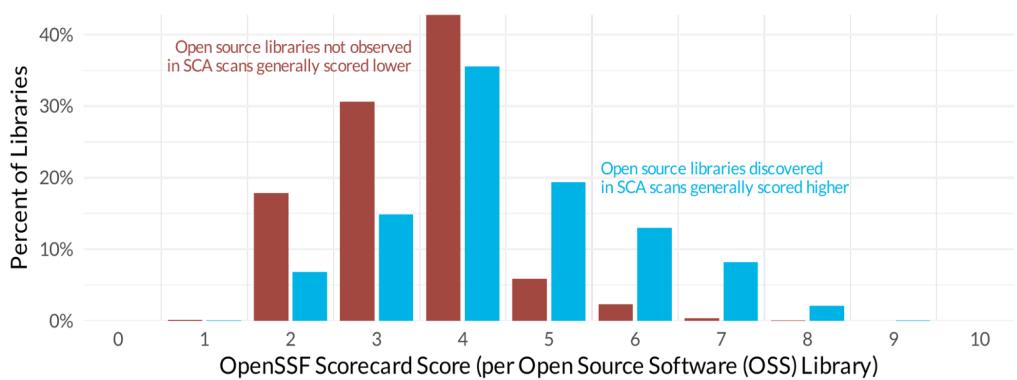
SOSS & OpenSSF Scorecard



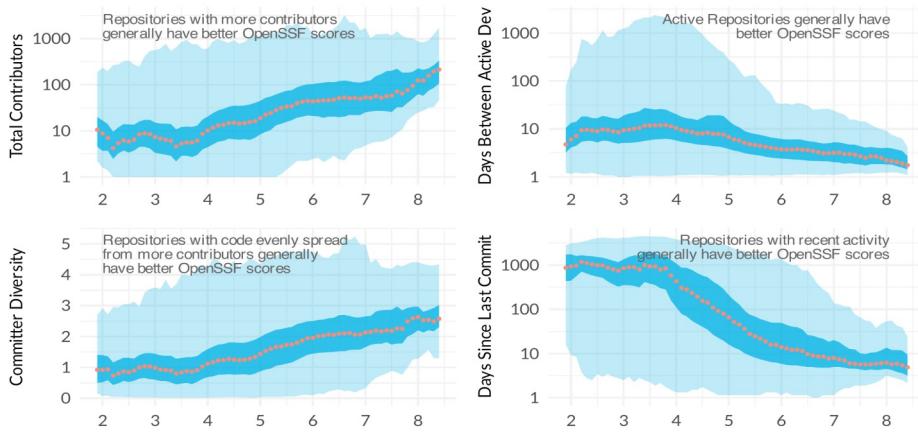
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<https://www.rsaconference.com/Library/presentation/usa/2024/quantifying%20the%20probability%20of%20flaws%20in%20open%20source>

Correlation between SOSS



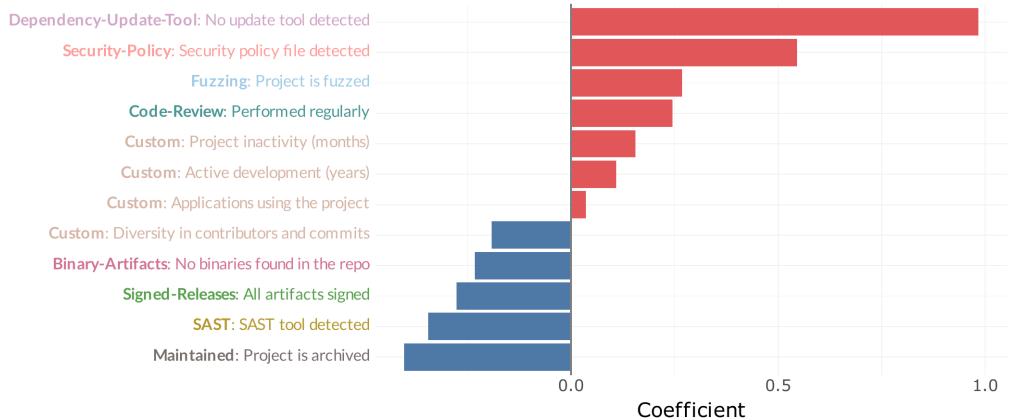
Github commits vs OpenSSF



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What really contributes to OSS Security?



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What can we improve?



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<https://www.bestpractices.dev/en/criteria/0>

Fuzzing .NET



- Fuzzing, or fuzz testing
 - Automated software testing method that uses a wide range of **invalid** and unexpected data as input to find flaws
- Definitely good for finding C/C++ memory issues
- Can it be of any value with managed languages like .NET?



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<https://www.bestpractices.dev/en/criteria/0>

Fuzzing .NET & SharpFuzz

New & Improved!

Nemanja Mijailovic's Blog

Five years of fuzzing .NET with SharpFuzz

Jul 23, 2023

It's been almost five years since I created [SharpFuzz](#), the only .NET coverage-guided fuzzer. I already have a blog post on how it works, what it can do for you, and what bugs it found, so check it out if this is the first time you hear about SharpFuzz:

[SharpFuzz: Bringing the power of afl-fuzz to .NET platform](#)

A lot of interesting things have happened since then. SharpFuzz now works with libFuzzer, Windows, and .NET Framework. And it can finally fuzz the .NET Core base-class library! The whole fuzzing process has been dramatically simplified, too.

Not many people are aware of all these developments, so I decided to write this anniversary blog post and showcase everything SharpFuzz is currently capable of.

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<https://mijailovic.net/2023/07/23/sharpfuzz-anniversary/>

Fuzzing .NET & SharpFuzz

New & Improved!

Trophies

The list of bugs found by SharpFuzz has been growing steadily and it now contains more than 80 entries. I'm pretty confident that some of the bugs in the .NET Core standard library would have been impossible to discover using any other testing method:

- BigInteger.TryParse out-of-bounds access
- Double.Parse throws AccessViolationException on .NET Core 3.0
- G17 format specifier doesn't always round-trip double values

As you can see, SharpFuzz is capable of finding not only crashes, but also correctness bugs—the more creative you are in writing your fuzzing functions, the higher your chances are for finding an interesting bug.

SharpFuzz can also find serious security vulnerabilities. I now have two CVEs in my trophy collection:

- CVE-2019-0980: .NET Framework and .NET Core Denial of Service Vulnerability
- CVE-2019-0981: .NET Framework and .NET Core Denial of Service Vulnerability

If you were ever wondering if fuzzing managed languages makes sense, I think you've got your answer right here.

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<https://mijailovic.net/2023/07/23/sharpfuzz-anniversary/>

Fuzzing .NET – Jil JSON Serializer



```
public static void Main(string[] args)
{
    SharpFuzz.Fuzzer.OutOfProcess.Run(stream => {
        try
        {
            using (var reader = new System.IO.StreamReader(stream))
                JSON.DeserializeDynamic(reader);
        }
        catch (DeserializationException) { }
    });
}
```



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<https://github.com/google/fuzzing/blob/master/docs/structure-aware-fuzzing.md>

Fuzzomatic: Using AI to Fuzz Rust

New & Improved!

How does it work?

Fuzzomatic relies on libFuzzer and cargo-fuzz as a backend. It also uses a variety of approaches that combine AI and deterministic techniques to achieve its goal.

We used the OpenAI API to generate and fix fuzz targets in our approaches. We mostly used the gpt-3.5-turbo and gpt-3.5-turbo-16k models. The latter is used as a fallback when our prompts are longer than what the former supports.

Fuzz targets and coverage-guided fuzzing

```

1  #[no_main]
2  extern crate libfuzzer_sys;
3  use mylib_under_test::MyModule;
4  use libfuzzer_sys::fuzz_target;
5
6  fuzz_target!(data: [u8]) {
7      // fuzzed code goes here
8      if libfuzzer_sys::is_last() = std::str::from_utf8(data) {
9          MyModule::target_function(input);
10     }
11 }
12 }
```

This fuzz target needs to be compiled into an executable. As you can see, this program depends on libFuzzer and also depends on the library under test, here "mylib_under_test". The "fuzz_target!" macro makes it easy for us to just write what needs to be called, provided that we receive a byte slice, the "data" variable in the above example. Here we convert these bytes to a UTF-8 string and call our target function and pass that string as an argument. LibFuzzer takes care of calling our fuzz target repeatedly with random bytes. It measures the code coverage to assess whether the random input helps cover more code. We say it's coverage-guided fuzzing.

Comment Retag Subscribe ...

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<https://research.kudelskisecurity.com/2023/12/07/introducing-fuzzomatic-using-ai-to-automatically-fuzz-rust-projects-from-scratch/>

Static Code Analysis (SAST)

New &
Improved!

```
public byte[] CreateHash(string password)
{
    var b = Encoding.UTF8.GetBytes(password);
    return SHA1.HashData(b);
}
```



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<https://www.bestpractices.dev/en/criteria/0>

Static Code Analysis (SAST)

New &
Improved!

```
public class CustomerController : Controller
{
    public IActionResult GenerateCustomerReport(string customerID)
    {
        var data = Reporting.GenerateCustomerReportOverview(customerID)
        return View(data);
    }
    public static class Reporting
    {
        public static byte[] GenerateCustomerReportOverview(string ID)
        {
            return System.IO.File.ReadAllBytes("./data/{ID}.pdf");
        }
    }
}
```



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<https://www.bestpractices.dev/en/criteria/0>

.NET Reproducibility



- Reproducible builds → independently-verifiable path from source to binary code.
- .NET Roslyn Deterministic Inputs
- How reproducible is a simple console app?
- Fennec Diff (work-in-progress)



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Application Inspector

New & Improved!

Application Features

This section reports the major characteristics of the application or its primary features organized by customizable Feature Groups. Click any of the highlighted icons below (indicating at least one match) to view additional details or expand a feature group for more information. To view where in source code a specific feature was found, click the Rule name link shown on the right. A disabled icon indicates a not found status for that feature.

| Feature Groups | Associated Rules |
|---------------------|--------------------------------------|
| + Select Features | Name (click to view source) |
| + General Features | Authentication: Microsoft (Identity) |
| + Development | Authentication: General |
| + Active Content | Authentication: (OAuth) |
| + Data Storage | |
| + Sensitive Data | |
| + Cloud Services | |
| + OS Integration | |
| + OS System Changes | |
| + Other | |

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<https://github.com/microsoft/ApplicationInspector>

Application Inspector



| Feature | Confidence | Details |
|---------------------------|------------|----------------------|
| Authentication | | View |
| Authorization | | View |
| Cryptography | | View |
| Object Deserialization | | N/A |
| AV Media Parsing | | N/A |
| Dynamic Command Execution | | N/A |

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<https://github.com/microsoft/ApplicationInspector>

Community Review

New & Improved!

The screenshot shows a web browser window displaying the [Cargo Vet](https://mozilla.github.io/cargo-vet/) documentation. The page has a dark theme with white text. On the left, there is a sidebar with a table of contents:

- 1. Introduction
 - 1.1. Motivation
 - 1.2. How it Works
- 2. Tutorial
 - 2.1. Installation
 - 2.2. Setup
 - 2.3. Audit Criteria
 - 2.4. Importing Audits
 - 2.5. Recording Audits
 - 2.6. Performing Audits
 - 2.7. Trusting Publishers
 - 2.8. Specifying Policies
 - 2.9. Multiple Repositories
 - 2.10. Configuring CI
 - 2.11. Curating Your Audit Set
- 3. Reference
 - 3.1. Configuration
 - 3.2. Audit Entries
 - 3.3. Wildcard Audit Entries
 - 3.4. Trusted Entities

The main content area is titled "Cargo Vet" and contains the following text:

The `cargo vet` subcommand is a tool to help projects ensure that third-party Rust dependencies have been audited by a trusted entity. It strives to be lightweight and easy to integrate.

When run, `cargo vet` matches all of a project's third-party dependencies against a set of audits performed by the project authors or entities they trust. If there are any gaps, the tool provides mechanical assistance in performing and documenting the audit.

The primary reason that people do not ordinarily audit open-source dependencies is that it is too much work. There are a few key ways that `cargo vet` aims to reduce developer effort to a manageable level:

- **Sharing:** Public crates are often used by many projects. These projects can share their findings with each other to avoid duplicating work.
- **Relative Audits:** Different versions of the same crate are often quite similar to each other. Developers can inspect the difference between two versions, and record that if the first version was vetted, the second can be considered vetted as well.
- **Deferred Audits:** It is not always practical to achieve full coverage. Dependencies can be added to a list of exceptions which can be ratcheted down over time. This makes it trivial to introduce `cargo vet` to a new project and guard against future vulnerabilities while vetting the

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<https://mozilla.github.io/cargo-vet/>

The screenshot shows a blog post on the Microsoft Dev Blogs website. The title of the post is "OpenSSF Scorecard for .NET and the NuGet ecosystem". The post is dated November 4th, 2024. It features a brief introduction about the OpenSSF Scorecard tool. On the right side of the post, there is a "Table of contents" section with links to "Overview", "What is Scorecard and why should you use it", and "What are the checks run by Scorecard". Below the post, there is a sidebar with social sharing icons and a "Feedback" button. The footer of the page includes the Microsoft Dev Blogs navigation bar and a copyright notice for Microsoft Corporation.

<https://devblogs.microsoft.com/nuget/openssf-scorecard-for-net-nuget/>

Conclusion

- Scorecard helps security reviewing a NuGet Package
- Better understand what's inside, how it's build/maintained and what are the risks!
- Scorecard should not be a goal on its own!



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Conclusion

- NuGet Package Scoring (NET Score)
- Room for .NET specific improvements with Fennec CLI
 - Tools (diff, insights)
 - Trust Graph
 - Contribute back to OpenSSF Scorecard



`dotnet tool install -g fennec`



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Questions?



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Danke, Merci, Bedankt!

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