



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

