# Supply Chain Security

Aleksandr Tserepov-Savolainen

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# Outline

# Problem statement

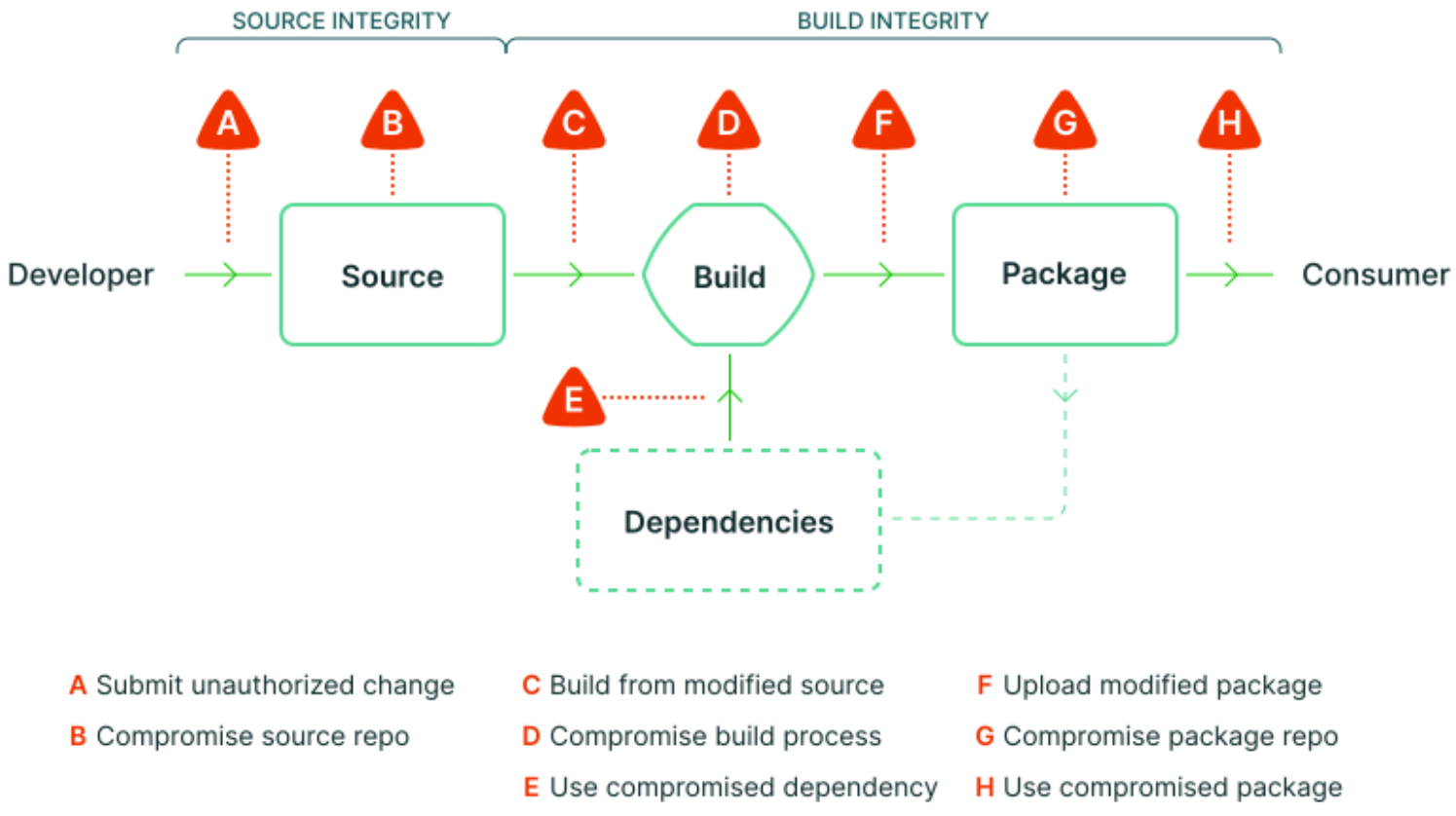


image src:
`https://slsa.dev/spec/v0.1/#supply-chain-threats`

# Breach cases

TODO: Example breach cases here

# SLSA Framework

## Source Integrity

Ensuring every change reflects the intent of producer.

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## Availability

Ensuring that all code and change history are available for potential incident investigation.

# Levels of Assurance

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## Level 1

Easy to adopt, offering supply chain visibility and generating provenance

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Hardened infrastructure, trust integration

## Level 4

The highest assurance of build integrity and dependency management

# NixOS / Spectrum Build Environment

TODO: Build environment picture
Hydra -> BinCache -> Jenkins -> Release

- — TII GitHub
- — OpenSrc locations

# NixOS SLSA Solution

Hydra package signing

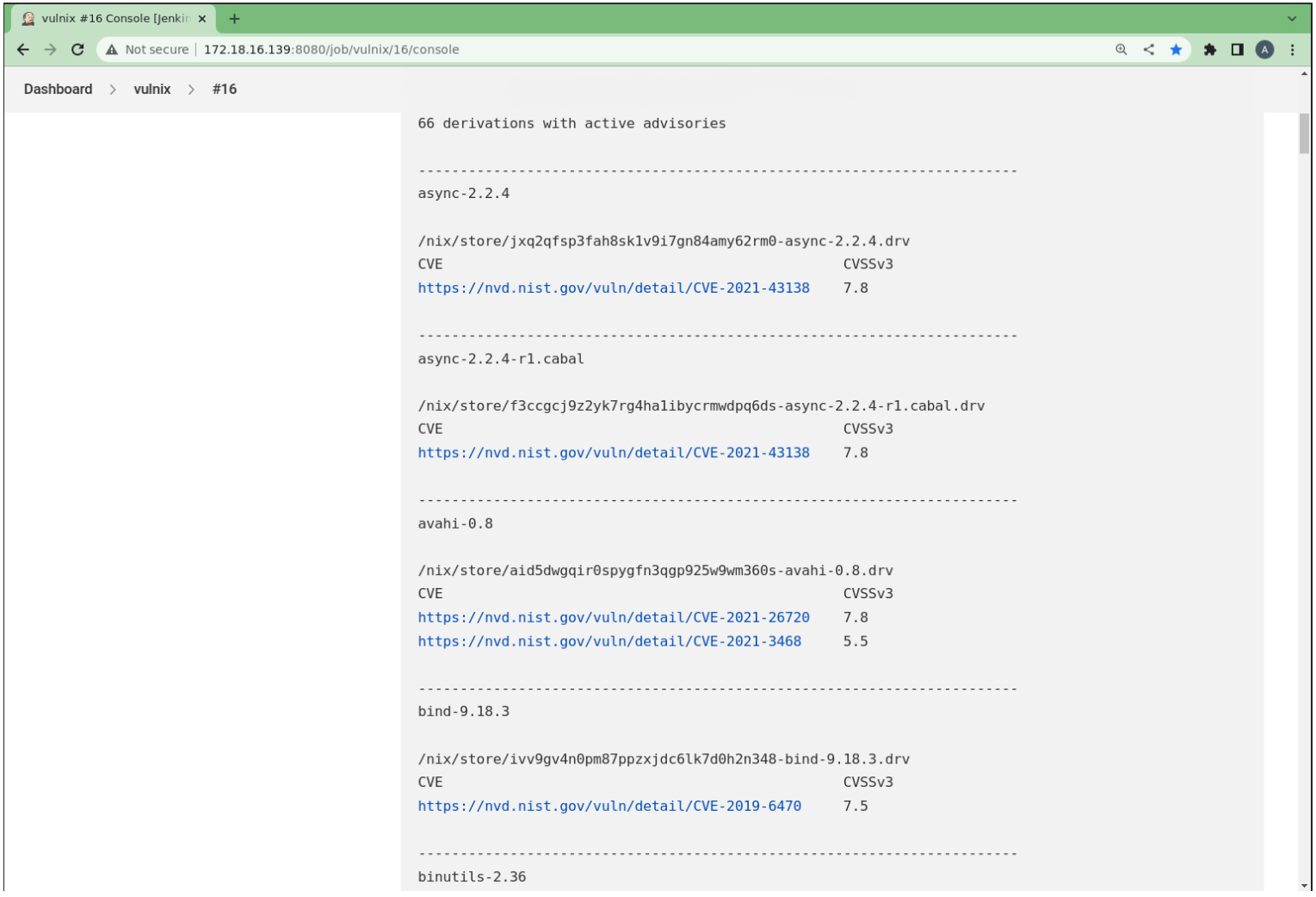
Binary cache package signing

Jenkins package signature verification

# SCA (Software Composition Analysis)

- Automated process that defines the open source software in the codebase.
- Companies need to be aware of potential obligations, limitations and security vulnerabilities that open source brings into play.
- As the codebase grows, tracking all of those becomes rather tricky.
- SCA takes use of automatic scanners to enable productivity without compromise on security.

# Look & Feel


vulnix #16 Console [Jenkin
Not secure | 172.18.16.139:8080/job/vulnix/16/console
Dashboard > vulnix > #16
66 derivations with active advisories
async-2.2.4
/nix/store/jxq2qfsp3fah8sk1v9i7gn84amy62rm0-async-2.2.4.drv
CVE CVSSv3
https://nvd.nist.gov/vuln/detail/CVE-2021-43138 7.8
async-2.2.4-r1.cabal
/nix/store/f3ccgcj9z2yk7rg4ha1ibycrmwdpq6ds-async-2.2.4-r1.cabal.drv
CVE CVSSv3
https://nvd.nist.gov/vuln/detail/CVE-2021-43138 7.8
avahi-0.8
/nix/store/aid5dwgqir0spygfn3qgp925w9wm360s-avahi-0.8.drv
CVE CVSSv3
https://nvd.nist.gov/vuln/detail/CVE-2021-26720 7.8
https://nvd.nist.gov/vuln/detail/CVE-2021-3468 5.5
bind-9.18.3
/nix/store/ivv9gv4n0pm87ppzxjdc6lk7d0h2n348-bind-9.18.3.drv
CVE CVSSv3
https://nvd.nist.gov/vuln/detail/CVE-2019-6470 7.5
binutils-2.36

# [Vulnix] Theory of operation

- Pulls all known CVEs from NVD
- Matches a list of derivations against CVE entries
- Whitelisting is used to suppress unwanted results

# [Vulnix] Pros & Cons

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## Pros

- Fast
- Easy integration
- Written in Python - easy to maintain

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## Cons

- Simplistic mapping can lead to false positives / negatives
- Inactive development