The OpenChain Telco SBOM Guide

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Agenda

1. The OpenChain Telco work group
2. Work result: the OpenChain Telco SBOM Guide
3. Content of the Guide
4. OpenChain Telco SBOM validator

Who are we?

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OpenChain Telco WG lead

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OpenChain Telco Validator committer
Here

OpenChain Project

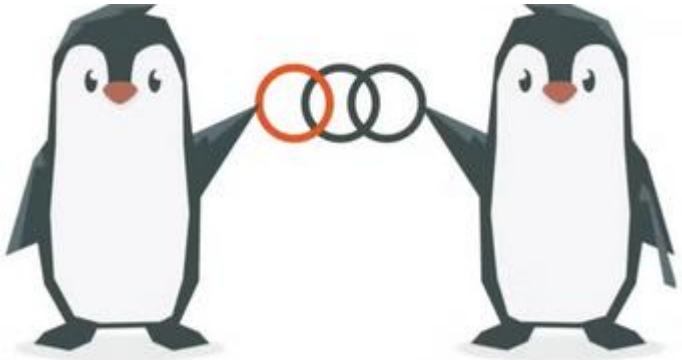
Open community to build standards for supply chain (https://openchainproject.org/)

Standard for open source compliance programs (OpenChain ISO/IEC 5230)

Standard for open source security assurance programs (OpenChain ISO/IEC 18974)

Also provides space for working groups, like:

- AI Working Group
- Tooling Working Group
- (Japan) Automation and SBOM
- Telco
- many more



The OpenChain Telco work group

The OpenChain Telco work group was formed in May 2021

Vision: industry alignment on SBOM

- SBOM fragmentation is bad for the industry, it will only drive cost & complexity
- SBOM format is not a competitive advantage

Goals:

- Define what a quality SBOM is for the telco industry
- Define a precise format for the SBOM
- Follow industry best practices
- Define how and when the SBOM should be distributed

OpenChain Telco work group

We work by consensus.

Everyone can join.

Open mailing list at https://lists.openchainproject.org/g/telco

We have calls the first Thursday of the month (morning and afternoon CET, so all time zones can participate)

Big and small companies, some not from the telco industry.

Work result: the OpenChain Telco SBOM Guide

The OpenChain Telco SBOM Guide

The Guide was approved by the work group in September 2023.
Then it was approved by the OpenChain steering committee to make it an **official OpenChain document**.

https://openchainproject.org/news/2024/07/30/openchain-telco-sbom-guide-general-availability

Translations exist in **French**, **Japanese** and **simplified Chinese**.

We did not find requirements very specific to telco, the **guide can be used by other industries**.

Content of the Guide

Result is practical and operational: precise definition of the SBOM content and format.

SBOM format is SPDX:

- Version 2.2 (ISO version) or 2.3
- JSON or tag:value (both human-readable and machine-readable)

We follow industry requirements:

- NTIA minimum elements
- CISA SBOM types (Design, Source, Build, Analyzed, Deployed)

Requirements have different levels: MUST, SHALL, SHOULD as described in BCP 14 [RFC2119] [RFC8174]

Each requirement is described and followed by a “Verification and reference material” and a “Rationale” section.

Creation information

SBOMs conforming to the OpenChain Telco SBOM Guide MUST contain information as **when they were created** (using the SPDX Created field) and to **which version of the software they were created** (using the SPDX CreatorComment field).

The Creator field MUST:

- contain a line with the **Organization** keyword;
- contain a line with the **Tool** keyword; in this line we MUST have after the Tool keyword the **tool name** and the **tool version**.

The tool name and the tool version SHOULD be separated by hyphen ("-"), no other hyphen SHOULD appear on the line.

SBOMs conforming to the OpenChain Telco SBOM Guide MUST provide their **SBOM Type** as defined by **CISA** in the CreatorComment field.

```
## Creation Information
LicenseListVersion: 3.22
Creator: Organization: Nokia
Creator: Tool: Nokia Compliance Tool - 1.0
Created: 2024-09-09T12:12:33Z
CreatorComment: CISA SBOM type: Source
```

Package information

Each package contains:

- PackageName
- PackageVersion: needed by “NTIA SBOM Minimum elements”
- PackageSupplier: needed by “NTIA SBOM Minimum elements”
- PackageDownloadLocation
- PackageChecksum: recommended by “NTIA SBOM Minimum elements”
- PackageLicenseConcluded
- PackageLicenseDeclared
- PackageCopyrightText
- ExternalRef: to be able to put the Package URL

A package SHOULD be identified by a **Package URL (PURL)**. See https://github.com/package-url/purl-spec

```
## Package Information
PackageName: packageurl-python
SPDXID: SPDXRef-Package-PyPI-packageurl-python-0.15.6
PackageVersion: 0.15.6
PackageDownloadLocation: git+https://github.com/package-url/packageurl-python.git
FilesAnalyzed: false
PackageChecksum: SHA256: a40210652c89022772a6c8340d6066f7d5dc67132141e5284a4db7a27d0a8ab0
PackageHomePage: https://github.com/package-url/packageurl-python
PackageLicenseConcluded: NOASSERTION
PackageLicenseDeclared: MIT
PackageCopyrightText: NONE
PackageSummary: A purl aka. Package URL parser and builder
PackageSupplier: Organization: Pypi https://pypi.org/
ExternalRef: PACKAGE-MANAGER purl pkg:pypi/packageurl-python@0.15.6
```

SBOM Scope

The SBOM SHALL contain all open source software that is delivered with the product including all of the transitive dependencies.

The SBOM SHOULD contain all commercial components.

If some components are not included, they MUST be reported as “known unknowns.”

Other recommendations

SBOM Verification

It is RECOMMENDED to provide a digital signature of the SBOM in order to guarantee the integrity of the SBOM.

SBOM Merger

SBOMs following this Guide can be built from several SBOM files with a well-defined relationship to each other using the relationship definition features in SPDX.

SBOM Confidentiality

SBOMs MAY be subject to confidentiality agreements. A conformant SBOM MUST NOT, however, be subject to any confidentiality agreements that would prevent a recipient from redistributing the parts of the SBOM applicable to software that such recipient has a right to redistribute.

Moving towards 1.1

Clarifications and corrections based on feedback.

- Both PackageChecksum and PackageVerificationCode are allowed as package hash.
- The package hash is RECOMMENDED instead of MANDATORY.
- ExternalRef is RECOMMENDED instead of MANDATORY.
- FilesAnalyzed is no longer MANDATORY.
- Examples are provided for the CISA SBOM Types.
- sbomasm is a better example of SBOM merge tool.
- Add reference to new CISA document.

- Majority of the content added, received comments are under correction

Do not agree?

The guide is developed by a community.

Join us!

Or just file an issue: https://github.com/OpenChain-Project/Telco-WG/issues

OpenChain Telco SBOM validator

Nokia has provided to the community the “**OpenChain Telco SBOM validator**.”

Code is available at

https://github.com/OpenChain-Project/Telco-WG/tree/main/tools/openchain_telco_sbom_validator

Test it and report any errors to https://github.com/OpenChain-Project/Telco-WG/issues

Contributions are warmly welcome in the form of GitHub pull requests.

Example run

```
openchain-telco-sbom-validator test-sbom-01.spdx
2024-09-24 17:58:26,202 - INFO - Input file is test-sbom-01.spdx
+---+-----------------------+-----------------------+---------------+---------------------------------------------+
| # | Error type            | SPDX ID               | Package name  | Reason                                      |
+---+-----------------------+-----------------------+---------------+---------------------------------------------+
| 1 | NTIA validation error | SPDXRef-Package-deb-li | libldap-2.4-2 | Package without a package supplier or package |
|   |                       | bldap-2.4-2-          |               | originator                                  |
|   |                       | 796a192b709a2a2b      |               |                                             |
+---+-----------------------+-----------------------+---------------+---------------------------------------------+
| 2 | Missing mandatory     | SPDXRef-Package-deb-li | libldap-2.4-2 | Supplier field is missing                   |
|   | field from Package    | bldap-2.4-2-          |               |                                             |
|   |                       | 796a192b709a2a2b      |               |                                             |
+---+-----------------------+-----------------------+---------------+---------------------------------------------+
| 3 | Missing mandatory     | SPDXRef-Package-deb-li | libldap-2.4-2 | Checksum field is missing                   |
|   | field from Package    | bldap-2.4-2-          |               |                                             |
|   |                       | 796a192b709a2a2b      |               |                                             |
+---+-----------------------+-----------------------+---------------+---------------------------------------------+
The SPDX file test-sbom-01.spdx is not compliant with the OpenChain Telco SBOM Guide
```

Example run

```
openchain-telco-sbom-validator open-chain-telco-sbom-validator-0.1.spdx
2024-09-24 18:04:01,308 - INFO - Input file is open-chain-telco-sbom-validator-0.1.spdx
The SPDX file open-chain-telco-sbom-validator-0.1.spdx is compliant with the OpenChain Telco SBOM Guide
```


NOKIA