



ATI TECHNOLOGIES INC.
R400 Performance Verification

June 14, 2017

AMD1044_0186698

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❖ Performance Verification

- **Application Analysis**
 - Extraction and analysis of benchmark application data
 - Analyze application data against R400 models
- **Directed Tests**
 - Fill rate tests
 - Complex images and shaders
 - Application specific algorithms
- **Application Level Tests**
 - Driver benchmark traces
 - Performance related support for hardware and driver groups

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❖ Directed Tests (PrimLib)

- R400 Performance Verification Test Plan spec
 - Approx 75% complete
- Geometry class support in PrimLib
 - Approx 75% complete
- Directed tests status
 - Approx 20% complete
 - Tests include pv_color_depth, pv_basic_texture, pv_depth_cache
 - Currently have about 20 individual test cases
 - Includes basic fill rates for color, depth, and some texture

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❖ R400 Performance

- Some very, very preliminary results...
 - Have run several simple fill rate tests on the simulator
 - Working with the designers to determine the best way interpret the data
 - Do not have optimal environment yet...

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❖ R400 Capture and Playback Tools

- Complementary mechanism to PrimLib
 - Allow driver traces to be captured and simulated
 - Used by diagnostics
 - R400 cannot easily use emulator traces
- Effort falls across multiple groups
 - Binary dump format spec written and reviewed (Toronto HW Perf Group)
 - Capture design & impl (Toronto QS Group) just getting started
 - Pkt reconstruction/playback tools starting shortly (Marlboro)
 - Coordinating weekly meetings

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❖ Leveraging R300 Knowledge

- Trip to SiV in Sep to discuss R300 performance verification experience
 - Tools used
 - Methods employed
- Effort to port tgl to primlib
 - Allow R300 synthetic and high level tests to be run on R400 (SiV)
- Benefiting from some detailed R300 application analysis
 - Dxlogger

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❖ Performance Verification

- Need performance counters and/or verilog monitors defined and implemented for performance analysis (and regression)
- Regression support for pv tests in simulator and IKOS
- Need R400 packet capture and reconstruction support completed
- Support for complex shader tests
- Availability of drivers and optimized shaders

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❖ Resources

- Functional verification engineer now helping out with performance verification
- Current staffing level still below plan

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❖ Goals for next month...

- Complete at least 50% of directed tests
- Complete support to automatically extract performance information from a simulation run
- Some performance regressions operational as part of nightly build
- R400 packet capture and playback implementation complete
- Simple driver trace through simulation?

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