

# **Package-URL Specification Update For SPDX Tech Team August 12, 2025**

# Background

- PURL (Package-URL) and VERS (Version Range Specifier) are very popular specifications in the software supply chain security domain
- The repositories for both specifications are located on GitHub under the package-url organization
  - <https://github.com/package-url/purl-spec>
  - <https://github.com/package-url/vers-spec>
  - There are currently 12 language-level PURL implementations under package-url and more in other projects
  - There is a VERS implementation at: <https://github.com/aboutcode-org/univers> and more in other projects
- Ecma standardization is proceeding under the auspices of TC54-TG2 for both PURL and VERS

# PURL and VERS Adoption

- Package-URL adoption is growing
  - SPDX
  - But also OpenVEX, CSAF 2.0 and CycloneDX
  - **And under fast track consideration for CVE!**
- Version Range Specifier is also used in
  - CSAF 2.0
  - CycloneDX
- Used in many tools, package and vulnerability DBs
  - Rust crates.io
  - OpenSSF OSV and Google OSV
  - Sonatype OSS Index
  - Google deps.dev
  - Microsoft sbom-tool
  - Ecosyste.ms
  - AboutCode tools and data: ScanCode, VulnerableCode, DejaCode and PurlDB
  - and more

# PURL Status

- We plan to submit the PURL v1.0 standard to Ecma on September 1 for expected approval by the Ecma General Assembly in December 2025
- **NB:** The PURL v1.0 standard will be a subset of the specification where the primary content of the standard is a pair of JSON Schemas:
  - <https://github.com/package-url/purl-spec/blob/main/schemas/purl-type-definition.schema.json>
  - <https://github.com/package-url/purl-spec/blob/main/schemas/purl-test.schema.json>
- These schemas replace the former “narrative” definition of PURL Types and standardize the testing primarily by PURL Type
- This change was merged only 2 weeks ago so more refinement is in progress
- The JSON schemas will be provided in human-friendly format in the Ecma standard document and in the specification documentation

# PURL Status [2]

- The major practical change is to shift focus from generic PURL component rules to registered PURL Types
  - Registration requires a PURL Type definition file and a PURL Type Test file (both .json)
  - There are currently 32 registered PURL Types
  - We expect to have at least 50-60 registered PURL Types by the end of 2025 – likely more
- The set of registered PURL Types is a key part of the core specification but will not be part of the Ecma standard
  - Somewhat analogous to the SPDX License List
  - Some versioning for the list of registered PURL Type will probably be needed

# PURL Status [3]

- The pur1-spec repository is currently in flux for major changes to the documentation
  - The primary change is replacing 2 rST files (PURL-SPECIFICATION.rst and PURL-TYPES.rst) with more granular markdown files that can be reused in multiple contexts
  - The new repo structure will be stabilized this week
  - We are setting up a new `packageur1.org` website that will be the primary home for PURL (and VERS) documentation – expected to be launched in 6-8 weeks
- Other focus areas
  - Clearing the backlog of issues and pull requests – especially those for new PURL Types
  - Updating current PURL implementations to use the new JSON Schemas for PURL Type validation and testing
  - Preparing outreach program for January 2026 after approval of the Ecma standard

# VERS Status

- We plan to submit the VERS v1.0 standard to Ecma on March 1 for expected approval by the Ecma General Assembly in June 2026
- The vers-spec repository is currently in flux in order to:
  - Complete replacement of the “narrative” specification with JSON Schemas for VERS definitions and tests
  - Add more structured documentation (markdown) for the Ecma standard and the overall specification
  - Similar process to what we have applied to the pur1-spec repo
- NB: VERS is complementary to PURL
  - Most common use cases are vulnerabilities or dependencies where you express the PURL without a version and use VERS to specify a version range
  - Does not replace the version component of a PURL

# Contact us

- PURL/VERS meetings
  - Biweekly TC54/TG2 meetings on Fridays at 7 AM Pacific – next meeting is August 15
  - Biweekly Community meetings on Wednesdays at 9 AM Pacific – next meeting is August 20
  - See <https://tc54.org/purl/> for details
  - Currently one set of meetings for both PURL and VERS