Supply Chain Security

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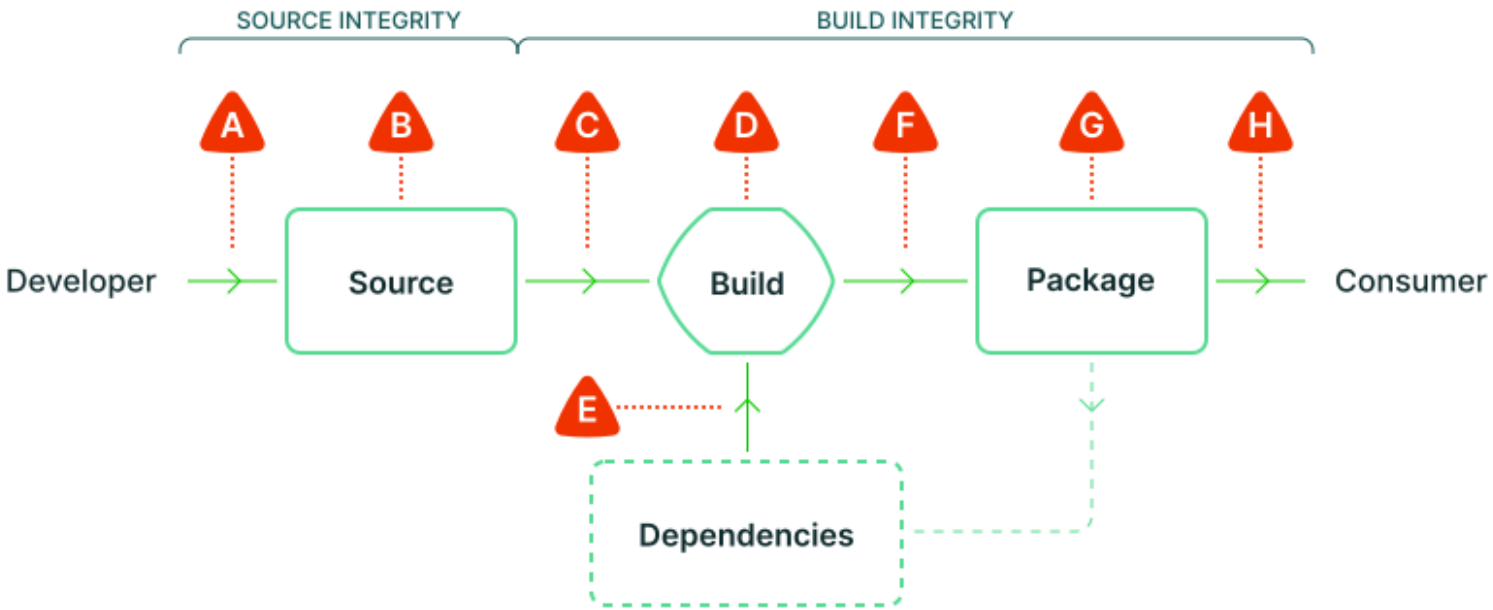
Outline

Problem statement



A Submit unauthorized change
B Compromise source repo
C Build from modified source
D Compromise build process
E Use compromised dependency
F Upload modified package
G Compromise package repo
H Use compromised package

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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Level 2

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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

Nix Tooling SLSA Solution

- package signing during build
- Package signing during sharing
- Package signature verification during testing stages

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.

SBOM (Software Bill of Materials)

- List of software components in a derivation
- Generated at the build time by the build system
- Serves as part of build provenance
- Stored inside of the software package
- Is signed at the build stage

[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