Jump-Start Software-Driven Hardware Verification with a Verification Framework

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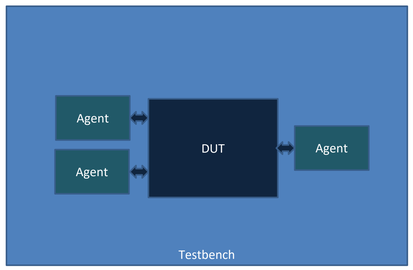
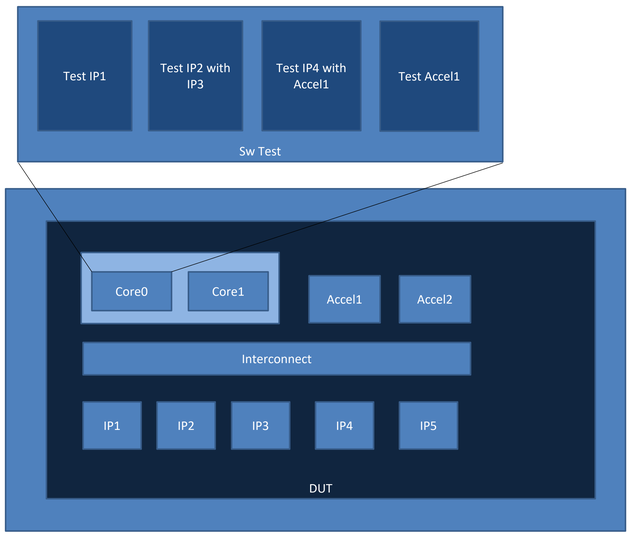
Hardware Verification



Verify functionality from outside the design
Lots of parallelism
Testbench wraps around the IP
Verification frameworks like UVM boost productivity

Software-Driven Hardware Verification



Verify integration of IPs from inside the design
Lots of parallelism
Test software typically “bare metal”
Labor-intensive to create test variants

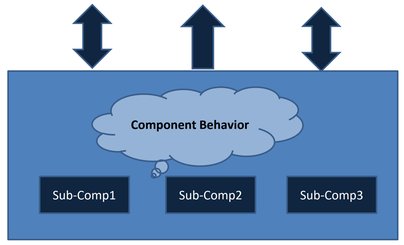
Software-Driven Verification Challenges

Lacking OS-provided services
Reuse is ad-hoc
Little support for test-creation automation
Little support for easily creating test variants
Minimal infrastructure
Resource-constrained environments

A Framework for Software-Driven Hardware Verification

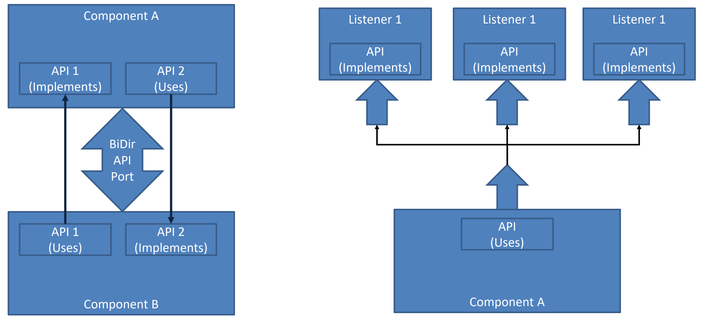
Facilitates encapsulation and reuse
Provides key infrastructure
Enables automation

Component Model and Factory



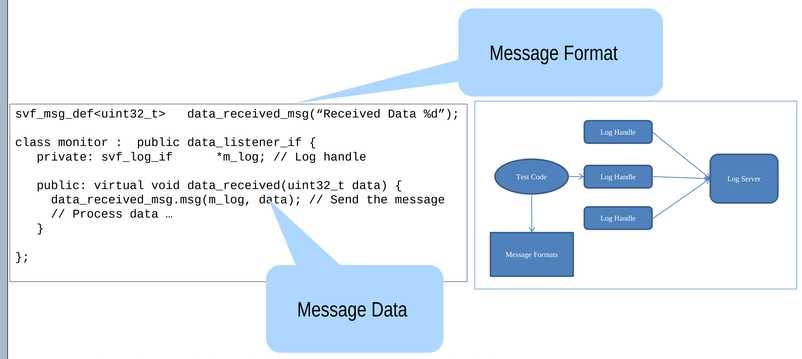
Enables test functionality to be encapsulated
Factory makes it easy to create test variants
Build, connect, execute phasing

Delegated Implementation



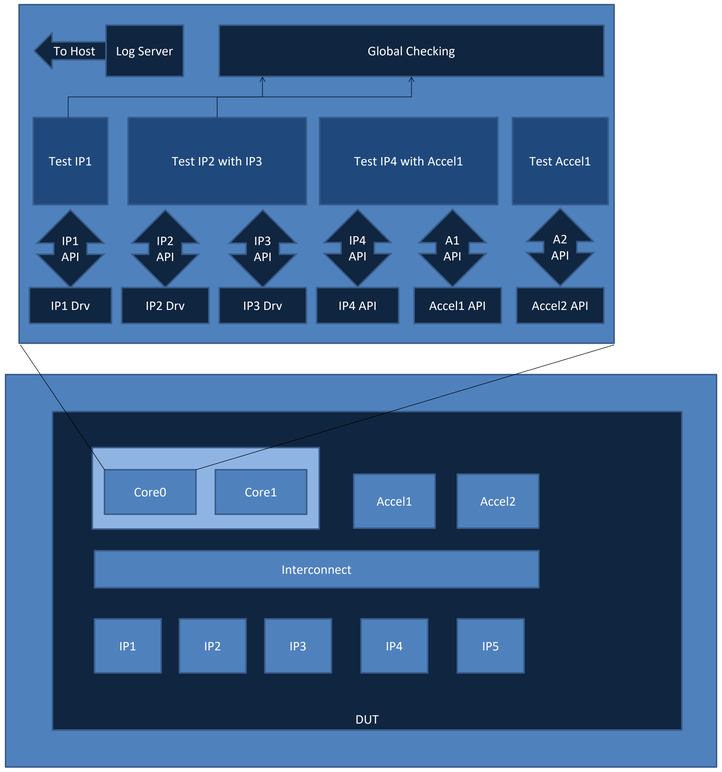
UVM delegates implementation via transactions
Software delegates implementation via APIs
SVF provides uni- and bi-directional API delgation

Efficient Logging



Logging is critical for analysis and debug
Logging introduces significant overhead
SVF splits message format, arguments for efficiency
Logging and message rendering separated for efficiency

Software-Driven Hardware Verification with a Framework



“Test” code clearly separated from “driver” code
Efficient logging
Global checking via analysis API ports
Easy to create test variants by replacing components

Conclusion

Verification frameworks boost productivity
A software-driven verification framework
- Facilitates component encapsulation and reuse
- Tailored to specific needs of software-driven verification
- Enables automation
- Simplifies creation of test variants