SpringOne

Building A Secure Software Supply Chain MVP

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springone.io

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Introductions

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Rough Agenda

- What is a Secure Software Supply chain?
- How might I evaluate if I’m doing it “right”?
- Let’s put hands on keyboards!

What is it?

Secure Software Supply Chain is a set of practices that enable organizations to adjust the way they deliver software packages – both first- and third-party – from source code to production at a sustained high speed and quality relative to their accepted risk level.

It provides confidence that the code and its dependencies are:

- trustworthy, compliant, up-to-date and release-ready
- as well as ensuring regular scans are in place to detect, report and eliminate new vulnerabilities.
- With a defined set of policies enforced consistently across all systems in the chain, it prevents unauthorized access and prohibits unsigned packages to run.

tl;dr

What does that really mean?

- Verify your source code
- Verify your dependencies
- Protect your builds
- Protect your artifacts and deployments

...and do it all in a repeatable, reproducible way. (Automate!)

Source: CNCF - Evaluating Your Supply Chain Security

Learning to walk

Let’s MVP a Secure Software Supply Chain together.

Let’s:

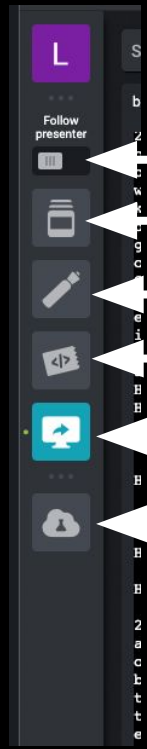
- Validate a commit
  - ...and fail an unverified commit
- Generate a Software Bill of Materials (SBOM)
  - ...to identify and visualize risks in our code and its dependencies
- Build our application
  - ...with a secure base image and components
- Deploy our artifacts
  - ...and check for where our image came from

Before we get started!

There are 7 exercises, following this structure

- Introduction of exercises and context
- Do the work on your own
  - Use the ask for help button and/or unmute if you need help and we will hurry on over.
  - Raise your hand please when you're done working and reading.
- Recap

Strigo Logistics



Panes (Terminal, Dependency Track, etc.)

Quick follow along toggle

Slides

Instructor whiteboard

Code snippets

Instructor lab / screenshare

Your lab!

The items in this green will not be used much or at all during the presentation.

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Workshop Configuration: Exercise 1

Let’s dive in!

Let’s get a few minor tasks out of the way to ensure your environment is setup.

Commit validation (Code I Write): Exercise 2

Control(s):

- Do you require signed commits?

What this solves for:

- Knowing that new code comes from a known and verified source.

Generate SBOM (Code I Use): Exercise 3

Control(s):

- Do you create an SBOM of your own artifacts?

What this solves for:

- Knowing that what's in your build and dependencies comes from a known and verified source.

Check for vulnerabilities (Code I Use (cont.)): Exercise 4

Control(s):

- Do you verify that dependencies meet your minimum thresholds for quality and reliability?
- Do you automatically scan dependencies for security issues and license compliance?
- Do you automatically perform Software Composition Analysis on dependencies when they are downloaded/installed?
- Do you monitor dependencies for updates and security issues?

What this solves for:

- Reduces the likelihood of allowing user-impacting security, licensing, and reliability issues to enter your application
- Helps developers know to inspect new dependencies more thoroughly

Secure base image and components (Build the Image): Exercise 5

Control(s):

- Do you use hardened, minimal containers as the foundation for your build workers?
- Do you maintain your build and test pipelines as Infrastructure-as-Code?
- Do you automate every step in your build pipeline outside of code reviews and final sign-offs?
- Do you network isolate your build workers and pipeline as much as possible?

What this solves for:

- Reduces attack surface
- Improves reliability and resilience through repeatability
- Systematically reduces manual toil

Runtime checks (Run the Image): Exercise 6

Control(s):

- Is every artifact your produce (including metadata and intermediate artifacts) signed?
- Can your downstream consumers verify/validate any artifact they ingest from you before they use/deploy it?

What this solves for:

- Automates the security validation process for promoting artifacts into environments

Cleanup: Exercise 7

In the spirit of a secure supply chain, you don't really know us or where these VM's came from... so please clear from GitHub your:

- GPG Keys
- Access or SSH keys generated

This is an MVP!

Securing a Software Supply Chain is a journey, not a destination so:

- Iterate on it as though it were any other software product
- Prioritize the highest impact, lowest effort things first
- Report *then* enforce
- Version control *everything*
- Automate as you move beyond MVP
  - Do and document what you did
  - Script
  - Config Abstraction/Full automation