



# UVM Working Group Releases 1800.2-2020-2.0 Library

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# Working Group Focus

1. Remove obstacles preventing people from moving on from UVM1.1d or UVM1.2

## More reasons to update

2. Improve performance in certain critical areas
3. Fix some bugs
  - Keep in mind that each release has had bug fixes, so the cumulative total from your current version is quite large`

# Backward Compatibility – API Restoration

- APIs have been removed/modified from the library in earlier releases
- To restore compatibility, we added these APIs back, with no documentation and a tag to let a linter know the intent
  - No defines such as the DEPRECATED defines in previous releases
- We made it possible for user code to use both these restored APIs and the new recommended APIs
- There are ~50 instances of API that is restored by 2.0

# Change In Library Philosophy

- OLD
  - Library guides users towards implementing all API updates using deprecation process with old API under define for a while and then removed
- NEW
  - Library implements a superset of all historical API to avoid backward compatibility issues. All API is tagged as current or not so that a third-party lint tool can provide guidance.

# Backward Compatibility – compat\_pkg

- If API has changed semantics, it can also cause run-time compatibility problems
- The 2.0 release introduces a new package, uvm\_compat\_pkg, that can be included along with uvm\_pkg
- It can be included/imported in both 1.2 and 1800.2, and the 1.2 compatible APIs/semantics are maintained between both

# Backward Compatibility – Remainder

- A small amount (mostly undocumented) API has not been restored by default
  - Discussed in release notes along with recommendations
- Some new warnings are implemented, these can be demoted if desired
- The `get_provided_to` API changed expected type of its argument
  - Few lines of new code must be added

# Backward Compatibility Results

- Members in the UVM Working Group have successfully run old user code with the new library
  - Typically with modifications limited to using the compat package printer and demoting some warnings

# Migration Hindrance – Manual Edits

- If your version of the UVM library has manual edits to introduce new features, those edits must be re-done for each new version
- To reduce this migration work, the WG has restructured the library to make it extensible in areas that are known to have been edited
- With 1800.2-2020-2.0, you would need to implement the extension, but for all future library releases, that extension should still work
- Examples: uvm\_resource\_db/uvm\_config\_db, phase execution, uvm\_reg error format

# Performance Enhancements (1)

- Addressed slow performance in build\_phase and/or register configuration
  - Regular Expression optimization (recommended if save/restore not used)
  - Field Macro (apply\_config\_settings) optimization (recommended unless strict LRM semantics are required)
  - uvm\_resource pattern matching optimization (recommended unless undocumented fields have been used)
- See the release notes for details on enabling these optimizations
- Better than workarounds such as setting NO\_DPI defines

# Performance Enhancements (2)

- Introduced a cache for “get\_by\_name” functions in uvm\_reg, uvm\_reg\_block, and uvm\_field
  - For register models with 10k registers, has shown ~90% reduction in runtime of these functions

# Bug Fixes / Enhancements

- 17 bug fixes or other enhancements in release, primarily in registers
- A few examples
  - Bad synchronization when multiple register sequences access the same register simultaneously (Mantis 6966)
  - Register access hang due to NULL map (Mantis 6273)
  - Uvm\_config\_db::set ignored regex when context is supplied (Mantis 6556)
  - Uvm\_reg\_field::write() did not call set() causing errors upon read (Mantis 7240)

# Your Next Steps

- Accellera library can be downloaded from Accellera website
- If you get your library from someone else such as your simulation vendor, you can ask them for their plans to distribute the 1800.2-2020-2.0 version
- Consult the README file in the top level of the library for the (short) list of issues that may require changes to existing code
- Compile and run with your existing code!

# Questions

