

The state of WebAssembly debugging in LLDB

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WebAssembly Debugging with LLDB

- Comprehensive support for debugging WebAssembly (Wasm)
  - Any **language** supported by LLDB
  - Any **runtime** implementing the GDB remote protocol



https://archive.fosdem.org/2026/schedule/event/87ZLQV-wasm-debugging-lldb/

WebAssembly Runtime Support

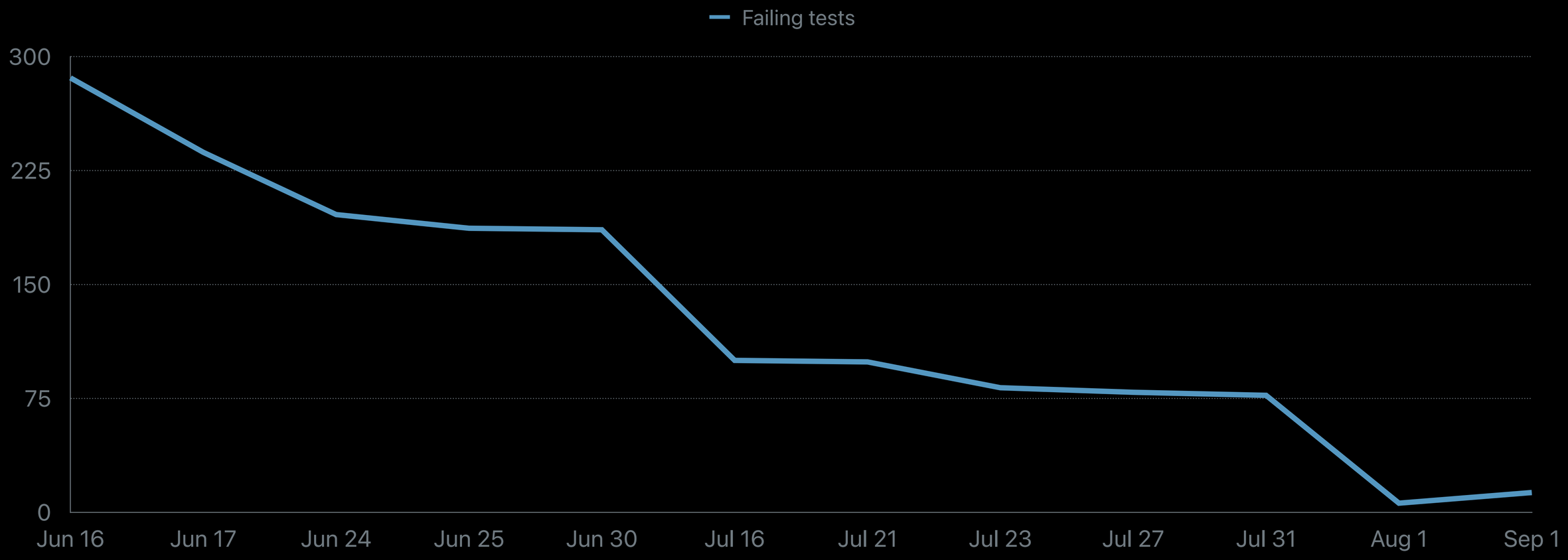
	Call Stack	Locals	Globals	Stack Values
V8†	✓	✓	✓	✓
WAMR†	✓	✓	✓	✗
WasmKit†	✓	✓	✓	✗
Wasmtime	✓	✓	✓	✓
WebKit	✓	✓	✓	✓

† some runtimes require enabling debugging at build time

Adding Wasm to the LLDB Test Suite

- LLDB has ~1500 integration tests
  - Compile test binaries and debug them with LLDB
  - Build for `wasm32-wasip1`
  - Launch them under a Wasm runtime (WasmKit & WAMR)
- Unsupported tests are skipped
  - Signals, Thread, Shared libraries
  - Threads
  - Shared libraries

Adding Wasm to the LLDB Test Suite



Pass	Unsupported	Failing
615	858	13

Bugs Uncovered by the Test Suite

- LLDB: 20+ bugfixes
- LLVM
  - One bug in the Wasm backend (#210120)
  - One bug in Wasm debug info (#211826)
- WasmKit
  - 10 bugfixes
  - 3 new debugging features

Summary

- Comprehensive support for WebAssembly in LLDB
  - LLDB's approach has become the standard
  - Test coverage takes it from experimental to production

- Next steps
  - Run the Wasm test suite in CI
  - ~~Add documentation to the website~~

https://lldb.llvm.org/resources/wasm-testing.html



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