

## RAYTRACING PERFORMANCE REVEALED

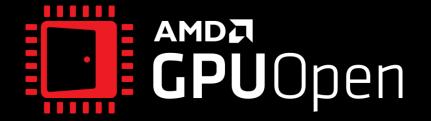
HOW TO OPTIMIZE YOUR GAME WITH THE

RADEON™ DEVELOPER TOOL SUITE

**CHRISTOPHER HESIK** 

**CAN ALPER** 





# **RAYTRACING PERFORMANCE REVEALED**

# Part 1: Radeon<sup>™</sup> GPU Profiler

- How does the use of ray tracing impact my frame?
- What is the performance of my ray tracing pipelines?
- What is the relative cost of my ray generation, traversal, any hit, closest hit, and miss shaders?

# Part 2: Radeon<sup>™</sup> Raytracing Analyzer

- How can I optimize an acceleration structure to reduce intersection cost?
- Did I apply the correct flags and transform onto my geometry?



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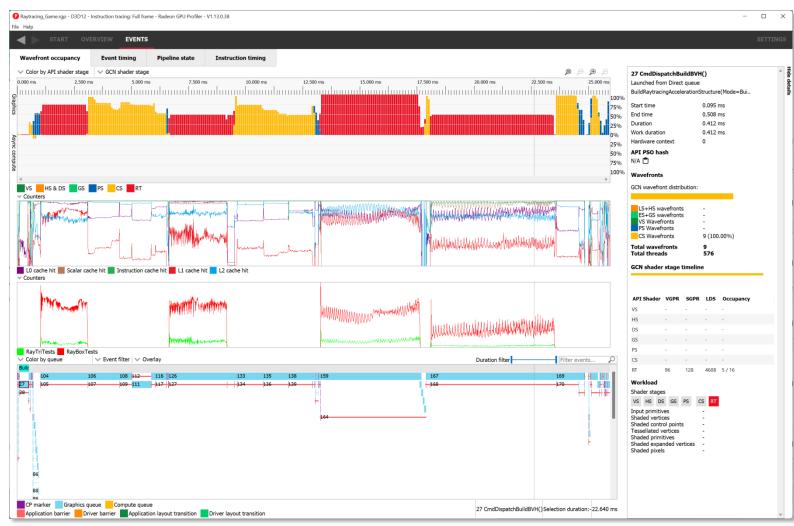
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### **RADEON GPU PROFILER**



#### **GPU Performance analysis tool**

- Frame-based performance analysis
- Exposes hardware-level profiling data
- Identifies performance bottlenecks
- Visualizes GPU workloads intuitively



## **RGP CONTENT ON GPUOPEN.COM**



	TOOLS	SDK5	SAMPLES	PERFORMANCE	•	DOCUMENTATION		
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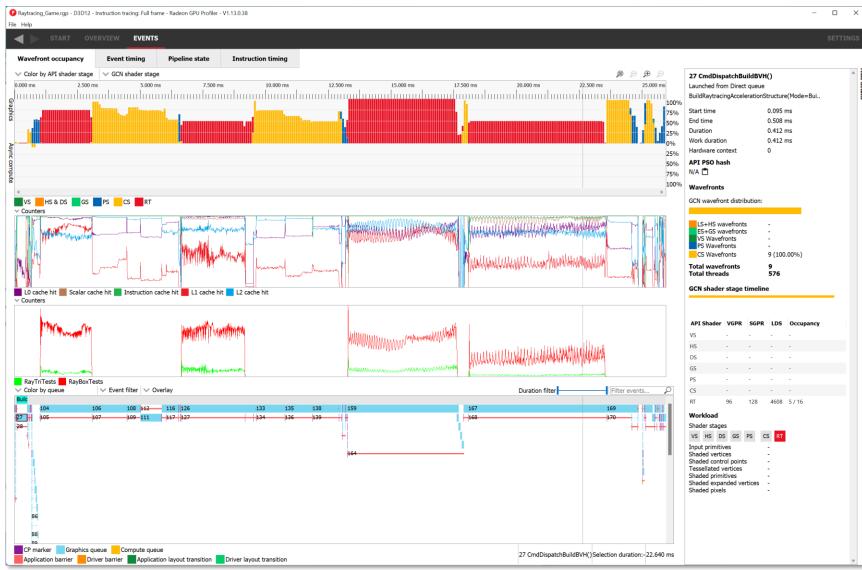
https://gpuopen.com/rgp/

### https://gpuopen.com/learn/radeon-gpu-profiler-1-12-released/

https://gpuopen.com/videos/amd-rdna2-rgp-1-10/



### **RADEON GPU PROFILER VIEWS**



- Overview
  - Frame summary
  - Barriers
  - Context rolls
  - Most expensive events
  - Render/depth targets
  - Pipelines
  - Device configuration
- Events
  - Wavefront occupancy
  - Event timing
  - Pipeline state
  - Instruction timing



## WHICH RAY TRACING EVENTS ARE THE MOST EXPENSIVE?

#### Overview -> Most expensive events

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	Queue Direct queue	Event ID           167           159           126           104           27           128           106           133           135           138           169	Event           DispatchRays <indirect>(3768320, 1, 1)           DispatchRays<indirect>(2560, 1440, 1)           Dispatch(320, 180, 1)</indirect></indirect></indirect></indirect></indirect></indirect></indirect></indirect>	Duration           5.519 ms           5.519 ms           2.559 ms           2.559 ms           2.070 ms           0.412 ms           0.328 ms           1.384 ms           1.155 ms           1.092 ms           0.982 ms           0.984 ms	Work duration           5.519 ms           5.519 ms           2.559 ms           2.559 ms           2.070 ms           0.412 ms           0.328 ms           1.384 ms           1.155 ms           1.052 ms           0.982 ms	User Event	VS           VS	HS HS HS HS HS HS HS HS HS	DS C DS C DS C DS C DS C DS C DS C DS C	INS         PS           IS         PS	<ul> <li>CS</li> <li>C</li></ul>	RT RT RT RT RT RT RT RT RT			



## WHICH RAY TRACING PIPELINE IS THE MOST EXPENSIVE?

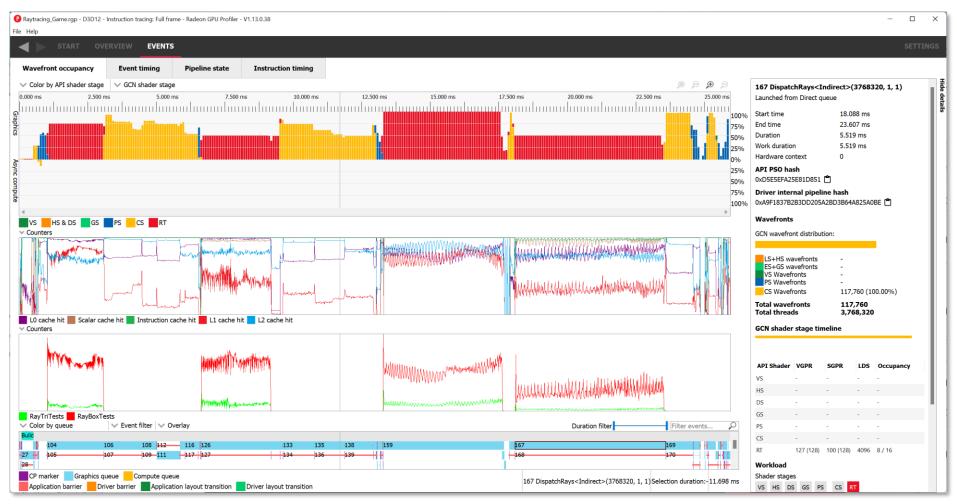
#### Overview -> Pipelines

P Raytracing_Game.rgp - ille Help	D3D12 - Instru	ction tracing: Full frame - Radeon GPU Pro	filer - V1.13.0.38															– 🗆 X
START	OVERVI	EW EVENTS																SETTINGS
Frame summary Barriers Context rolls	Pipeline s All detected	ummary d pipeline configurations																
Most expensive events	VS HS	DS GS PS CS RT 43 pipeli	ines VS HS DS	GS PS CS	7 pipelines													
Render/depth targets Pipelines	VS HS			GS PS CS F	4 pipelines													
Device configuration	Pipelines																Filter	pipelines ${\cal O}$
	Bucket ID	Hash (API PSO + API shader)	Duration	Event Count	Avg event duration	Occupancy	VGPRs	SGPRs	Scratch mem	Wave mode	Stage	s				Ť		
	> 33	0xD5E5EFA25E81D851	8.406 ms [32.39%]	3 [1.21%]	2.802 ms	8 - 8	127 - 127	100 - 100	No		VS	HS	DS G	S PS	CS	RT		
	> 44	0x56404370C70516E5	4.615 ms [17.78%]	5 [2.02%]	0.936 ms	16 - 16	45 - 45	90 - 90	No		VS	HS	DS G	S PS	CS	RT		
	> 26	0x4CBF9D9F7A373E81	2.070 ms [7.98%]	1 [0.40%]	2.070 ms	14 - 14	71 - 71	64 - 64	No		VS	HS	DS G	S PS	CS	RT		
	> 28	0x474008421E24C572	1.389 ms [5.35%]	2 [0.81%]	0.694 ms	16 - 16	48 - 48	72 - 72	No		VS	HS	DS G	S PS	CS	RT		
	> 27	0x4A2F3A5392F421BE	1.384 ms [5.33%]	1 [0.40%]	1.384 ms	16 - 16	41 - 41	85 - 85	No		VS	HS	DS G	S PS	CS	RT		
	> 35	0x95EC88218130A5CD	1.155 ms [4.45%]	1 [0.40%]	1.155 ms	12 - 12	80 - 80	96 - 96	No		VS	HS	DS G	S PS	CS	RT		
	> 36	0x93ED69053FB85C21	1.092 ms [4.21%]	1 [0.40%]	1.092 ms	11 - 11	87 - 87	104 - 104	No		VS	HS	DS G	S PS	CS	RT		
	> 37	0xC6488C579EC9F24E	1.052 ms [4.05%]	1 [0.40%]	1.052 ms	8 - 8	128 - 128	84 - 84	No		VS	HS	DS G	S PS	cs	RT		
	Bucket I	D 33 API PSO hash 0xD5E5EF	A25E81D851 🗂 I	nternal pipeline	<b>hash</b> 0xA9F1837B2B3D	D205A2BD3B644	A825A0BE 🗂										View	in pipeline state
	Events																	
	Event ID	Event	Duration						~									
	167	DispatchRays <indirect>(3768320, 1, 1)</indirect>	5.519 ms [21.279	6]														
	126	DispatchRays <indirect>(2560, 1440, 1)</indirect>	2.559 ms [9.86%]															
	128	DispatchRays <indirect>(2560, 1440, 1)</indirect>	0.328 ms [1.26%]															



## WHICH PARTS OF MY FRAME ARE USING RAYTRACING?

#### • Events -> Wavefront occupancy





## DOES MY USE OF RAYTRACING FIT MY BUDGET?

#### Events -> Event timing

elp											
	OVERVIEW EVENT	S									
vefront occupa	ncy Event timing	Pipeline state	Instruction timing								
pse tree 🛛 🗸 🤇	Group by user events	V Color by queu	Je				DispatchRay	<b>S</b> 🔊 💬 🗩 🗩		/s <unified>(3768320, 1, 1</unified>	1)
		0.000 ms	3.750 ms	7.500 ms	11.250 ms	15.000 ms	18.750 ms	22.500 ms	Launched from Dire	ect queue	
		luuuut	ta an	muuluumutuum	anhaanataan	anhannataan	mhannataan	mhaanaataanaa -	Start time	13.277 ms	
	nified>(2560, 1440, 1)		2.070 ms						End time	17.690 ms	
	direct>(2560, 1440, 1) direct>(2560, 1440, 1)			2.559 ms 0.328 n					Duration	4.413 ms	
	nified>(3768320, 1, 1)			0.526 1	115	4.4	13 ms		Work duration	4.413 ms	
	nified>(3768320, 1, 1)						69 ms		Hardware context	0	
	nified>(3768320, 1, 1)						066 ms		API PSO hash		
	nified>(3768320, 1, 1) nified>(3768320, 1, 1)						066 ms .066 ms		0x56404370C7051	6E5 📋	
	direct>(3768320, 1, 1)				1	1	.000 m3	5.519 ms	Driver internal p	ipeline hash	
										E0F5CA36CA46449FF07 📋	
									Wavefronts		
									GCN wavefront dist	tribution:	
									LS+HS wavefrom	nts -	
									ES+GS wavefrom VS Wavefronts	nts -	
									PS Wavefronts	-	
									CS Wavefronts	117,760 (100.00%	o)
									Total wavefronts Total threads	117,760 3,768,320	
									GCN shader stag	e timeline	
									API Shader VGP	R SGPR LDS Occupan	ncy
									VS -		
									HS -		
									DS -		
									GS -		
									PS -		
										8) 90 (128) 2048 16 / 16	
								Ψ		5 55 (120) 2040 10/10	
		4	1-16-1- (2762220 1 1)					•	Workload		
narker 📃 Grapl	hics queue 📒 Compute queue	e 159 DispatchRays <u< td=""><td>Inified&gt;(3768320, 1, 1)</td><td></td><td></td><td></td><td>Selectio</td><td>n duration: 4.413 ms 14.154 ms</td><td>Shader stages</td><td></td><td></td></u<>	Inified>(3768320, 1, 1)				Selectio	n duration: 4.413 ms 14.154 ms	Shader stages		



## DOES MY USE OF RAYTRACING FIT MY BUDGET?

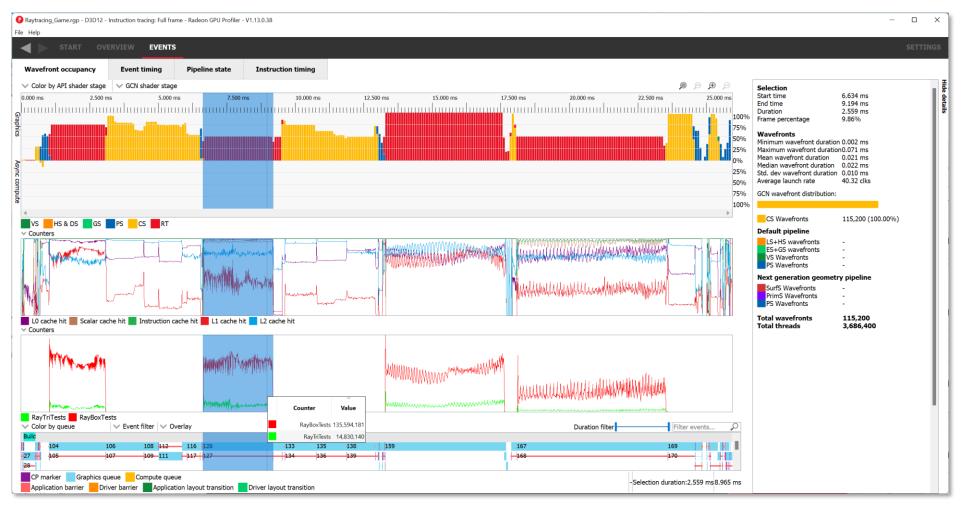
#### Events -> Event timing

elp											
	OVERVIEW EVENTS	s									
vefront occupanc	y Event timing	Pipeline state	Instruction timing								
pse tree 🛛 🗸 Gro	up by user events	V Color by queu	ie				DispatchRays	C 🕀 🔍 🔍 🛇		ys <unified>(3768320, 1, 1</unified>	1)
		0.000 ms	3.750 ms	7.500 ms	11.250 ms	15.000 ms	18.750 ms	22.500 ms	Launched from Dir		
4 DispatchRays <unifie< td=""><td>d&gt;(2560, 1440, 1)</td><td></td><td>2.070 ms</td><td></td><td></td><td></td><td></td><td></td><td>Start time End time</td><td>13.277 ms 17.690 ms</td><td></td></unifie<>	d>(2560, 1440, 1)		2.070 ms						Start time End time	13.277 ms 17.690 ms	
DispatchRays <indire< td=""><td></td><td></td><td>21070110</td><td>2.559 ms</td><td></td><td></td><td></td><td></td><td>Duration</td><td>4.413 ms</td><td></td></indire<>			21070110	2.559 ms					Duration	4.413 ms	
3 DispatchRays < Indire				0.328	ms				Work duration	4.413 ms	
9 DispatchRays <unifie 0 DispatchRays<unifie< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>413 ms 069 ms</td><td></td><td>Hardware context</td><td>0</td><td></td></unifie<></unifie 							413 ms 069 ms		Hardware context	0	
1 DispatchRays <unifie< td=""><td>ed&gt;(3768320, 1, 1)</td><td></td><td></td><td></td><td></td><td>0.</td><td>066 ms</td><td></td><td>API PSO hash</td><td></td><td></td></unifie<>	ed>(3768320, 1, 1)					0.	066 ms		API PSO hash		
2 DispatchRays <unifie< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>.066 ms</td><td></td><td>0x56404370C7051</td><td>6E5 📋</td><td></td></unifie<>							.066 ms		0x56404370C7051	6E5 📋	
3 DispatchRays <unifie 7 DispatchRays<indire< td=""><td></td><td></td><td></td><td></td><td>I</td><td></td><td>0.066 ms</td><td>5.519 ms</td><td>Driver internal p</td><td>ipeline hash</td><td></td></indire<></unifie 					I		0.066 ms	5.519 ms	Driver internal p	ipeline hash	
										E0F5CA36CA46449FF07 📋	
									Wavefronts		
									GCN wavefront dis	tribution	
									GCN waverront dis	tribution:	
										- 1-	
									LS+HS wavefro ES+GS wavefro		
									VS Wavefronts	-	
									PS Wavefronts CS Wavefronts	- 117,760 (100.00%	5)
									Total wavefronts		· ·
									Total threads	3,768,320	
									GCN shader stag	e timeline	
									API Shader VGP	R SGPR LDS Occupan	су
									VS -		
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									GS -		
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									RT 45 (4	8) 90 (128) 2048 16 / 16	
		4						Þ.	Workload		
arker Graphics	queue 🛛 Compute queue	159 DispatchRavs <u< td=""><td>nified&gt;(3768320, 1, 1)</td><td></td><td></td><td></td><td>Selectio</td><td>n duration: 4.413 ms 14.154 ms</td><td>Shader stages</td><td></td><td></td></u<>	nified>(3768320, 1, 1)				Selectio	n duration: 4.413 ms 14.154 ms	Shader stages		



### WHICH PARTS OF MY FRAME ARE PERFORMING THE MOST RAY TESTS?

#### Events -> Wavefront occupancy





### **EVENTS -> PIPELINE STATE**

ytracing_Game.rgp - D3D12 - Instruction tracing: Full fr		13.0.30											- 0
elp													
START OVERVIEW	rs												
avefront occupancy Event timing	Pipeline state	Instruction ti	ming										
apse tree V Group by user events													Filter event tree
164 ResourceBarrier()													
165 Dispatch(920, 1, 1)													
166 ResourceBarrier()	Shader table	ISA Inform	nation										
167 DispatchRays <indirect>(3768320, 1, 1)</indirect>						-				<b>A</b>			
68 ResourceBarrier()													
69 Dispatch(320, 180, 1)													
170 ResourceBarrier()					Ray ge	eneration	Traversa	<		Ht? Yes	Closest hit		
171 DrawIndexedInstanced(3, 1, 0, 0, 0)						140/					25 440		
172 DrawIndexedInstanced(6, 1, 0, 0, 0)					15.	.11%	57.25%		1	<b>Y</b>	25.44%		
73 ResourceBarrier()									1	No			
74 DrawIndexedInstanced(600, 1, 0, 0, 0)									1	T			
75 DrawIndexedInstanced(600, 1, 0, 0, 0)							*						
76 CmdBarrierResolveQueryTimestampStall()													
77 CmdBarrierResolveQueryCopy()													
78 CmdBarrierBlitSync()							Intersecti	an An	ny hit		Miss		
							111 March 100 100 100 100 100 100 100 100 100 10						
180 ClearRenderTargetView()								0.:	.32%		1.51%		
180 ClearRenderTargetView() 181 CmdPostComputeColorClear()								0.1	32%		1.51%		
180 ClearRenderTargetView() 181 CmdPostComputeColorClear() 182 DrawIndexedInstanced(120, 1, 0, 0, 0)	Shader Tabl	e						0.1	32%		1.51%		
180 ClearRenderTargetView() 181 CmdPostComputeColorClear() 182 DrawIndexedInstanced(120, 1, 0, 0, 0) 183 DrawIndexedInstanced(120, 1, 0, 0, 0)			riven by the sl	nader tabl	le entries with the	e highest pr	essure on each reso	0.3		l	1.51%	✓ Show filters	Shader search
180 ClearRenderTargetView()           181 CmrdPostColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)	Allocated	resources are d	2002-012-M-022-202					urce, regardless of the	e call count.	Instruction bit count *			1
180 ClearRenderTargetView()           181 CmdPostComputEctolorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)	Allocated Export name	resources are d	Туре	VGPRs	Stack size (B)	LDS (B) S	Scratch memory (B)	urce, regardless of the Total latency (clks) *	e call count.	<sup>1</sup> Instruction hit count *	Call count *	API shader hash	Internal pipeline
180 ClearRenderTargetView()           181 CmdPostComputColociClear()           182 DrawnidexeedInstanced(120, 1, 0, 0, 0)           183 DrawindexeedInstanced(120, 1, 0, 0, 0)           184 DrawnidexeedInstanced(120, 1, 0, 0, 0)           185 DrawnindexeedInstanced(120, 1, 0, 0, 0)           185 DrawnindexeedInstanced(120, 1, 0, 0, 0)           185 DrawnindexeedInstanced(120, 1, 0, 0, 0)	Allocated Export name TraceRaysAmdl	resources are d	<b>Type</b> Traversal	VGPRs 101	Stack size (B)	LDS (B) S 4,096 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240	e call count. Instruction cost (%) 57.25	5,404,930	<b>Call count *</b> 1,159	API shader hash 0xAAA1CCC200000000E6358C99C24C2C9D	Internal pipeline 0x89D6BEBF73517
180 ClearRenderTargetView()           181 CmdPostComput&ColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           187 DrawIndexedInstanced(1584, 1, 0, 0, 0)	Allocated Export name TraceRaysAmdl 0xD526F1147E	I resources are d Internal 3562CB4_RayGe	<b>Type</b> Traversal Ray generation	VGPRs 101 121	<b>Stack size (B)</b> 128 336	LDS (B) 5 4,096 0 4,096 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536	a call count. <b>Instruction cost (%)</b> 57.25 15.11	5,404,930 758,347	Call count * 1,159 988	API shader hash 0xAAA1CCC200000000E6358C99C24C2C9D 0xD526F1147B562CB4	Internal pipeline 0x89D6BEBF73517 0x123009F7A9AE0
180 ClearRenderTargetView()           181 CmPlostComputeColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(1864, 1, 0, 0, 0)           187 DrawIndexedInstanced(1544, 1, 0, 0, 0)           188 DrawIndexedInstanced(1544, 1, 0, 0, 0)	Allocated Export name TraceRaysAmdi 0xD526F1147E 0xEEE4A4D071	I resources are d Internal 3562CB4_RayGe 132E286_CH5_1	Type Traversal Ray generation Closest hit	VGPRs 101 121 72	<b>Stack size (B)</b> 128 336 96	LDS (B) 5 4,096 0 4,096 0 128 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,986,382	e call count. Instruction cost (%) 57.25 15.11 6.35	5,404,930 758,347 299,017	<b>Call count *</b> 1,159 988 251	API shader hash 0xAAA1CCC20000000E6358C99C24C2C9D 0xD526F11478552C84 0xEE4A4D07132E286	<b>Internal pipeline</b> 0x89D6BEBF73517 0x123009F7A9AE0 0x9A790BCF1976
180 ClearRenderTargetView()           181 CmdPostComputeColorClear()           182 Drawndroxedinstanced(120, 1, 0, 0, 0)           183 Drawndroxedinstanced(120, 1, 0, 0, 0)           184 Drawndroxedinstanced(120, 1, 0, 0, 0)           185 Drawndroxedinstanced(120, 1, 0, 0, 0)           185 Drawndroxedinstanced(120, 1, 0, 0, 0)           186 Drawndroxedinstanced(154, 1, 0, 0, 0)           187 Drawndroxedinstanced(154, 1, 0, 0, 0)           188 Drawndroxedinstanced(1564, 1, 0, 0, 0)           188 Drawndroxedinstanced(154, 1, 0, 0, 0)           188 Drawndroxedinstanced(154, 1, 0, 0, 0)	Allocated Export name TraceRaysAmd 0xD526F1147P 0xEEE4A4D071 0x0232FAF835	I resources are d Internal 3562CB4_RayGe 132E286_CHS_1 35A02A_CHS_5	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98	<b>Stack size (B)</b> 128 336 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0	Scratch memory (B)	urce, regardless of the <b>Total latency (clks) *</b> 44,956,240 11,867,536 4,986,382 4,743,010	e call count. Instruction cost (%) 57.25 15.11 6.35 6.04	5,404,930 758,347 299,017 382,756	<b>Call count *</b> 1,159 988 251 298	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F11478552C84 0xEEE4A4D07132E286 0x0232FAF83353A02A	<b>Internal pipeline</b> 0x89D6BEBF73517 0x123009F7A9AE0 0x9A790BCF1976 0xC6DC5D70B813
179 CmdPteComputeColorClear()           180 ClearkenderTargetVlew()           181 CmdPastComputeColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(154, 1, 0, 0, 0)           188 DrawIndexedInstanced(1584, 1, 0, 0, 0)           189 DrawIndexedInstanced(1584, 1, 0, 0, 0)           189 DrawIndexedInstanced(1584, 1, 0, 0, 0)           190 CmdBarrierResolveCuery(Cuery)(InterstangStall())           191 CmdBarrierResolveCuery(Copy()	Allocated Export name TraceRaysAmdl 0xD526F1147E 0xEE4A400T 0x0232FAF835 0x0232FAF835	Internal 3562CB4_RayGe 132E286_CHS_1 35A02A_CHS_5 35A02A_CHS_6	Type Traversal Ray generation Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98	<b>Stack size (B)</b> 128 336 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 2,816 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720	a call count. Instruction cost (%) 57.25 15.11 6.35 6.04 3.85	5,404,930 758,347 299,017 382,756 219,775	Call count * 1,159 988 251 298 119	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562C84 0x252cF43535A02A 0x0232cFA83535A02A	Internal pipeline   0x89D6BEBF73517 0x123009F7A9AE0 0x9A7908CF1976 0xC6DC5D70B813 0xF049B3C4B935A
180 ClearRenderTargetView()           181 CmdPostComputeColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(154, 1, 0, 0, 0)           186 DrawIndexedInstanced(154, 1, 0, 0, 0)           189 DrawIndexedInstanced(154, 1, 0, 0, 0)           189 DrawIndexedInstanced(154, 1, 0, 0, 0)           190 CmdBarrierResolveQueryTimestampStall()           191 CmdBarrierResolveQueryTimestampStall()	Allocated Export name TroceRaysAmdl 0x5526F1147E 0x6252F61147E 0x6232FAF835 0x6232FAF835 0x6232FAF835	Internal 3562CB4_RayGe 132E286_CHS_1 355A02A_CHS_5 35A02A_CHS_d 132E286_CHS_4	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72	<b>Stack size (B)</b> 128 336 96 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 2,816 0 128 0	Scratch memory (B)	urce, regardless of the <b>Total latency (clks) *</b> 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301	e call count. Instruction cost (%) 57.25 15.11 6.35 6.04 3.85 3.39	5,404,930 758,347 299,017 382,756 219,775 147,153	<b>Call count *</b> 1,159 988 251 298 119 80	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562CB4 0xEEE4A4D07132E286 0x0232FAF8355A02A 0x2232FAF8355A02A 0xEEE4A4D07132E286	Internal pipeline 0x89D68EBF73517 0x123009F7A9AE0 0x9A7908CF1976 0x60C5D708813 0xF049B3C48935A 0x47EC2AE332493
180 ClearRenderTargetView()           181 CmPOstComputeColorClear()           182 DrawhdrexedInstanced(120, 1, 0, 0, 0)           183 DrawhdrexedInstanced(120, 1, 0, 0, 0)           184 DrawhdrexedInstanced(120, 1, 0, 0, 0)           185 DrawhdrexedInstanced(120, 1, 0, 0, 0)           186 DrawhdrexedInstanced(120, 1, 0, 0, 0)           186 DrawhdrexedInstanced(154, 1, 0, 0, 0)           187 DrawhdrexedInstanced(1584, 1, 0, 0, 0)           188 DrawhdrexedInstanced(1584, 1, 0, 0, 0)           189 DrawhdrexedInstanced(1584, 1, 0, 0, 0)           190 CmdBarrierResolveQueryCompy()           191 CmdBarrierResolveQueryCopy()           192 ResourceBarrier()	Allocated     Export name     TraceRaysAmdl     0x0526F1147P     0xEEE4A4D071     0x0232FAF835     0x0232FAF835     0x6EE4A4D071     0x76889BD250	Internal 3562CB4_RayGe 132E286_CH5_1 35SA02A_CH5_5 35SA02A_CH5_d 132E286_CH5_4 0C32E44_CH5_8	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79	<b>Stack size (B)</b> 128 336 96 96 96 96 96	LDS (B) S 4,096 0 4,096 0 128 0 2,816 0 128 0 128 0 384 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632	e call count. Instruction cost (%) ' 57.25 15.11 6.35 6.04 3.85 3.39 1.86	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950	Call count * 1,159 988 251 298 119 80 101	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x222FAF83535A02A 0x6E84A4D07132E286 0x768898D250C32E44	Internal pipeline 0x89D68EBF73517 0x123009F7A9AE0 0x9A7908CF1976 0x60C5D708813 0xF049B3C48935A 0x47EC2AE332493 0x98499C9708918
180 ClearRenderTargetView()           181 CmdPostComputeColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(184, 1, 0, 0, 0)           187 DrawIndexedInstanced(184, 1, 0, 0, 0)           188 DrawIndexedInstanced(184, 1, 0, 0, 0)           190 CmdBarrierBesolveCueryTimestampStall()           191 CmdBarrierBesolveCueryCopy()           192 DrawIndexedInstance(3, 1, 0, 0, 0)	Allocated     Export name     TraceRaysAmdl     0x0526F1147     0x6EE4A40071     0x0232FAF835     0x6EE4A40071     0x768980252     0x89231A8F42	resources are d Internal 3562CB4_RayGe 3252286_CHS_1 335A02A_CHS_5 335A02A_CHS_5 325286_CHS_4 0.232E44_CHS_8 2F0CBE3_Miss_7	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Miss	VGPRs 101 121 72 98 98 72	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 2,816 0 128 0	Scratch memory (B)	urce, regardless of the <b>Total latency (clks) *</b> 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301	e call count. Instruction cost (%) 57.25 15.11 6.35 6.04 3.85 3.39	5,404,930 758,347 299,017 382,756 219,775 147,153	<b>Call count *</b> 1,159 988 251 298 119 80	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562C84 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x6284AD07132E286 0x768989D520C32E44 0x89231A8F42F0CBE3	Internal pipeline 0x89D68EBF73517 0x123009F7A9AE0. 0x6DCSD708813 0xF04983C48935A. 0x47EC2AE332493 0x98499C9708918 0x905D37983AE8
180 ClearRenderTargetView()           181 CmdPostComputColociClear()           182 DrawhdrexedInstanced(120, 1, 0, 0, 0)           183 DrawindexedInstanced(120, 1, 0, 0, 0)           184 DrawindexedInstanced(120, 1, 0, 0, 0)           185 DrawindexedInstanced(120, 1, 0, 0, 0)           186 DrawindexedInstanced(120, 1, 0, 0, 0)           186 DrawindexedInstanced(154, 1, 0, 0, 0)           186 DrawindexedInstanced(154, 1, 0, 0, 0)           189 DrawindexedInstanced(154, 1, 0, 0, 0)           190 CmdBarrierResolveQueryTimestampStall()           191 CmdBarrierResolveQueryCopy()           192 ResourceBarrier()           193 DrawindexedInstance(3, 1, 0, 0, 0)	Allocated Export name TraceRaysAmdl 0x5526F1147E 0x6224FA835 0x0232FA835 0x232FA835 0x6284A0071 0x768898D225 0x89231A8F42 0x78355895AE	resources are d Internal 35562C84 RayGe 335A02A_CH5_S 335A02A_CH5_d 132E286_CH5_d 132E286_CH5_d 132E286_CH5_d 132E286_CH5_S 5C7EAD_CH5_T	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96	LDS (B) S 4,096 0 4,096 0 128 0 2,816 0 2,816 0 128 0 384 0 4,096 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449	e call count. Instruction cost (%) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030	Call count * 1,159 988 251 298 119 80 101 306	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0x6EE4A4D071322286 0x0232FAF83535A02A 0x6EE4A4D071322286 0x768980D250C32E44 0x889201A8F42F0C8E3 0xFR35E95A5C7FAD	Internal pipeline 0x89D68EBF73517 0x123009F7A9AE0 0x9A7908CF1976 0x60C5D708813 0xF049B3C48935A 0x47EC2AE332493 0x98499C9708918
180 ClearRenderTargetView()           181 Cm4PbstComputeColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           187 DrawIndexedInstanced(1584, 1, 0, 0, 0)           188 DrawIndexedInstanced(1584, 1, 0, 0, 0)           189 DrawIndexedInstanced(1584, 1, 0, 0, 0)           180 Cm4BinierierResolveCumyTimestampStall()	Allocated     Export name     TraceRaysAmdl     0x0526F1147P     0xEEE4A4D071     0x0232FAF835     0x0232FAF835     0x2232FAF835     0x6EE4A4D071     0x76889BD250     0x89231A8F42     0xF855E95Ae     0x686Ae55B844	resources are d Internal 3562CB4_RayGe 3252286_CHS_1 335A02A_CHS_5 335A02A_CHS_5 325286_CHS_4 0.232E44_CHS_8 2F0CBE3_Miss_7	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96	LDS (B) S 4,096 0 4,096 0 128 0 2,816 0 128 0 2,816 0 128 0 384 0 4,096 0 1,024 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 664,150	e call count. Instruction cost (%) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030 45,984	Call count * 1,159 988 251 298 119 80 101 306 48	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562C84 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x6284AD07132E286 0x768989D520C32E44 0x89231A8F42F0CBE3	Internal pipeline ( 0x89068EBr73517 0x123009F7A9AE0 0x66DC5D708813 0x704983C48935A 0x874248324893 0x98499C9708918 0x9405D7983AEE 0xAED25CF39D0D
180 ClearRenderTargetView()           181 CmPlostComputeColocIcle()           182 DrawnloexedInstanced(120, 1, 0, 0, 0)           183 DrawnloexedInstanced(120, 1, 0, 0, 0)           184 DrawnloexedInstanced(120, 1, 0, 0, 0)           185 DrawnloexedInstanced(120, 1, 0, 0, 0)           186 DrawnloexedInstanced(120, 1, 0, 0, 0)           186 DrawnloexedInstanced(150, 1, 0, 0, 0)           187 DrawnloexedInstanced(154, 1, 0, 0, 0)           188 DrawnloexedInstanced(154, 1, 0, 0, 0)           189 DrawnloexedInstanced(154, 1, 0, 0, 0)           190 CmdBarrierResolveQueryTimestampStall()           191 CmdBarrierResolveQueryCopy()           192 ResourceBarrie()           193 DrawnloexedInstanced(3, 1, 0, 0, 0)           194 ResourceBarrie()           195 Dispatch(120, 180, 1)           196 Dispatch(160, 90, 1)           197 ResourceBarrie()	Allocated     Export name     TraceRaysAmdl     OxD526F1147E     OxEE4A4A0071     Ox0232FAF835     Ox0232FAF835     Ox1254A40071     Ox7684890225     Ox89231A8F42     OxFF855E95AE     Ox68A650844     Ox68A650844     Ox6767620886	resources are d Internal 3562C84_RayGe 325266_CH5_1 35A02A_CH5_5 35A02A_CH5_4 132E286_CH5_4 132E286_CH5_4 132E286_CH5_4 132E7C8D_CH5_7 4A19727_CH5	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) S 4,096 0 4,096 0 128 0 2,816 0 2,816 0 1,28 0 384 0 4,096 0 1,024 0 128 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11.867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726	e call count. Instruction cost (%6) ' 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030 45,984 33,682 24,472	Call count * 1,159 988 251 298 119 80 101 306 48 27	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0xEEE4A4D07132E286 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x6EE4A4D07132E286 0xF6838105250C32F44 0x96231A8F42F0C8E3 0xFF85559SAE5C7EAD 0x68AE55D84A419727	Internal pipeline 0x89068EBF73517 0x123009F7A9AE0 0x9A7908CF1976 0xC605D708813 0x6704982C48935A 0x945027708918 0x905D37983AE8 0x46725CF39DDD 0xAC225E104318
180 ClearRenderTargetView()           181 CmdPostComputeColorClear()           182 DrawhdrexedInstanced(120, 1, 0, 0, 0)           183 DrawindexedInstanced(120, 1, 0, 0, 0)           184 DrawindexedInstanced(120, 1, 0, 0, 0)           185 DrawindexedInstanced(10, 1, 0, 0, 0)           186 DrawindexedInstanced(10, 1, 0, 0, 0)           186 DrawindexedInstanced(164, 1, 0, 0, 0)           187 DrawindexedInstanced(164, 1, 0, 0, 0)           188 DrawindexedInstanced(164, 1, 0, 0, 0)           189 DrawindexedInstanced(164, 1, 0, 0, 0)           190 CmdBarierResolveClueryTimestampStall()           191 CmdBarierResolveClueryCopy()           192 ResourceBarier()           193 Dispatch(160, 90, 1)           194 ResourceBarier()           195 Dispatch(160, 90, 1)           197 ResourceBarier()           198 ClearDepHStencilView()	Allocated     Export name     TraceRaysAmdl     OxD526F1147E     OxEE4A4A0071     Ox0232FAF835     Ox0232FAF835     Ox1254A40071     Ox7684890225     Ox89231A8F42     OxFF855E95AE     Ox68A650844     Ox68A650844     Ox6767620886	resources are d internal 35562C84 RayGe 332E286_CH5_1 35A02A_CH5_5 35A02A_CH5_4 33A02A_CH5_4 33A02A_CH5_4 332E286_CH5_4 326264_CH5_4 5C7EAD_CH5_7 4A19727_CH5 82D174_CH5_9	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 128 0 128 0 384 0 4,096 0 1,024 0 1,024 0 128 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726 335,686	e call count. Instruction cost (%6) 57.25 15.11 6.35 6.04 3.39 1.86 1.47 0.87 0.79 0.49	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030 45,984 33,682 24,472	Call count * 1,159 988 251 298 119 80 101 306 48 27 28	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F11478562C84 0x0232FA8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x6282FA825C32FA4 0x89231A8F42F0CBE3 0xF6898D525C32FA4 0x89231A8F42F0CBE3 0xF6895D525C32FAD 0x68AE5058A4A19727 0xFA9C0808803F9756	Internal pipeline ( 0x89D68EBF73517 0x123009F7A9AE0 0x9A7908CF1976 0x6CbC5D708813 0xF04983C48935A 0x4F04983C48935A 0x945905708918 0x905D37983AE8 0x905D37983AE8 0x0AC275E104318 0xC0A2707ACD4D
180 ClearRenderTargetView()           181 CmdPostComputeColocIlear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(1544, 1, 0, 0, 0)           188 DrawIndexedInstanced(1544, 1, 0, 0, 0)           189 DrawIndexedInstanced(1544, 1, 0, 0, 0)           190 CmdBarrierBesolveCueryIntestampStall()           191 CmdBarrierResolveCueryIntestampStall()           192 DrawIndexedInstanced(3, 1, 0, 0, 0)           198 Despatch(160, 90, 1)           199 Dispatch(160, 90, 1)           197 ResourceBarrier()           198 ClearDepthStenciNitew()           199 DrawIndexedInstanced(44, 1800, 0, 0, 0)	Allocated     Export name     TraceRaysAmdl     0x0526F1147P     0xEEE4A4D071     0x0232FAF835     0x0232FAF835     0x6254A4D071     0x76889BD250     0x89231A8442     0xF855E95AE     0x68AE65D844     0xFA9FC8086     0x7B5CF7FE36     _amdgpu_cs_m	resources are d internal 35562C84 RayGe 332E286_CH5_1 35A02A_CH5_5 35A02A_CH5_4 33A02A_CH5_4 33A02A_CH5_4 332E286_CH5_4 326264_CH5_4 5C7EAD_CH5_7 4A19727_CH5 82D174_CH5_9	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit N/A	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 128 0 384 0 4,096 0 1,024 0 1,024 0 1,024 0 1,024 0 1,024 0 1,024 0 512 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,966,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 664,150 623,726 385,686 336,909	e call count. Instruction cost (%) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43	5.404,930 758,347 299.017 382,756 219,775 147,153 95,950 180,030 45,5984 33,682 24,472 16,741	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x76898bD250C32E44 0x98231A8F42F0C8E3 0xFF855D95A5C57EAD 0x6F855D95A4519727 0xF8655D84A519727 0xF865F0564505756 0xF865F05620174	Internal pipeline           0x89D68EBF73517           0x123009F7A9AE0           0x9A7090E71976           0x66DC5D708813           0x47020AE32493           0x4899C9708918           0x905D37983AE32493           0x905D37983AE32493           0x905D37983AE32493           0x905D37983AE32493           0x40225E738DDD           0xAC275E104318           0x2A02475F104318           0xAD045F518893
80 ClearRenderTargetView() 81 CmdPostComputeColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(184, 1, 0, 0, 0) 87 DrawIndexedInstanced(184, 1, 0, 0, 0) 89 DrawIndexedInstanced(184, 1, 0, 0, 0) 80 CmdBarrierResolveQueyTimestampStall() 91 CmdBarrierResolveQueyCopy() 92 ResourceBarrier() 93 DrawIndexedInstanced(3, 1, 0, 0, 0) 94 ResourceBarrier() 95 Dispatch(120, 180, 1) 96 Dispatch(160, 90, 1) 97 ResourceBarrier() 99 DrawIndexedInstanced(48, 1800, 0, 0, 0) 90 DrawIndexedInstanced(48, 1800, 0, 0, 0)	Allocated Export name TraceRaysAmdl 0xD526F11478 0xEE4A4D071 0x0232FAR835 0x232FAR835 0x232FAR835 0x89231A8F42 0xF855E95A4 0x68AE55D844 0xF855E95A4 0xF855E95A4 0xF855E75FE6 0x785CF7FE6 0x48C257A37E	resources are d Internal 5562CB4, RayGe 35702A(CHS_1 35A02A_CHS_5 35A02A_CHS_5 35A02A_CHS_4 352286_CHS_4 0C32E44_CHS_8 9C32E44_CHS_8 9C32E44_CHS_8 9C7EAD_CHS_7 4A19727_CHS 339756_CHS_d 82D174_CHS_9 nain	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit N/A Any hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80 3	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 128 0 128 0 128 0 1,024 0 1,024 0 128 0 1,024 0 128 0 128 0 128 0 128 0 0 0 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11.867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,153,449 684,150 623,726 623,726 336,509 336,909 266,234	e call count. Instruction cost (%6) ' 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.36	5,404,930 758,347 299,017 282,756 219,775 147,153 9,550 180,030 45,984 35,682 24,472 16,741 16,741	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 27 28 15 988	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x62E4A4D07132E286 0x0232FAF83535A02A 0x62E4A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x7F8855895AE5C7FAD 0x68AE65D84A419727 0xFR95C984A419727 0xFA9C6088639756 0x61D8175FE66864C9	Internal pipeline   0x89D68EBF73517 0x9A7908CF1976 0x66DC5D708813 0x7604983C48935A 0x47EC2AE332493 0x9849629708918 0x9849629708918 0x9825CF390DD 0x0AC2755104318 0x4AE025CF39DDD 0xA04518893 0xA9F18378283D
180 ClearRenderTargetView()           181 Cm90sstComputeColorClear()           182 DrawnldexedInstanced(120, 1, 0, 0, 0)           183 DrawnldexedInstanced(120, 1, 0, 0, 0)           184 DrawnldexedInstanced(120, 1, 0, 0, 0)           185 DrawnldexedInstanced(120, 1, 0, 0, 0)           185 DrawnldexedInstanced(120, 1, 0, 0, 0)           186 DrawnldexedInstanced(184, 1, 0, 0, 0)           187 DrawnldexedInstanced(184, 1, 0, 0, 0)           188 DrawnldexedInstanced(184, 1, 0, 0, 0)           189 DrawnldexedInstanced(184, 1, 0, 0, 0)           180 DrawnldexedInstanced(184, 1, 0, 0, 0)           180 DrawnldexedInstanced(184, 1, 0, 0, 0)           180 DrawnldexedInstanced(184, 1, 0, 0, 0)           190 CmdBarrieResolveCueryCopy()           192 ResourceBarrie()           193 DrawnldexedInstanced(3, 1, 0, 0, 0)           194 ResourceBarrie()           195 Dispatch(160, 90, 1)           195 Dispatch(160, 90, 1)           197 ResourceBarrie()           198 ClearDepthEstencIView()           199 DrawnldexedInstanced(48, 1800, 0, 0, 0)           190 Combarrie(185tanced(48, 1800, 0, 0, 0)           191 ResourceBarrie()	Allocated     Export name     TraceRaysAmdl     Ox5056F1147E     OxEEE4A4D071     Ox5256F1147E     OxEEE4A4D071     Ox76809BD252     Ox76809BD252     Ox76809BD252     Ox76809BD252     Ox76809BD252     Ox76809BD252     Ox76855584     Ox76555854     Ox7655594     Ox765755954     Ox76751957595     Ox717181F029	resources are d Internal 3562C84, RayGe 3350224, CHS J 3350224, CHS J 3350224, CHS J 3326266, CHS J 3326266, CHS J 35002264, CHS J 339756, CHS J 339756, CHS J 3002766, CHS J 3000276, CHS J	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80 3 54	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 5 4,096 0 4,096 0 128 0 2,816 0 128 0 2,816 0 128 0 384 0 4,096 0 1,024 0 1,024 0 1,024 0 1,024 0 1,024 0 1,024 0 0,0 0 0 0 0 0 0 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44.956.240 11.867.536 4.986.382 4.743.010 3.021.720 2.659.301 1.462.632 1.153.449 684.150 623.726 336.509 286.234 253.487 534.457 535.487	e call count. Instruction cost (%6) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.36 0.32	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682 24,472 16,741 29,640 1,316	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 988 46	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0522F11478562C84 0x232FA5355A02A 0x0232FA5355A02A 0x0232FA5355A02A 0x0232FA5355A02A 0x6282FA5025C32F44 0x89231A8F42F0CBE3 0xF6895D52C032F44 0x89231A8F42F0CBE3 0xF6895D52F052FAD 0x68AE55D64A419727 0xFA9FC808863F9756 0x785C7FE36280174 0x6108175FE6684C9 0x48C257A37BD3835F	Internal pipeline           0x89D68EBF73517           0x123009F7A9AE0           0x9A7098CF1976           0x60C5D708813           0x76049835A           0x47E02AC4832493           0x949905708918           0x945037983AE           0x04275E104318           0x2A2707AC4Db           0x2A2707AC4Db           0xA941837B283D           0x340C264520AE53
180 ClearRenderTargetView()           181 Cm/PostComputeColorClear()           182 Drawindweedinstanced(120, 1, 0, 0, 0)           183 Drawindweedinstanced(120, 1, 0, 0, 0)           184 Drawindweedinstanced(120, 1, 0, 0, 0)           185 Drawindweedinstanced(120, 1, 0, 0, 0)           185 Drawindweedinstanced(120, 1, 0, 0, 0)           185 Drawindweedinstanced(120, 1, 0, 0, 0)           186 Drawindweedinstanced(154, 1, 0, 0, 0)           187 Drawindexedinstanced(154, 1, 0, 0, 0)           188 Drawindexedinstanced(154, 1, 0, 0, 0)           189 Drawindexedinstanced(154, 1, 0, 0, 0)           190 Cmd8arrierResolveQuery(Copy()           191 Cmd8arrierResolveQuery(Copy()           192 Drawindexedinstanced(13, 1, 0, 0, 0)           194 ResourceBarrier()           195 Dispatch(160, 90, 1)           197 ResourceBarrier()           198 ClearDepthStencilView()           199 Drawindexedinstanced(48, 1800, 0, 0, 0)           200 Drawindexedinstanced(48, 1800, 0, 0, 0)           201 ResourceBarrier()           202 Drawindexedinstanced(43, 1800, 0, 0, 0)           202 Drawindexedinstanced(43, 1800, 0, 0, 0)           202 Drawindexedinstanced(3, 1, 0, 0, 0)	Allocated Export name TraceRaysAmdl 0xD526F1147B 0xEE4A4D071 0x0232FAR835 0x232FAR835 0x232FAR835 0x232FAR835 0x6889B225 0x89231A8F42 0xFR855E95AE 0x68A65D844 0xFR85C67FE36 amdgpu_cs 0x7B5CF7FE36 amdgpu_cs0 0x47F815019 0x47181FD299 0x31C68666A	resources are d Internal 3562C84, RAGe 332E286_CHS_1 335A02A_CHS_5 332E286_CHS_4 332E286_CHS_4 332E286_CHS_4 332E286_CHS_4 332F276_CHS_4 82D174_CHS_9 ahin 303833F_AHS 805C03_CHS 1228FF3_CHS_4	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80 3 54 79 54 79 85 84	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) \$ 4,096 0 4,096 0 128 0 2,816 0 2,816 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 128 0 0 0 0 0 0 384 0 1,152 0 1,024 0 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,966,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 644,150 623,726 336,690 286,234 253,487 208,749 208,749	e call count. Instruction cost (%6)' 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.36 0.32 0.27 0.26 0.23	5.404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030 45,984 33,682 24,472 24,472 16,741 29,640 11,316 11,347 10,428	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 988 46 13 11 8	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0xD526F11478562C84 0xcE8A4A071322286 0x0232FAF83535A02A 0x0232FAF83535A02A 0xcE84A4071322286 0x768898D250C32E44 0x989231A8F42F0C8E3 0xFR855D9A4519727 0x6FR855D9A55C7EAD 0x68A650584A19727 0x6785C7FA5820576 0x785C7FA5820576 0x785C778 0x785C7FA5820576 0x785C77 0x785C7FA582057 0x785C7FA58205 0x785C7FA58205 0x785C7FA58205 0x785C7FA58205 0x785 0x78 0x78 0x785 0x78 0x78 0x7	Internal pipeline           0x89D68EBF73517           0x123009F7A9A60           0x9A7090E71976           0x66DC5D708813           0x76C2A5708813           0x947090E739248           0x98499C9708918           0x9605D37983A8B           0x4E225E739D0L           0x4AC275E104318           0x2475E14318           0x2475E742707ACD4D           0x340C26E9C0AE5           0x340C26E9C0AE5           0x346767422333
180 ClearRenderTargetView()           181 CmdPostComputeColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(154, 1, 0, 0, 0)           187 DrawIndexedInstanced(154, 1, 0, 0, 0)           188 DrawIndexedInstanced(154, 1, 0, 0, 0)           189 DrawIndexedInstanced(154, 1, 0, 0, 0)           190 CmdBarrieResolveQueryCopy()           191 CmdBarrieResolveQueryCopy()           192 ResourceBarrie()           193 DrawIndexedInstanced(3, 1, 0, 0, 0)           194 ResourceBarrie()           195 Dispatch(160, 90, 1)           197 ResourceBarrie()           198 DrawIndexedInstanced(48, 1800, 0, 0, 0)           199 DrawIndexedInstanced(48, 1800, 0, 0, 0)           100 DrawIndexedInstanced(48, 1800, 0, 0, 0)           101 DrawIndexedInstanced(48, 1800, 0, 0, 0)           102 DrawIndexedInstanced(3, 1, 0, 0, 0)           103 DrawIndexedInstanced(3, 1, 0, 0, 0)           104 DrawIndexedInstanced(3, 1, 0, 0, 0)	Allocated Export name TraceRaysAmil 0x0526F117E 0xEE4A4D071 0x0232FA835 0x0232FA835 0x6254A4D071 0x7686980225 0x89231A8F42 0x68965595A 0x89231A8F42 0x6955595A 0x6955595A 0x6955595A 0x6955595A 0x6757FE36 amdgpu.cs. 0x48C257A37E 0x4673A51015 0x17181FD299 0x031C68668A 0x72655A93F8	resources are d internal 3562c84, RayGe 3562c84, RayGe 35702A, CHS J 35A02A, CHS J 35A02A, CHS J 352c86, CHS J 352c76AD, CHS J 352756C, CHS J 359756, CHS J 359756, CHS J 30835F, AHS 30835F, AHS 308026, CHS J 308026, CHS J 308026, CHS J	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit N/A Any hit Closest hi	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80 3 54 79 85 84 88 88 88 82	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) S 4,096 0 4,096 0 128 0 2,816 0 2,816 0 2,816 0 1,28 0 1,28 0 1,28 0 1,024 0 1,024 0 1,024 0 512 0 0 0 0 0 384 0 1,152 0 1,024 0 0 384 0 0,152 0 1,024 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,966,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 623,726 385,686 385,686 385,686 385,686 286,234 253,487 208,749 206,460 184,285 149,887 149,887	e call count. Instruction cost (%6) ' 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.36 0.32 0.27 0.26 0.23 0.19	5,404,930 758,347 299,017 382,756 219,775 140,130 47,153 95,950 180,030 45,984 33,682 24,472 16,741 29,640 11,316 11,947 10,428 11,040 7,704	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 988 46 13 11 8 8	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0xc322FAF83535A02A 0xc322FAF83535A02A 0xc322FAF83535A02A 0xcE4EA4A0071322286 0x768898D250C32E44 0x89231A8F42F0C8E3 0xFR35E95A5C7EAD 0x68AE65D844A19727 0xFR35E9FA5862D174 0x68AE65D844A19727 0xF83FE66864C9 0x48C25TA37B03835F 0x4CF3A510158D5CD3 0x17181F02980802F6 0x031C68E68A2A8FF3 0x72F35X931B8186F4	Internal pipeline           0x89D68EBF73517           0x123009F7A9A60           0x97098CF1976           0x047098CF1976           0x462051708813           0x74752A52433           0x98499C9708918           0x98499C9708918           0x905D37983A8E           0x42752F104318           0x404751833           0x340547518833           0x340547518833           0x3402645742333           0x3402645742333           0x74004747448           0x3765767422333           0x7189232E282065           0x7189232E282055
180 ClearRenderTargetView() 181 CmPostComputEcOloClear() 182 DrawIndexedinstanced(120, 1, 0, 0, 0) 183 DrawIndexedinstanced(120, 1, 0, 0, 0) 184 DrawIndexedinstanced(120, 1, 0, 0, 0) 185 DrawIndexedinstanced(120, 1, 0, 0, 0) 185 DrawIndexedinstanced(184, 1, 0, 0, 0) 186 DrawIndexedinstanced(184, 1, 0, 0, 0) 188 DrawIndexedinstanced(184, 1, 0, 0, 0) 189 DrawIndexedinstanced(184, 1, 0, 0, 0) 180 DrawIndexedInstanced(184, 1, 0, 0, 0) 190 CmdBarrierBesolveQueryCopy() 191 DavIndexedInstanced(184, 1, 0, 0, 0) 193 DrawIndexedInstanced(3, 1, 0, 0, 0) 194 ResourceBarrier() 195 Dispatch(320, 180, 1) 195 ClearDeptStencIView() 199 DrawIndexedInstanced(48, 1800, 0, 0, 0) 200 DrawIndexedInstanced(48, 1800, 0, 0, 0) 201 ResourceBarrier() 202 DrawIndexedInstanced(3, 1, 0, 0, 0) 203 ResourceBarrier() 202 DrawIndexedInstanced(3, 1, 0, 0, 0) 203 ResourceBarrier() 204 DrawIndexedInstanced(3, 1, 0, 0, 0) 205 ResponderStanced(3, 1, 0, 0, 0) 206 DrawIndexedInstanced(3, 1, 0, 0, 0) 207 ResponderStanced(3, 1, 0, 0, 0) 208 DrawIndexedInstanced(3, 1, 0, 0, 0) 208 DrawIndexedInstanced(3, 1, 0, 0, 0) 209 DrawIndexedInstanced(3, 1, 0, 0, 0) 200 DrawIndexedInstanced(3, 1, 0, 0, 0) 201 ResponderStancedInstanced(3, 1, 0, 0, 0) 203 DrawIndexedInstanced(3, 1, 0, 0, 0) 203 DrawIndexedInstanced(3, 1, 0, 0, 0) 204 DrawIndexedInstanced(3, 1, 0, 0, 0)	Allocated Export name TraceRaysAmdl Ox526F1147E Ox526F1147E Ox526F1147E Ox526F1147E Ox526F1147E Ox526849B0252 Ox58245148F44 Ox684650844 Ox6846257A37E Ox4672451015 Ox48C257A37E Ox4672451015 Ox17181F029E Ox031C68668A Ox72F35A931E Ox188877654 Ox188877654	resources are d Internal 3562C34, RayGe 335022, CHS, J 335022, CHS, J 335022, CHS, J 332E286, CHS, J 332E286, CHS, J 332E286, CHS, J 3370756, CHS, J 82D174, CHS, J 82D174, CHS, J 830835F, AHS, 8080276, CHS, J 38186F4, CHS, S 38186F4, CHS, S	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98 72 79 125 84 71 64 80 3 54 79 85 84 79 85 84 82 78	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (8) S 4,096 0 4,096 0 2,816 0 2,816 0 128 0 2,816 0 128 0 384 0 1,024 0 1,024 0 1,024 0 1,024 0 0 0 0 0 384 0 1,152 0 0,1,024 0 768 0 256 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44.956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 624,150 623,726 335,690 235,686 336,909 266,234 253,487 208,749 206,460 184,285 149,897 110,057	e call count. Instruction cost (%6) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.32 0.32 0.27 0.26 0.23 0.19 0.14	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 35,882 24,472 26,447 11,316 11,947 11,947 11,0428 11,000 7,704 6,405	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 498 46 13 11 11 8 8 8 7	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0x62E4A4D07132E286 0x0232FAF83535A02A 0x0232FAF83535A02A 0x62E4A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x7689B0250C32F44 0x98231A8F42F0C8E3 0x7F855E95AE5C7EAD 0x68AE65D84A419727 0x7A9C608863F9756 0x7B5C7FE3882D174 0x61D8175FE66864C9 0x46F3A51015B05CD3 0x47F8351015B05CD3 0x17181F02580802F6 0x031C68E68A2ABFF3 0x71565493A807	Internal pipeline I           0x89D68EBF73517           0x123009F7A9AE0           0x9A7908CF1976           0x60C5D708813           0x47EC2AE332493           0x947900C9708918           0x9475202432493           0x425C7390DD           0x0AC275E104318           0x42024751883           0x437E1378832           0x340C26E9C0AE5           0x76076742233           0x7604576742233           0x47E22828205           0x4718322822055           0x47133CF67642233
180 ClearRenderTargetView()           181 CmPlostComputeColocIlear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(864, 1, 0, 0, 0)           186 DrawIndexedInstanced(1544, 1, 0, 0, 0)           187 DrawIndexedInstanced(1544, 1, 0, 0, 0)           188 DrawIndexedInstanced(1544, 1, 0, 0, 0)           190 CmdBarrierResolveQueryTimestampStall()           191 CmdBarrierResolveQueryTimestampStall()           192 DrawIndexedInstanced(13, 1, 0, 0, 0)           193 DrawIndexedInstanced(13, 1, 0, 0, 0)           194 ResourceBarrie()           195 Dispatch(160, 90, 1)           199 DrawIndexedInstanced(48, 1800, 0, 0, 0)           200 DrawIndexedInstanced(48, 1800, 0, 0, 0)           201 ResourceBarrie()           202 DrawIndexedInstanced(3, 1, 0, 0, 0)           203 ResourceBarrie()           204 DrawIndexedInstanced(3, 1, 0, 0, 0)           205 ResourceBarrie()           204 DrawIndexedInstanced(3, 1, 0, 0, 0)           205 CopyTextureRegion()	Allocated Export name TraceRaysAmdl 0x0526F1147E 0x5226F1147E 0x232FA835 0x232FA835 0x232FA835 0x232FA835 0x8923TA8F42 0x7E64A40071 0x768088625 0x8923TA8F42 0x7E525FAE 0x88A65D844 0x7E5257A37E 0x4CF3A51015 0x17181FD299 0x31C68666A 0x72F35A931B 0x172F35A931B 0x72F35A931B 0x18E8077654 0x68665D844	resources are d Internal 3562C84, RayGe 332E286, CHS 1 335A02A, CHS 5 335A02A, CHS 5 332A286, CHS 4 5C7EAD, CHS 7 5C7EAD, CHS 7 5C7EAD, CHS 7 3979756, CHS 4 3979756, CHS 4 30802F6, CHS 4 30802F6, CHS 4 30802F6, CHS 4 30802F6, CHS 4 393A807, CHS 3 393A807, CHS 5	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98 72 79 125 84 71 64 80 3 54 79 85 84 85 84 82 78 71	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (8) \$ \$ 4,096 0 4,096 0 128 0 2,816 0 128 0 2,816 0 128 0 4,096 0 1,024 0 1,024 0 1,024 0 1,024 0 1,024 0 0 1,024 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44,956,240 11,867,536 4,966,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 664,150 623,726 385,686 336,609 286,234 253,487 208,749 206,460 144,285 149,897 110,057 110,057 103,510	e call count. Instruction cost (%6) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.32 0.27 0.26 0.22 0.19 0.14 0.13	5.404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030 45,984 33,682 24,472 24,472 16,741 29,640 11,346 11,947 10,428 11,047 10,428 11,047 10,428 4,572	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 988 46 13 11 8 8	API shader hash 0xAAA1CCC20000000E6358C99C24C2C9D 0x0526F11478562C84 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x6EE4A40071322286 0x7680980259C32E44 0x89231A8F42F0CBE3 0x6F855D95AE5C7EAD 0x68AE55D84A519727 0xFa9FC808863F9756 0x785CFF13682D174 0x610B175FE66864C9 0x48C257A37B03835F 0x4CF3A510158D5CD3 0x17E8FD280802F6 0x031C68E682A8FF3 0x785CFF35A9318B186F4 0x18E87765493A807 0x68AE55D84A419727	Internal pipeline i           0x89D68EBF73517           0x123009F7A9AE0           0x9A7096CF1976           0x6CDC5D708813           0x76C2AE32493           0x947096C54970.0918           0x947096C545708913           0x905D37983AE8           0xAED25CF39DDD           0xAC275E104318           0x4C2A2707ACD4D           0x340C26E9C0AE5           0x37E6767422333           0x3472C42474F8           0x047574474F8           0x74672474F8           0x48P32447474F8           0x3489269C0A55           0x344724444490C545
180 ClearRenderTargetView() 181 CmPostComputEcOloClear() 182 DrawIndexedinstanced(120, 1, 0, 0, 0) 183 DrawIndexedinstanced(120, 1, 0, 0, 0) 184 DrawIndexedinstanced(120, 1, 0, 0, 0) 185 DrawIndexedinstanced(120, 1, 0, 0, 0) 185 DrawIndexedinstanced(184, 1, 0, 0, 0) 186 DrawIndexedinstanced(184, 1, 0, 0, 0) 188 DrawIndexedinstanced(184, 1, 0, 0, 0) 189 DrawIndexedinstanced(184, 1, 0, 0, 0) 180 DrawIndexedInstanced(184, 1, 0, 0, 0) 190 CmdBarrierBesolveQueryCopy() 191 DavIndexedInstanced(184, 1, 0, 0, 0) 193 DrawIndexedInstanced(3, 1, 0, 0, 0) 194 ResourceBarrier() 195 Dispatch(320, 180, 1) 195 ClearDeptStencIView() 199 DrawIndexedInstanced(48, 1800, 0, 0, 0) 200 DrawIndexedInstanced(48, 1800, 0, 0, 0) 201 ResourceBarrier() 202 DrawIndexedInstanced(3, 1, 0, 0, 0) 203 ResourceBarrier() 202 DrawIndexedInstanced(3, 1, 0, 0, 0) 203 ResourceBarrier() 204 DrawIndexedInstanced(3, 1, 0, 0, 0) 205 ResponderStanced(3, 1, 0, 0, 0) 206 DrawIndexedInstanced(3, 1, 0, 0, 0) 207 ResponderStanced(3, 1, 0, 0, 0) 208 DrawIndexedInstanced(3, 1, 0, 0, 0) 208 DrawIndexedInstanced(3, 1, 0, 0, 0) 209 DrawIndexedInstanced(3, 1, 0, 0, 0) 200 DrawIndexedInstanced(3, 1, 0, 0, 0) 201 ResponderStancedInstanced(3, 1, 0, 0, 0) 203 DrawIndexedInstanced(3, 1, 0, 0, 0) 203 DrawIndexedInstanced(3, 1, 0, 0, 0) 204 DrawIndexedInstanced(3, 1, 0, 0, 0)	<ul> <li>Allocated</li> <li>Export name</li> <li>TraceRaysAmdl</li> <li>Ox5526F1147E</li> <li>OxEEE4A4D071</li> <li>Ox5226F1347E</li> <li>Ox2224FA835</li> <li>Ox2224FA835</li> <li>Ox2224FA835</li> <li>Ox68231A8F42</li> <li>Ox6864550844</li> <li>Ox6864550844</li> <li>Ox6864550844</li> <li>Ox6864550844</li> <li>Ox6864550844</li> <li>Ox687457654</li> <li>Ox686450844</li> <li>Ox74875459545</li> <li>Ox48C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46C257A37E</li> <li>Ox46R257544</li> <li>Ox586464</li> <li>Ox728735A931E</li> <li>Ox1781877654</li> <li>Ox5864650844</li> <li>Ox5864650844</li> </ul>	resources are d Internal 3562C84 RayGe 332E286_CH5_1 335022, CH5_5 332D23, CH5_5 332E286_CH5_4 322E286_CH5_4 322E286_CH5_4 322E286_CH5_4 332P756_CH5_J 339756_CH5_J 339756_CH5_J 339756_CH5_J 3008276_CH5_J 3008276_CH5_J 38186F4_CH5_8 38186F4_CH5_8 38186F4_CH5_8	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98 72 79 125 84 71 64 88 71 64 83 54 79 85 84 82 78 71 90	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (8) S 4,096 0 4,096 0 2,816 0 2,816 0 384 0 4,096 0 128 0 384 0 1,024 0 512 0 0 0 0 0 0 0 1,152 0 1,024 0 758 0 256 0 128 0 256 0	Scratch memory (B)	urce, regardless of the Total latency (clks) * 44.956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 624,150 623,726 335,690 235,686 336,909 266,234 253,487 208,749 206,460 184,285 149,897 110,057	e call count. Instruction cost (%6) 57.25 15.11 6.35 6.04 3.85 3.39 1.86 1.47 0.87 0.79 0.49 0.43 0.32 0.32 0.27 0.26 0.23 0.19 0.14	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 35,882 24,472 26,447 11,316 11,947 11,947 11,0428 11,000 7,704 6,405	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 498 46 13 11 11 8 8 8 7	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0x62E4A4D07132E286 0x0232FAF83535A02A 0x0232FAF83535A02A 0x62E4A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x7689B0250C32F44 0x98231A8F42F0C8E3 0x7F855E95AE5C7EAD 0x68AE65D84A419727 0x7A9C608863F9756 0x7B5C7FE3882D174 0x61D8175FE66864C9 0x46F3A51015B05CD3 0x47F8351015B05CD3 0x17181F02580802F6 0x031C68E68A2ABFF3 0x71565493A807	Internal pipeline I           0x89D68EBF73517           0x123009F7A9A60           0x9A7908CF1976           0x60C50708813           0x47EC2AE332493           0x94790047978           0x94790248935A           0x47EC2AE332493           0x9425CF390DD           0x0AC275E104318           0x40C24F31893A           0x4AC242707ACD4D           0x34074F18378283D           0x3476742233           0x7E02680D6086           0x74174F4           0x718932E82055           0x467F33CF069



### **COMPILATION MODES FOR RAYTRACING EVENTS**

#### DispatchRays<Unified> and DispatchRays<Indirect>

- Both correspond to the DispatchRays API call
- The specific type used depends on the compilation mode chosen by the driver and compiler

#### DispatchRays<Unified>

• The individual shaders are inlined into a single shader, resulting in a single stream of ISA instructions

#### DispatchRays<Indirect>

• The individual shaders are compiled separately, and the functions in each shader end up as their own stream of ISA instructions. In indirect mode, function call instructions are generated in the ISA to allow one function to call another.



### WHICH STAGE OF MY RAY TRACING PIPELINE IS THE MOST EXPENSIVE?

#### • Events -> Pipeline state

ytracing_Game.rgp - D3D12 - Instruction tracing: Full													- 0
elp START OVERVIEW EVEN	TC												SETTI
START OVERVIEW EVEN	15												SETTI
avefront occupancy Event timing	Pipeline state	Instruction ti	iming										
apse tree 🛛 🗸 Group by user events													Filter event tree
164 ResourceBarrier()													
165 Dispatch(920, 1, 1)	Shader table	ISA Inform											
166 ResourceBarrier()	Shauer table	15A Inform	nation										
167 DispatchRays <indirect>(3768320, 1, 1)</indirect>										A 1			
168 ResourceBarrier()													
169 Dispatch(320, 180, 1)							2						
170 ResourceBarrier()					Ray g	eneration	Traversa	al 🧧		Hit?	Closest hit		
171 DrawIndexedInstanced(3, 1, 0, 0, 0)									1 2		DE 440		
72 DrawIndexedInstanced(6, 1, 0, 0, 0)					15	5.11%	57.25%	b	1		25.44%		
73 ResourceBarrier()									1	No			
74 DrawIndexedInstanced(600, 1, 0, 0, 0)									1	T			
75 DrawIndexedInstanced(600, 1, 0, 0, 0)							+						
76 CmdBarrierResolveQueryTimestampStall()										1 1			
77 CmdBarrierResolveQueryCopy()													
78 CmdBarrierBlitSync()							To be readed		Any hit		Miss		
							4110 C 1 2 C C C		sity the		1165		
79 CmdPreComputeColorClear()													
									1 2 2 0 %		1 5106		
80 ClearRenderTargetView()								0	0.32%		1.51%		
80 ClearRenderTargetView() 81 CmdPostComputeColorClear()	Shader Ta	le						0	0.32%		1.51%	2	
180 ClearRenderTargetView() 181 CmdPostComputeColorClear() 182 DrawIndexedInstanced(120, 1, 0, 0, 0)			triven by the s	hader table	entries with th	e highest	pressure on each ress				1.51%	Show filters	Shader search
80 ClearRenderTargetView() 81 CmdPostComputeColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0)	<li>Allocate</li>	ed resources are d	2002-012-M-022-202				pressure on each reso	ource, regardless of th	e call count.				
80 ClearRenderTargetView()           81 CmdPostComputeColorClear()           82 DrawIndexedInstanced(120, 1, 0, 0, 0)           83 DrawIndexedInstanced(120, 1, 0, 0, 0)           84 DrawIndexedInstanced(120, 1, 0, 0, 0)           85 DrawIndexedInstanced(120, 1, 0, 0, 0)           85 DrawIndexedInstanced(120, 1, 0, 0, 0)		ed resources are d	friven by the sl					ource, regardless of th		<sup>1</sup> Instruction hit count <sup>1</sup>			
80 ClearRenderTargetView()           81 CmdPostComputColorClear()           82 DrawIndexedInstanced(120, 1, 0, 0, 0)           83 DrawIndexedInstanced(120, 1, 0, 0, 0)           84 DrawIndexedInstanced(120, 1, 0, 0, 0)           85 DrawIndexedInstanced(120, 1, 0, 0, 0)           86 DrawIndexedInstanced(120, 1, 0, 0, 0)           86 DrawIndexedInstanced(120, 1, 0, 0, 0)	<li>Allocate</li>	ed resources are d	2002-012-M-022-202	VGPRs				ource, regardless of th	e call count.	<sup>2</sup> Instruction hit count <sup>3</sup> 5,404,930			Internal pipeline
80 ClearRenderTargetView() 81 CmdPostComputColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(820, 1, 0, 0, 0) 85 DrawIndexedInstanced(864, 1, 0, 0, 0) 87 DrawIndexedInstanced(1584, 1, 0, 0, 0)	Allocate Export nam TraceRaysAm	ed resources are d	<b>Type</b> Traversal	VGPRs 101	Stack size (B)	LDS (B) 4,096	Scratch memory (B)	ource, regardless of th	e call count. * Instruction cost (%)		* Call count *	API shader hash	Internal pipeline 0x89D6BEBF73517.
80 ClearRenderTargetView() 81 CmdPostComputeColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 86 DrawIndexedInstanced(1584, 1, 0, 0, 0) 87 DrawIndexedInstanced(1584, 1, 0, 0, 0) 88 DrawIndexedInstanced(1584, 1, 0, 0, 0)	Allocate Export nam TraceRaysAm 0xD526F114	ed resources are d ne idinternal	<b>Type</b> Traversal Ray generation	<b>VGPRs</b> 101 121	Stack size (B)	LDS (B) 4,096	Scratch memory (B)	ource, regardless of th Total latency (clks) 44,956,240	e call count. * Instruction cost (%) 57.25	5,404,930	* Call count * 1,159	API shader hash 0xAAA1CCC200000000E6358C99C24C2C9D	Internal pipeline 0x89D6BEBF73517.
80 ClearRenderTargetView() 81 CrndPostComputeColocClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawindexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(1264, 1, 0, 0, 0) 86 DrawindexedInstanced(1584, 1, 0, 0, 0) 88 DrawIndexedInstanced(1584, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0)	Allocate Export nam TraceRaysAm 0xD526F114 0xEE4A4D0 0x0232FAF83	ed resources are d ne idinternal 78562CB4_RayGe 7132E286_CHS_1 8535A02A_CHS_5	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98	<b>Stack size (B)</b> 128 336 96 96	LDS (B) 4,096 4,096 128 2,816	Scratch memory (B)	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010	e call count.	5,404,930 758,347 299,017 382,756	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F11478552C84 0xEEE4A4D07132E286 0x0232FAF83353A02A	<b>Internal pipeline</b> 0x89D6BEBF73517 0x123009F7A9AE0. 0x9A790BCF1976 0xC6DC5D70B813
80 ClearRenderTargetView() 81 CmdPostComput&ColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(864, 1, 0, 0, 0) 86 DrawIndexedInstanced(864, 1, 0, 0, 0) 88 DrawIndexedInstanced(864, 1, 0, 0, 0) 80 DrawIndexedInstanced(1584, 1, 0, 0, 0) 80 DrawIndexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrieResolveQueryTimestarmpStall()	Allocate Export nam TraceRaysAm 0xD526F114 0xEE4A4D0 0x0232FAF8: 0x0232FAF8:	ed resources are d ne ndinternal 78562CB4_RayGe 7132E286_CHS_1 8535A02A_CHS_5 8535A02A_CHS_6	Type Traversal Ray generation Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98	<b>Stack size (B)</b> 128 336 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816	Scratch memory (B) 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720	e call count.  * Instruction cost (%) 57.25 15.11 6.35 6.04 3.85	5,404,930 758,347 299,017 382,756 219,775	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562C84 0x252cF43535A02A 0x0232cFA83535A02A	Internal pipeline 0x89D6BEBF73517. 0x123009F7A9AE0. 0x9A790BCF1976 0xC6DC5D70B813 0xF049B3C4B935A.
80 ClearRenderTargetView() 81 CndPostComputeColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 86 DrawIndexedInstanced(864, 1, 0, 0, 0) 87 DrawIndexedInstanced(1584, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrierResolveQueryTimestarmpStall() 91 CndBarrierResolveQueryCopy()	Allocate     Export nam     TraceRaysAm     0xD526F114     0xCEE4A4D0     0x0232FAF8:     0xC0232FAF8:     0xCEE4A4D0	ed resources are d idinternal 78562CB4_RayGe 7132E286_CHS_1 3535A02A_CHS_5 3535A02A_CHS_d 7132E286_CHS_4	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72	<b>Stack size (B)</b> 128 336 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301	e call count. * Instruction cost (%) 57.25 15.11 6.35 6.04 3.85 3.39	5,404,930 758,347 299,017 382,756 219,775 147,153	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562CB4 0x052E6H147B562CB4 0x0232FAF83535A02A 0x0232FAF8355A02A 0x62E4A4D07132E286	Internal pipeline 0x89D6BEBF73517 0x123009F7A9AE0. 0x9A790BCF1976 0xC6DC5D70B813 0xF049B3C4B935A. 0x47EC2AE332493
80 ClearRenderTargetView() 81 CmdPostComputColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(1864, 1, 0, 0, 0) 86 DrawIndexedInstanced(1864, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrierResolveQueryCompt() 91 CmdBarrierResolveQueryCopy() 92 ResourceBarrier()	Allocate     Export nam     TraceRaysAm     0x0526F114     0xEEE4A4D0     0x0232FAF83     0x0232FAF83     0xCEE4A4D0     0x768398D0     0x768398D0	ed resources are d ie didinternal 7132E286_CHS_1 5353A02A_CHS_4 3535A02A_CHS_4 7132E286_CHS_4 50C32E44_CHS_8	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128 128 384	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x6E84A4D07132E286 0x768898D250C32E44	Internal pipeline 0x89D68E8F73517. 0x123009F7A9AE0. 0x62D5D708813 0xF04985C48935A. 0x47EC2AE332493. 0x98499C9708918.
80 ClearRenderTargetView()           81 CmdPostComputeColorClear()           82 DrawIndexedInstanced(120, 1, 0, 0, 0)           83 DrawIndexedInstanced(120, 1, 0, 0, 0)           84 DrawIndexedInstanced(120, 1, 0, 0, 0)           85 DrawIndexedInstanced(120, 1, 0, 0, 0)           86 DrawIndexedInstanced(120, 1, 0, 0, 0)           86 DrawIndexedInstanced(184, 1, 0, 0, 0)           86 DrawIndexedInstanced(184, 1, 0, 0, 0)           86 DrawIndexedInstanced(184, 1, 0, 0, 0)           80 DrawIndexedInstanced(184, 1, 0, 0, 0)           80 DrawIndexedInstanced(1864, 1, 0, 0, 0)           80 DrawIndexedInstanced(1864, 1, 0, 0, 0)           80 DrawIndexedInstanced(1864, 1, 0, 0, 0)           91 CmdBarterResolveQueryCopy()           92 DrawIndexedInstanced(3, 1, 0, 0, 0)	Allocate     Export nam     TraceRaysAm     0xD526F114     0xEE4A4D0     0x0232FAF83     0x0232FAF83     0x6E4A4D0     0x76889800     0x689231A8Fr	ed resources are d ie idinternal 7132E286_CHS_1 5335A02A_CHS_5 5335A02A_CHS_6 7132E286_CHS_4 50C32E44_CHS_8 42F0CBE3_Miss_7	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Miss	VGPRs 101 121 72 98 98 72 79 125	<b>Stack size (B)</b> 128 336 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128 384 4,096	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> <li>306</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F1147B562C84 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x0232FAF8355A02A 0x6284AD07132E286 0x768989D520C32E44 0x89231A8F42F0CBE3	Internal pipeline 0x89D68EBF73517. 0x123009F7A9AE0. 0x623009F7A9AE0. 0x60CSD708813. 0xF04983C48935A. 0x47EC2AE332493. 0x98496C9708918. 0x985D37983AE8
80 ClearRenderTargetView() 81 Cm8PostComputeColocClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(864, 1, 0, 0, 0) 87 DrawIndexedInstanced(864, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrierResolveQueryTimestarmpStall() 91 CmdBarrierResolveQueryCopy() 92 ResourceBarrier()	Allocate     Export nam     TraceRaysAm     0xD526F114     0x0E24F482     0x0232F4783     0x62232F4783     0x6E44AD0     0x763859802     0x76855952     0xFF655595	de dresources are d ne didinternal 78562CB4_RayGe 7132E286_CH5_1 \$353A02A_CH5_L \$353A02A_CH5_L \$0032E44_CH5_8	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84	Stack size (B) 128 336 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128 384 4,096 1,024	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,950 180,030 45,984	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> <li>306</li> <li>48</li> </ul>	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0xD526F1147B562C84 0x6EE4A4D071322286 0x0232FAF83535A02A 0x6EE4A4D071322286 0x76898D259C32E44 0x76898D259C32E44 0x76835E95A5C7FAD	Internal pipeline 0x89D68EBF73517. 0x123009F7A9AE0. 0x6A7908CF1976 0xC6DC5D708813. 0xF04983C48935A. 0x8499C9708378. 0x98D597893AE8 0xAED25CF39D0D.
80 ClearRenderTargetView() 81 Cm8PostComputeColocClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(864, 1, 0, 0, 0) 86 DrawIndexedInstanced(84, 1, 0, 0, 0) 80 DrawIndexedInstanced(81, 1, 0, 0, 0) 80 DrawIndexedInstanced(81, 1, 0, 0, 0) 90 CmdBarrierResolveQueryCompt() 91 CmdBarrierBesolveQueryCopy() 92 ResourceBarrier() 93 DrawIndexedInstanced(3, 1, 0, 0, 0) 94 ResourceBarrier() 95 Dispath(20, 180, 1)	Allocate     Export nam     TraceRaysAm     0x0526F114     0xEE4A4D0     0x0232FAF83     0xEE4A4D0     0x76889BD2     0x97331A8F     0xF8545957     0x68AE5508	add resources are d           ne           udinternal           78562C84_RayGe           7132E286_CHS_1           3535A02A_CHS_d           7132E286_CHS_4           \$0022E44_CHS_8           42F0C8E3_Miss_7           485C7EAD_CHS_7           44A19727_CHS	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128 384 4,096 1,024 128	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,452,652 1,153,449 684,150 623,726	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> <li>306</li> <li>48</li> <li>27</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x62E4A4D07132E286 0x0232FAF8353SA02A 0x0232FAF8353SA02A 0x62E4A4D07132E286 0x76889B0250C32E44 0x89231A8F42F0C8E3 0x768355E95AE5C7EAD 0x68AE65D844A19727	Internal pipeline 0x89D68EBF73517. 0x123009F7A9AE0. 0x9A7908CF1976 0x6C05D708B13 0xF04983C48935A. 0x98499C9708918. 0x905D3798AE8 0x4ED25CF39D0D. 0x0AC275E104318.
80 ClearRenderTargetView() 81 CmdPostComputeColoClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(184, 1, 0, 0, 0) 80 DrawIndexedInstanced(184, 1, 0, 0, 0) 90 CmdBarrierBosoNecQueryCopy() 92 ResourceBarrier() 93 DrawIndexedInstanced(3, 1, 0, 0, 0) 94 ResourceBarrier() 95 Dispatch(320, 180, 1) 96 Dispatch(160, 90, 1)	Allocate     Export nam     TraceRaysAm     0xD526F114     0x2E24AD0     0x0232FAR8     0x223FAR8     0x223FAR8     0x223FAR8     0x6894D2     0x69321ABF     0xF655085     0x68AE65D8     0xFA9C208E	dinternal Resources are d re dinternal R562CeR4, RayGe 7132E286, CH5, 1 3535A02A, CH5, 3 3535A02A, CH5, 3 3535A02A, CH5, 3 42F0CBE3, Miss, 7 HSCTRAD, CH5, 7 44A19727, CH5, 863F9756, CH5, d	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128 384 4,096 1,024 1,024 128 128	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726 385,686	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,595 180,030 45,984 33,682 24,472	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> <li>306</li> <li>48</li> <li>27</li> <li>28</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0xD526F11478562C84 0x0232FA5355A02A 0x0232FA5355A02A 0x0232FA5355A02A 0x0232FA5355A02A 0x6282FA505C32FA4 0x89231A8F42F0CBE3 0xF6895D52C032FA4 0x89231A8F42F0CBE3 0xF6855D5A5C7FAD 0x68AE55D8A4A19727 0xFA9FC808863F9756	Internal pipeline 0x89D68E8F73517. 0x123009F7A9AE0. 0x9A7908CF1976 0xc6Dc5D708813. 0x4764983C48935A. 0x4764983C48935A. 0x48499C708918. 0x905D37983AE8 0x40525CF39D0D. 0x0Ac275E104318. 0xc2A2707ACD4D.
80 ClearRenderTargetView() 81 CmdPostComputeColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 86 DrawIndexedInstanced(864, 1, 0, 0, 0) 87 DrawIndexedInstanced(864, 1, 0, 0, 0) 88 DrawIndexedInstanced(1584, 1, 0, 0, 0) 89 DrawIndexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrierResolveQueryTimestarmpStall() 91 CmdBarrierResolveQueryCopy() 92 ResourceBarrier() 95 Dispatch(120, 180, 1) 96 Dispatch(160, 90, 1) 97 ResourceBarrier()	Allocate     Export nam     TraceRaysAm     0xD526F114     0xD526F114     0xC232FAF8     0x0232FAF8     0xC0325FAF8     0xF854500     0xF685500     0xF685500     0xF685500     0xF69F680     0xF855F0     0xF87F65     0xF87F65     0xF87F65     0xF87F65     0xF87F65     0xF87F65     0xF87F65     0xF87F65     0xF8550     0xF85     0xF8     0xF85     0xF85     0xF8     0xF     0xF     0xF     0xF     0xF     0xF     0xF     0xF	d resources are d te dinternal 78562CB4.gAtyGe 71362286.gAtyS 5353A02A.CHS 5 5353A02A.CHS 5 5353A02A.CHS 4 50C32E44.CHS 8 42F0CBB3.Miss 7 5627EAD.CHS 7 44A19727.CHS 6682D174.CHS 9 6682D174.CHS 9	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 128 384 4,096 1,024 128 128 128 512	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726 385,686 336,909	e call count.	5.404.930 758.347 299.017 382.756 219.775 147.153 95.950 180.030 45.984 33.682 24.472 16.741	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> <li>306</li> <li>48</li> <li>27</li> <li>28</li> <li>28</li> <li>27</li> <li>28</li> <li>15</li> </ul>	API shader hash 0xAAA1CCC20000000E6358C99C24C2C9D 0xD526F11478562C84 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x6EE4A40071322286 0x768989D250C32E44 0x89231A8F42F0CBE3 0xFR85E95AE5C7EAD 0x68AE5D9A4A19727 0xFA9FC808863F9756 0x785CFF45682D174	Internal pipeline           0x89D68EBF73517.           0x123009F7A9AE0.           0x9A7908CF1976           0x66DC5D708813           0x76C0451708           0x47E02AF322493.           0x98499C3708918.           0x9625C738918           0x9625C739000           0x0AC275E104318.           0x0AC275E104318.           0x0AC4F518893
80 ClearRenderTargetView() 81 CmB/DestComputeColorClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 86 DrawIndexedInstanced(864, 1, 0, 0, 0) 87 DrawIndexedInstanced(864, 1, 0, 0, 0) 88 DrawIndexedInstanced(81, 1, 0, 0, 0) 89 DrawIndexedInstanced(81, 1, 0, 0, 0) 90 CmdBarrierResolveCueryCompt() 91 CmdBarrierResolveCueryCopy() 92 ResourceBarrier() 93 DrawIndexedInstanced(3, 1, 0, 0, 0) 94 ResourceBarrier() 95 Dispatch(160, 90, 1) 97 ResourceBarrier() 95 ClearDeptStencilView()	Allocate     Export nam     TraceRaysAm     0x0526F114     0x0526F114     0x0232FAF83     0x0232FAF83     0x0232FAF83     0x6EF4A4D0     0x76809BD2     0x99331A8F     0xFF855E954     0x6BAE55D8     0x6APC3088     0x789CF7FE3     _amdgpu.cs     _amdgpu.cs	d resources are d te dinternal 78562264, RayGe 71362286, CH5, 1 53535002A, CH5, 3 53535002A, CH5, 3 53535002A, CH5, 3 50C32E44, CH5, 3 50C32E44, CH5, 3 56272FAD, CH5, 3 56382756, CH5, d 566820756, CH5, d 566820756, CH5, J 566820756, CH5, J 567820756, CH5, J 5678207576, CH5, J 5678207576, CH5, J 5678207576, CH5, J 56782075775, CH5, J 56782075775, CH5, J 56782075775, CH5, J 5678207577575, CH5, J 5678207577575, CH5, J 5678207577575, CH5, J 56782075775757575757575757575757575757575757	Type Traversal Ray generation Closest hit Closest hit	VGPRs 101 121 72 98 98 98 72 79 125 84 71 64 80 3	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96 96 90 90 0	LDS (B) 4,096 4,096 128 2,816 128 384 4,096 1,024 128 128 128 512 0	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,452,652 1,153,449 684,150 623,726 385,686 336,909 286,234	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682 24,472 16,741 29,640	<ul> <li>Call count *</li> <li>1,159</li> <li>988</li> <li>251</li> <li>298</li> <li>119</li> <li>80</li> <li>101</li> <li>306</li> <li>48</li> <li>27</li> <li>28</li> <li>15</li> <li>988</li> </ul>	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x62E64A4D07132E286 0x0232FAF83535A02A 0x62E64A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x7F8855859AE5C7FAD 0x68AE65D84A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C5084A419727 0x5A9C57FE568249 0x5108175FE6664C9	Internal pipeline           0x89D68E8F73517.           0x132009F7A9AE0.           0x9A7908CF1976           0x6Dc5D7008813.           0x4762A2832433.           0x47E22A2832433.           0x94592708918.           0x94592708918.           0x94592708918.           0x4E2525F3900D.           0xA2C255E104318.           0xA2751614318.           0xA4D044518893           0xA9F183782830
80 ClearRenderTargetView() 81 CndPostComputeColoClear() 82 DrawindexedInstanced(120, 1, 0, 0, 0) 83 DrawindexedInstanced(120, 1, 0, 0, 0) 84 DrawindexedInstanced(120, 1, 0, 0, 0) 85 DrawindexedInstanced(120, 1, 0, 0, 0) 85 DrawindexedInstanced(150, 1, 0, 0, 0) 85 DrawindexedInstanced(1584, 1, 0, 0, 0) 88 DrawindexedInstanced(1584, 1, 0, 0, 0) 89 DrawindexedInstanced(1584, 1, 0, 0, 0) 90 CrdBarrierResolveQueryCopy() 91 CrdBarrierResolveQueryCopy() 92 ResourceBarrier() 93 DrawindexedInstanced(3, 1, 0, 0, 0) 94 ResourceBarrier() 95 Dispatch(160, 90, 1) 96 Dispatch(160, 90, 1) 97 ResourceBarrier() 98 ClearDepthStencilView() 99 DrawindexedInstanced(48, 1800, 0, 0, 0)	Allocate     Export nam     TraceRaysAm     0xD5266F14     0xC232FAR8     0x232FAR8     0x232FAR8     0x232FAR8     0xFE4A4D0     0x768890D2     0x89321A8F     0xFF55295x     0x68AE65D8     0xFA9C208FA     0xFA9C208FA     0xFA9C208FA     0xFA9C208FA     0xFB257A8     0xFB257A     0xFB257A     0xFB257A     0xFB257     0xFB257     0xFB257     0xFB25     0xFB25	d resources are d te dinternal 78562C64 RayGe 7132E286, CHS 1 5353A02A, CHS 3 5353A02A, CHS 3 5353A02A, CHS 3 50C32E44, CH	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Any Any hit	VGPRs 101 121 72 98 98 72 79 125 84 71 64 80 3 54	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96 96 90 90 90 90 90 90 90 90 90 90 90 91 12	LDS (B) 4,096 4,096 128 2,816 2,816 128 384 4,096 1,024 128 128 512 0 0	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726 335,690 286,234 253,487 (Clks) (	e call count.	5,404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682 24,472 16,741 29,640 11,316	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 9988 46	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0522F11478562C84 0x232FA5355A02A 0x0232FA5355A02A 0x0232FA5355A02A 0x0232FA5355A02A 0x6282FA5025C32F44 0x89231A8F42F0CBE3 0xF6895D52C032F44 0x89231A8F42F0CBE3 0xF6895D52F052FAD 0x68AE55D64A419727 0xFA9FC808863F9756 0x785C7FE36280174 0x6108175FE6684C9 0x48C257A37BD3835F	Internal pipeline           0x89D68E8F73517           0x123009F7A9AE0           0x6709E71976           0x6709E71976           0x70987E789E0           0x70498374           0x47026E732493           0x9053798934E8           0x2627575103158           0x2247707ACD40           0x340256129045718893           0x34072618204571893
80 ClearRenderTargetView() 81 CmdPostComputeColoClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(864, 1, 0, 0, 0) 86 DrawIndexedInstanced(864, 1, 0, 0, 0) 80 DrawIndexedInstanced(1584, 1, 0, 0, 0) 80 DrawIndexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrierResolveQueryCopy() 92 ResourceBarrier() 91 DrawIndexedInstanced(3, 1, 0, 0, 0) 94 ResourceBarrier() 95 Dispatch(120, 90, 1) 97 ResourceBarrier() 99 DrawIndexedInstanced(48, 1800, 0, 0, 0) 90 DrawIndexedInstanced(48, 1800, 0, 0, 0) 90 DrawIndexedInstanced(48, 1800, 0, 0, 0)	Allocate     Export nam     TraceRaysAm     0x0526F114     0x0232FAF8     0x0232FAF8     0x0232FAF8     0x6889802     0x76855982     0x6846508     0x7695F285     0x6846508     0x7695C77E2     _amdgpu.cs,     0x48C257A3     0x4C23A510	d resources are d te dinternal 1856/2048_rayGe 1732E286_CHS_1 3535A02A_CHS_5 3535A02A_CHS_4 3535A02A_CHS_4 3535A02A_CHS_4 3632P756_CHS_4 36632P174_CHS_9 main 78D3835F_AHS 78D32835_AHS	Type Traversal Ray generation Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Closest hit Any hit Closest hit Closest hit	VGPRs           101           121           72           98           79           125           84           71           64           80           3           54           79	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 2,816 128 384 4,096 1,024 128 128 512 0 0 0 0 384	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726 385,686 336,909 286,234 253,487 208,749	e call count.	5.404.930 7.58.347 299.017 382.756 219.775 147.153 95.950 180.030 45.984 33.682 24.472 16.741 16.741 29.640 11.316	Call count * 1,159 988 251 298 119 90 48 27 28 15 988 46 13	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0xD526F11478562C84 0xcE8A4A071322286 0x0232FAF83535A02A 0x0232FAF83535A02A 0xcE84A4071322286 0x768898D250C32E44 0x989231A8F42F0C8E3 0xFR855D9A4519727 0x6FR855D9A55C7EAD 0x68A650584A19727 0x6785C7FA5820576 0x785C7FA5820576 0x785C778 0x785C7FA5820576 0x785C77 0x785C7FA582057 0x785C7FA58205 0x785C7FA58205 0x785C7FA58205 0x785C7FA58205 0x785 0x78 0x78 0x785 0x78 0x78 0x7 0x78 0x78 0x78 0x78 0x78	Internal pipeline           0x89D68EBF73517           0x123009F7A9AE0           0x9A7908CF1976           0x6C6DC5D708813           0x64D25C71976           0x47E02AE32A493
80 ClearRenderTargetView() 81 Cm8PostComputeColoClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(184, 1, 0, 0, 0) 86 DrawIndexedInstanced(184, 1, 0, 0, 0) 89 DrawIndexedInstanced(184, 1, 0, 0, 0) 80 DrawIndexedInstanced(184, 1, 0, 0, 0) 80 DrawIndexedInstanced(1864, 1, 0, 0, 0) 90 CmdBarrierBesolveQueryCopy() 92 ResourceBarrie() 91 Dispatch(160, 90, 1) 94 ResourceBarrie() 95 Dispatch(180, 180, 1) 96 Dispatch(160, 90, 1) 97 ResourceBarrie() 99 ClearDepthEstenUView() 99 DrawIndexedInstanced(48, 1800, 0, 0, 0) 00 DrawIndexedInstanced(48, 1800, 0, 0, 0)	Allocate     Export nam     TraceRaysAm     0x0526F14     0x0232FAF83     0x0232FAF83     0x0232FAF83     0x768898D2     0x768898D2     0x768898D2     0x7688762080     0x7685C57F82     _amdgpu.cs,     0x46F34501     0x47181FD2	d resources are d te dinternal 78562264_RayGe 71362286_CHS_1 53535A02A_CHS_4 53535A02A_CHS_5 53535A02A_CHS_4 50C32E44_CHS_8 42F0CBB_3Miss_7 5457CFAD_CHS_4 56329756_CHS_4 5682D174_CHS_9 main 78D38357_AHS 78D38357_AHS 9808002F6_CHS_1	Type Traversal Ray generation Closest hit Closest hit	VGPRs           101           121           72           98           779           125           84           71           64           80           3           54           79           88	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 9	LDS (B) 4,096 4,096 128 2,816 2,816 2,816 128 384 4,096 1,024 128 512 0 0 0 384 1,152	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,452,632 1,153,449 684,150 664,150 664,150 664,150 663,726 336,909 286,234 253,487 208,749 206,460	e call count.	5.404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682 24,472 16,741 29,640 11,316 11,947	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 998 46 13 11	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x62E64A4D07132E286 0x0232FAF83535A02A 0x62E64A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x76885E95AE5C7EAD 0x68AE65D84A419727 0x785C7FFE3682D174 0x785C7FFE3682D174 0x61D8175FE66864C9 0x4CF3A51105B05C03 0x471815F9260802F6	Internal pipeline           0x89D68EBF73517           0x132008F7A9AE0           0x6DC50708B13           0x6DC50708B13           0x470208E71976           0x47EC2AE332433           0x47EC2AE332433           0x47EC2AE332433           0x42E25CF390000           0x0AC275E104318           0x0AC275E104318           0x3AD04F518893           0x34D642518893           0x34C625C0425           0x34C625C04242333           0x7E0268006086
80 ClearRenderTargetView() 81 CmdPostComputeColoClear() 82 DrawindexedInstanced(120, 1, 0, 0, 0) 83 DrawindexedInstanced(120, 1, 0, 0, 0) 84 DrawindexedInstanced(120, 1, 0, 0, 0) 85 DrawindexedInstanced(120, 1, 0, 0, 0) 85 DrawindexedInstanced(150, 1, 0, 0, 0) 86 DrawindexedInstanced(1564, 1, 0, 0, 0) 80 DrawindexedInstanced(1584, 1, 0, 0, 0) 80 DrawindexedInstanced(1584, 1, 0, 0, 0) 80 DrawindexedInstanced(1584, 1, 0, 0, 0) 90 CmdBarrierBesolveQueryCopy() 92 ResourceBarrier() 93 DrawindexedInstanced(13, 1, 0, 0, 0) 94 ResourceBarrier() 98 ClearDepthStenciView() 99 DrawindexedInstanced(48, 1800, 0, 0, 0) 00 DrawindexedInstanced(48, 1800, 0, 0, 0) 101 ResourceBarrier() 20 ZhavindexedInstanced(3, 1, 0, 0, 0)	Allocate     Export nam     TraceRaysAm     OxD5266F14     OxD526F14     OxC223FAR8:     Ox0232FAR8:     OxC223FAR8:     OxC223FAR8:     OxF855295/     Ox6846508     OxF855295/     Ox6846508     Ox785CFFEE:     _amdgru.cs,     Ox48F25AR3     Ox4778B1FD2     Ox31C68E61     Ox31C68E61	d resources are d te dinternal 78562C64 RayGe 7132E286, CHS 1 5353A02A, CHS 5 5353A02A, CHS 5 5353A02A, CHS 4 50C32E44, CHS 3 42F0C8E3, Miss 7 42F0C8E3, Miss 7 42F0C8E3, Miss 7 42F0C8E3, Miss 7 5682D174, CHS 9 main 75D3835F, AHS 75BD3835F, AHS 75BD3835F, AHS 75BD3835F, CHS 980802F6, CHS .f	Type Traversal Ray generation Closest hit Closest hit	VGPRs           101           121           72           98           72           79           125           84           71           64           80           3           54           79           83           84           80           80           80           80           80           81           54           79           85           84	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 9	LDS (B) 4,096 4,096 128 2,816 128 128 384 4,096 1,024 128 128 512 0 0 384 1,152 1,024	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 684,150 623,726 385,686 336,909 286,234 253,487 208,749 206,740 184,285	e call count.	5.404.930 758.347 299.017 382.756 219.775 147.153 95.950 180.030 45.984 33.682 24.472 16.741 29.640 11.347 10.428 11.047	Call count * 1,159 988 251 298 119 90 48 27 28 15 988 46 13	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0xD526F1147B562C84 0x6224FA83535A02A 0x6224FA83535A02A 0x6224FA83535A02A 0x6E4A4A071322286 0x768989D250C32E44 0x689231A8F42P0CBE3 0xFR855D95A5C7EAD 0x6885D84A519277 0x617B5C95A55C7EAD 0x6865D84A519277 0x617B5C95A55C7EAD 0x68725A73A510158D3C5D3 0x48C25A34519280335 0x48C25A34519280335 0x48C25A34519280335 0x48C25A34519280335 0x48C25A34519280335 0x48C25A3451 0x5168656A2A8FF3 0x6165866A2A8FF3 0x6165866A2A8FF3 0x6165866A28F5 0x6165866A288F5 0x6165866A288F5 0x6165866A288F5 0x6165866A288F5 0x6165864288F5 0x6165866A288F5 0x6165864288F5 0x6165866A288F5 0x6165864288F5 0x616864288F5 0x6168564288F5 0x616854288F5 0x616854288F5 0x616854288F5 0x61644 0x616854288F5 0x61644 0x61644 0x61644 0x61644 0x61644 0x6164 0x61644 0x6164 0x6164 0x6164 0x6164 0x6164 0x616 0x6164 0x616 0x616 0x616 0x616 0x616 0x616 0x616 0x616 0x616 0x61 0x61	Internal pipeline           0x89D68E8F73517           0x123009F749AE0           0x6709E71976           0x6709E71976           0x605D708813           0x74098354.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.9349.0.242707ACD40.0.9x4D04F518893           0x340224575104318.0.9x4D044F518893           0x34024551849.0.9x4D044F518893           0x340264590AE5           0x340264590AE5           0x34026451487.0.8340.24274F44E           0x42474F4F4F4.
80 ClearRenderTargetView() 81 Cm8PostComputEcolocClear() 82 DrawIndexedInstanced(120, 1, 0, 0, 0) 83 DrawIndexedInstanced(120, 1, 0, 0, 0) 84 DrawIndexedInstanced(120, 1, 0, 0, 0) 85 DrawIndexedInstanced(120, 1, 0, 0, 0) 86 DrawIndexedInstanced(864, 1, 0, 0, 0) 87 DrawIndexedInstanced(184, 1, 0, 0, 0) 88 DrawIndexedInstanced(184, 1, 0, 0, 0) 89 DrawIndexedInstanced(184, 1, 0, 0, 0) 80 CmdBarrierResolveClueryCopy() 91 CmdBarrierResolveClueryCopy() 92 ResourceBarrier() 99 Dispatch(130, 90, 1) 97 ResourceBarrier() 99 Dispatch(160, 90, 1) 97 ResourceBarrier() 99 DrawIndexedInstanced(48, 1800, 0, 0, 0) 00 DrawIndexedInstanced(48, 1800, 0, 0, 0) 00 DrawIndexedInstanced(33, 1, 0, 0, 0) 01 ResourceBarrier() 92 DrawIndexedInstanced(48, 1800, 0, 0, 0) 01 DrawIndexedInstanced(33, 1, 0, 0, 0) 02 DrawIndexedInstanced(33, 1, 0, 0, 0) 02 DrawIndexedInstanced(33, 1, 0, 0, 0) 03 ResourceBarrier()	Allocate     Export nam     TraceRaysAm     0x5526714     0x5225748     0x623254788     0x623254783     0x623254783     0x689902     0x76955595     0x6845508     0x76955595     0x6845508     0x769576898     0x78957782     _amdgpu.cs,     0x48225743     0x4C234510     0x7181672     0x02155489     0x72635489	d resources are d te dinternal 78562264_RayGe 71362286_CHS_1 3535A02A_CHS_4 3535A02A_CHS_5 3535A02A_CHS_4 3535A02A_CHS_4 3535A02A_CHS_4 3505274A_CHS_4 363F9756_CHS_4 363F9756_CHS_4 3682D174_CHS_9 36082D174_CHS_9 390802676_CHS_1 38028676_CHS_	Type Traversal Ray generation Closest hit Closest hit	VGPRs           101           121           72           98           72           98           72           79           125           84           80           3           54           79           85           84           80           3           64           80           3           64           80           3           84           82	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 9	LDS (B) 4,096 4,096 128 2,816 128 384 4,096 1,024 128 128 512 0 0 0 384 1,152 1,024 768	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,966,382 4,966,382 2,659,301 1,462,632 1,153,449 684,150 623,726 335,686 335,690 286,234 253,487 208,749 208,749 208,749 208,749 208,460 184,285 149,897	e call count.	5,404,930 758,347 299.017 382,756 219,775 147,153 95,950 180,030 45,584 33,682 24,472 16,741 29,640 11,316 11,947 10,428 11,900 7,704	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 998 46 13 11	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0xc322FAF83535A02A 0xc322FAF83535A02A 0xc322FAF83535A02A 0xcE4EA4A007132E286 0x768898D250C32E44 0x89231A8F42F0C8E3 0xFR35E95A5C7EAD 0x68AE65D844A19727 0xFR35E7654562C7EAD 0x68AE65D844A19727 0xFR35E7F3E6884C9 0x48C25A737B03835F 0x4CF3A510158D5CD3 0x1718FF0280802F6 0x031C68E68A2A8FF3 0x72F35A931B8186F4	Internal pipeline           0x89D68EBF73517           0x123009F7A9AE0           0x9A7908C11976           0x6CbC5D708B13           0x604597A9AE0           0x47EC2AE32A93           0x947908C19376           0x47EC2AE32A93           0x94599C3708918           0x96499C3708918           0x4D25C758104318           0x2AC275E104318           0x3A0247518893           0x340C26458893           0x340C264520452           0x34672642233           0x34672642233           0x7189232282065           0x718923282065
180 ClearRenderTargetView()           181 CmdPostComputColoc(Lear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(184, 1, 0, 0, 0)           187 DrawIndexedInstanced(154, 1, 0, 0, 0)           188 DrawIndexedInstanced(154, 1, 0, 0, 0)           188 DrawIndexedInstanced(154, 1, 0, 0, 0)           189 DrawIndexedInstanced(154, 1, 0, 0, 0)           190 CmdBarrierBesolveQueryCopy()           192 DrawIndexedInstanced(3, 1, 0, 0, 0)           193 DrawIndexedInstanced(3, 1, 0, 0, 0)           194 ResourceBarrier()           195 ClearDepthStencIVIew()           199 DrawIndexedInstanced(48, 1800, 0, 0, 0)           100 TrawIndexedInstanced(48, 1800, 0, 0, 0)           101 ResourceBarrier()           102 DrawIndexedInstanced(48, 1800, 0, 0, 0)           101 ResourceBarrier()           102 ResourceBarrier()           102 ResourceBarrier()           102 ResourceBarrier()           104 ResourceBarrier()           104 ResourceBarrier()           104 ResourceBarrier()	Allocate     Export nam     TraceRaysAm     0xD526F114     0x2E24A1D0     0x0232FAR8     0x222FAR8     0x223FAR8     0x223FAR8     0x68456508     0x78555954     0x68A65508     0x7A9C2084     0x785257A3     0x48C257A3     0x48C257A3     0x471781FD2     0x31C68E6     0x72555A93     0x78582976	d resources are d te dinternal 78562C64, RayGe 7132E286, CHS 1 5353A02A, CHS 5 7132E286, CHS 1 5353A02A, CHS 5 5353A02A, CHS 5 54240C818, JMiss 7 44219727, CHS 5 54240C818, JMiss 7 44419727, CHS 5 5429C818, JMiss 7 5429C818, JMiss 7 54	Type Traversal Ray generation Closest hit Closest hit	VGPRs           101           121           72           98           72           84           71           64           80           54           79           85           84           85           84           85           84           82           78	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96 90 112 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 128 384 4,096 1,024 128 128 128 512 0 0 384 1,152 1,024 2,68 256	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,452,632 1,153,449 684,150 6623,726 385,686 336,909 286,234 253,487 208,749	e call count.	5.404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682 24,472 16,741 19,470 11,347 11,947 11,0428 11,040 7,704 6,405	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 998 46 13 11	API shader hash 0xAAA1CCC2000000066358C99C24C2C9D 0x0526F11478562C84 0x62E4A4D07132E286 0x0232FAF83535A02A 0x0232FAF83535A02A 0x62E4A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x7689B0250C32F44 0x98231A8F42F0C8E3 0x785C7FE3682D174 0x61D8175FE66864C9 0x46F8355D844A19727 0x46F8355D844A19727 0x4785C7FE3882D174 0x61D8175FE66864C9 0x48CF35TA37BD3835F 0x42F3A51015B05CD3 0x17181F02580802F6 0x031C68E68A2A8FF3 0x71565493A807	Internal pipeline           0x89D68EBF73517           0x132008F7A9AE0.           0x6Dc57050813           0x6Dc57050813           0x6Dc57050813           0x47026F2832433           0x9499c3708918           0x9459c3708918           0x9449c3708918           0x4ED25CF39000           0xAED25CF39000           0xAED25CF39000           0xAD04F51893           0x340c425E0458           0x7E026800b608           0x71892828206           0x71892828206           0x718292828206           0x7182582747474478           0x718258276474           0x718258276474           0x718258276474           0x467F183764749           0x718258276476
180 ClearRenderTargetView()           181 CmaPostComputColorClear()           182 DrawIndexedInstanced(120, 1, 0, 0, 0)           183 DrawIndexedInstanced(120, 1, 0, 0, 0)           184 DrawIndexedInstanced(120, 1, 0, 0, 0)           185 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           186 DrawIndexedInstanced(120, 1, 0, 0, 0)           187 DrawIndexedInstanced(154, 1, 0, 0, 0)           188 DrawIndexedInstanced(154, 1, 0, 0, 0)           189 DrawIndexedInstanced(154, 1, 0, 0, 0)           190 CmdBarrierResolveQueryTimestampStall()           191 CmdBarrierResolveQueryCopy()           192 DrawIndexedInstanced(3, 1, 0, 0, 0)           193 DrawIndexedInstanced(42, 100, 0, 0)           194 ResourceBarrier()           195 Dispatch(120, 0, 10, 1)           196 Dispatch(160, 90, 1)           197 ResourceBarrier()           199 DrawIndexedInstanced(48, 1800, 0, 0, 0)           200 DrawIndexedInstanced(48, 1800, 0, 0, 0)           201 ResourceBarrier()           202 DrawIndexedInstanced(3, 1, 0, 0, 0)           202 DrawIndexedInstanced(3, 1, 0, 0, 0)           203 ResourceBarrier()           204 DrawIndexedInstanced(3, 1, 0, 0, 0)           205 CopyTextureRegion(1)	Allocate     Export nam     TraceRaysAm     OxD526F114     OxC232FAF8:     OxO232FAF8:     OxC0325FAF8:     OxF63550954     OxF63550954     OxF63550954     OxF63550954     OxF63550954     OxF63500     Ox763507FEE:     _amdgpu.cs,     Ox402527A3     Ox4C57A510     Ox131C68E61     Ox2355A93     Ox18EB87766     Ox68EAE508     Ox68EAE508     Ox785CF7EE:     _amdgpu.cs,     Ox40257A3     Ox4C57A510     Ox131C68E61     Ox2355A93     Ox18EB87766     Ox68EAE508     Ox68EAE508     Ox68EAE508     Ox68EAE508     Ox68EAE508     Ox785CF7EE:     _amdgpu.cs,     Ox40257A3     Ox4C57A510     Ox131C68E61     Ox2355A93     Ox18EB87766     Ox68EAE508     Ox	d resources are d te dinternal 78562CB4 cHS 1 5855A02A cHS 5 5855A02A cHS 5 5855A02A cHS 5 5855A02A cHS 4 50C32E44 cHS 8 42F0CBE3 Miss 7 5863P9756 cHS 4 5863P9756 cHS 4 5863P0756 cHS 4 5863P0756 cHS 4 58020174 cHS 9 main 15BD5CD3 cHS 5802057 cHS 4 5802057 cHS 4 5802057 cHS 4 5802057 cHS 4 5802057 cHS 4 5802057 cHS 5 5403407 cHS 5 5403407 cHS 5 5403407 cHS 5	Type Traversal Ray generation Closest hit Closest hit	VGPRs           101           121           72           98           72           84           71           64           80           54           79           85           84           85           84           85           84           82           78	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 9	LDS (B) 4,096 4,096 128 2,816 128 384 4,096 128 128 128 128 512 0 0 384 1,152 1,024 768 256 128	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,462,632 1,153,449 623,726 385,686 336,909 286,234 253,487 208,749 2	e call count.	5.404.930 758.347 299.017 382.756 219.775 147.153 95.950 180.030 45.584 33.682 24.472 16.741 29.640 11.316 11.347 10.428 11.047 10.6405 4.572	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 998 46 13 11	API shader hash 0xAAA1CCC20000000E6358C99C24C2C9D 0x0526F11478562C84 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x0232FAF83535A02A 0x6EE4A40071322286 0x7680980259C32E44 0x89231A8F42F0CBE3 0x6F855D95AE5C7EAD 0x68AE55D84A519727 0xFa9FC808863F9756 0x785CFF13682D174 0x610B175FE66864C9 0x48C257A37B03835F 0x4CF3A510158D5CD3 0x17E8FD280802F6 0x031C68E682A8FF3 0x785CFF13682D17 0x18B87765493A807 0x868AE55D84A419727	Internal pipeline           0x89D68EBF73517           0x123009F749460           0x9A7090E71976           0x46D251976           0x47020AE32493           0x947090E732493           0x947090E74976           0x96D37983AE8           0x42C25E739DDD           0x42C25C739DDD           0x42C25C739DDD           0x42C24C4704AC04D           0x340265C90AE5           0x3766767422333           0x472474F8           0x0447274F474F8           0x46726500586           0x46726500586           0x46726500586           0x46726500586           0x46726500586           0x467474F8           0x467474F8           0x4808944900C5A           0x48049400C5A
179 CindPreComputeColorClear()           180 ClearRenderlarget/Wew()           181 CindPracComputeColorClear()           182 DrawindexedInstance(12, 1, 0, 0, 0)           184 DrawindexedInstance(12, 1, 0, 0, 0)           185 DrawindexedInstance(12, 1, 0, 0, 0)           186 DrawindexedInstance(12, 1, 0, 0, 0)           187 DrawindexedInstance(12, 1, 0, 0, 0)           188 DrawindexedInstance(13, 1, 0, 0, 0)           189 DrawindexedInstance(15, 14, 1, 0, 0, 0)           180 DrawindexedInstance(15, 15, 4, 1, 0, 0, 0)           180 DrawindexedInstance(15, 14, 1, 0, 0, 0)           180 DrawindexedInstance(15, 14, 1, 0, 0, 0)           190 CmdBarierResolveQueryCopy()           191 DrawindexedInstanced(3, 1, 0, 0, 0)           192 ResourceBarrie()           193 DrawindexedInstanced(4, 1, 10, 0, 0)           194 ResourceBarrie()           195 Dispatch(320, 180, 1)           195 Dispatch(160, 90, 1)           197 ResourceBarrie()           201 ResourceBarrie()           202 DrawindexedInstanced(48, 1800, 0, 0, 0)           201 ResourceBarrie()           202 DrawindexedInstanced(3, 1, 0, 0, 0)           203 ResourceBarrie()           204 DrawindexedInstanced(3, 1, 0, 0, 0)           205 CopyTextureRegion()           206 CroBarierEiiiif(Synct)           207	Allocate     Export nam     TraceRaysAm     OxD526F14     OxEE4A4D0     Ox232FAR8     OxEE4A4D0     Ox768898D2     Ox7685955     Ox689451A8     OxF655955     Ox6845508     Ox7A9FC808     OX7A9FC80	d resources are d te dinternal 78562C64, RayGe 7132E286, CHS 1 5353A02A, CHS 5 7132E286, CHS 1 5353A02A, CHS 5 5353A02A, CHS 5 54240C818, JMiss 7 44219727, CHS 5 54240C818, JMiss 7 44419727, CHS 5 5429C818, JMiss 7 5429C818, JMiss 7 54	Type Traversal Ray generation Closest hit Closest hit	VGPRs           101           121           72           98           72           79           125           84           71           64           73           54           79           85           84           79           80           3           54           79           80           3           54           79           85           84           79           71           64           70           85           84           71           85           84           78           71           90	Stack size (B) 128 336 96 96 96 96 96 96 96 96 96 96 96 96 96	LDS (B) 4,096 4,096 128 2,816 2,816 2,816 128 384 4,096 1,024 128 512 0 0 384 1,152 1,024 1,024 128 512 0 0 384 1,152 1,024 1,024 1,024 1,024 1,024 1,026 1,024 1,026 1,	Scratch memory (B) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Durce, regardless of th Total latency (clks) 44,956,240 11,867,536 4,986,382 4,743,010 3,021,720 2,659,301 1,452,632 1,153,449 684,150 6623,726 385,686 336,909 286,234 253,487 208,749	e call count.	5.404,930 758,347 299,017 382,756 219,775 147,153 95,550 180,030 45,984 33,682 24,472 16,741 19,470 11,347 11,947 11,0428 11,040 7,704 6,405	Call count * 1,159 988 251 298 119 80 101 306 48 27 28 15 998 46 13 11	API shader hash 0xAAA1CCC200000006358C99C24C2C9D 0x0526F11478562C84 0x62E4A4D07132E286 0x0232FAF83535A02A 0x0232FAF83535A02A 0x62E4A4D07132E286 0x76889B0250C32F44 0x98231A8F42F0C8E3 0x7689B0250C32F44 0x98231A8F42F0C8E3 0x7F855E95AE5C7EAD 0x68AE65D84A419727 0x7A9C608863F9756 0x7B5C7FE3882D174 0x61D8175FE66864C9 0x46F3A51015B05CD3 0x47F8351015B05CD3 0x17181F02580802F6 0x031C68E68A2ABFF3 0x71565493A807	Internal pipeline I           0x89D68EBF73517           0x123009F7A9A60           0x9A7908CF1976           0x60C50708813           0x47EC2AE332493           0x94790047978           0x94790248935A           0x47EC2AE332493           0x9425CF390DD           0x0AC275E104318           0x40C24F31893A           0x4AC242707ACD4D           0x34074F18378283D           0x3476742233           0x7E02680D6086           0x74174F4           0x718932E82055           0x467F33CF069



### WHICH SHADERS IN MY PIPELINE ARE THE MOST EXPENSIVE?

#### • Events -> Pipeline state

Help			1.13.0.38										- 0
	VIEW EVENTS												SETT
JIAKI OVER	EVENIS												SET
avefront occupancy	Event timing	Pipeline state	Instruction tin	ning									
lapse tree 🛛 🗸 Group by u	ser events												Filter event tree
164 ResourceBarrier()													
165 Dispatch(920, 1, 1)		Shader table	ISA Informa	tion									
166 ResourceBarrier()		Shauer Lable	134 10000	luon									
167 DispatchRays <indirect>(376</indirect>	68320, 1, 1)					2				<b></b>			
168 ResourceBarrier()													
169 Dispatch(320, 180, 1)												1.0.	
170 ResourceBarrier()						Ray gener	atton	raversal		Hit? Yes	Closest	THC.	
171 DrawIndexedInstanced(3, 1,	, 0, 0, 0)					15.119	M.	7.25%			25.44	04	
172 DrawIndexedInstanced(6, 1,	, 0, 0, 0)					15.119	50	7162 70		<b>T</b>	25.44	70	
173 ResourceBarrier()								1		No			
174 DrawIndexedInstanced(600,								1					
75 DrawIndexedInstanced(600,								▼					
76 CmdBarrierResolveQueryTin													
77 CmdBarrierResolveQueryCo	ppy()												
78 CmdBarrierBlitSync()							Inte	ersection	Any hit	100	Miss		
79 CmdPreComputeColorClear	0												
180 ClearRenderTargetView()									0.32%		1.519	6	
181 CmdPostComputeColorClea													
182 DrawIndexedInstanced(120,		Shader Tal	ole										
183 DrawIndexedInstanced(120,		Allocate	d resources are dri	ven by the	e shader table	entries with the hi	ghest pressure on eac	h resource, regardless	of the call count.				V Show filters Shader search
184 DrawIndexedInstanced(120,		Export nam		ype	VCDDa Char		Comtab momony (B	) Tatal latency (elles)	* Instruction cost (%)	Testevetien hit count		API shader hash	Internal pipeline hash
185 DrawindexedInstanced(120, 186 DrawindexedInstanced(864,				1000		and the second second second	the providence of the second		the second s				
186 Drawindexedinstanced(864, 187 Drawindexedinstanced(158-			132E286_CHS_1 C			128	0	4,986,382	6.35	299,017	251	0xEEE4A4D07132E286	0x9A790BCF1976D9D2EEE4A4D07132E286
188 DrawIndexedInstanced(864,			535A02A_CHS_5 C			2,816	0	4,743,010	6.04	382,756	298	0x0232FAF83535A02A	0xC6DC5D70B813B7CA0232FAF83535A02A
189 DrawIndexedInstanced(158-			535A02A_CHS_d C			2,816	0	3,021,720	3.85	219,775	119	0x0232FAF83535A02A	0xF049B3C4B935A7A30232FAF83535A02A
189 Drawindexedinstanced (1584 190 CmdBarrierResolveQueryTin			132E286_CHS_4 C			128	0	2,659,301	3.39	147,153	80	0xEEE4A4D07132E286	0x47EC2AE332493877EEE4A4D07132E286
190 CmdBarrierResolveQueryTin 191 CmdBarrierResolveQueryCo			50C32E44_CHS_8 C				0	1,462,632	1.86 0.87	95,950 45,984	101 48	0x76889BD250C32E44	0x9B499C970891826176889BD250C32E44
191 CmdbarnerNesolveQueryCo 192 ResourceBarrier()	004		ESC7EAD_CHS_7 C			1,024	0	684,150	0.87	45,984 33,682		0xFF855E95AE5C7EAD	0xAED25CF39D0D8312FF855E95AE5C7EAD
193 DrawIndexedInstanced(3, 1,	0.0.0)		44A19727_CHS C			128	0	623,726 385,686	0.79	33,682	27 28	0x6BAE65D844A19727	0x0AC275E10431B7FD6BAE65D844A19727
193 Drawindexedinstanced(5, 1, 194 ResourceBarrier()	, 0, 0, 0]		63F9756_CHS_d C			128 512	0	385,686 336,909	0.49	24,472	28	0xFA9FC80B863F9756	0xC2A2707ACD4D7940FA9FC808863F9756
195 Dispatch(320, 180, 1)			682D174_CHS_9 C I5BD5CD3_CHS C			384	0	208,749	0.43	16,741 11,947	15	0x7B5CF7FE3682D174 0x4CF3A51015BD5CD3	0xAD004F518B93BB647B5CF7FE3682D174 0x37E6767422333F374CF3A51015BD5CD3
196 Dispatch(160, 90, 1)			BOB02F6_CHS_f C			1,152	0	208,749 206,460	0.27	11,947	13	0x4CF3A51015BD5CD3 0x171B1FD29B0B02F6	0x37E6767422333F374CF3A510158D5CD3 0x7E02680D6D865CA3171B1FD2980802F6
197 ResourceBarrier()			A2ABFF3 CHS 3 C			1,152	0	184,285	0.26	11,000	8	0x031C68E6BA2ABFF3	0x7e02680060865CA3171B1FD2980802F6 0xD4437D4E74F808DA031C68E6BA2ABFF3
198 ClearDepthStencilView()			BB1B6F4_CHS_8 C			768	0	149,897	0.25	7,704	8	0x72F35A931BB1B6F4	0x718923E282D65BD872F35A931BB186F4
199 DrawindexedInstanced(48, 1	1800. 0. 0. 0)		493AB07_CHS_6 C			256	0	110.057	0.14	6,405	7	0x18EB87765493AB07	0xA6F7E33CF0E099EA18EB87765493AB07
200 DrawIndexedInstanced(48, 1			44A19727 CHS C			128	0	103.510	0.13	4,572	4	0x6BAE65D844A19727	0xBDB9449D0C5A160B6BAE65D844A19727
01 ResourceBarrier()	or and the test of a		87A0413 CHS 6 C			512	0	89,207	0.11	4,605	5	0x1C5E5F6E287A0413	0xAAA7616D07F32A4C1C5E5F6E287A0413
	, 0, 0, 0)		F81246E CHS 1 C			256	0	24,139	0.03	979	1	0xEE16B6661F81246E	0x38AC358DF1B06B50EE16B6661F81246E
202 DrawindexedInstanced(3, 1,	0.01/04-58		4614320D_CHS C			512	0	0	0.00	0	0	0x268AC9644614320D	0x0FCB75251A8889A3268AC9644614320D
						256	0	0	0.00	0	0	0x2E9A1EDAA4446514	0x0134E45462815F222E9A1EDAA4446514
203 ResourceBarrier()	, 0, 0, 0)	0x2F9A1FDA	A4446514 CHS										
203 ResourceBarrier() 204 DrawIndexedInstanced(3, 1,	, 0, 0, 0)		A4446514_CHS C				0	0		0	0		
202 DrawIndexedInstanced(3, 1, 203 ResourceBarrier() 204 DrawIndexedInstanced(3, 1, 205 CopyTextureRegion() 206 CmdBarrierBiltSync()	, 0, 0, 0)	0x2E9A1EDA	A4446514_CHS C A4446514_CHS C	losest hit	79 96	256	•		0.00	0	0	0x2E9A1EDAA4446514	0x79DCABFC38FC0CAE2E9A1EDAA4446514



### WHICH SHADERS IN MY PIPELINE ARE THE MOST EXPENSIVE?

#### Events -> Pipeline state

1080p Instr.rgp - D3D12 - Instruction tracing: Full frame - Radeon GP	PU Profiler - V1	1.12.0.18													>
e Help															
START OVERVIEW EVENTS															SETTING
Wavefront occupancy Event timing Pipel	eline state	Instruction timing	,												
ollapse tree 🛛 🗸 Group by user events															Search
2210 DispatchRays <indirect>(960, 540, 1)</indirect>															
✓ Transitions		Shader table ISA Inf	ormation												
2211 ResourceBarrier() RB DefaultGfxDeviceState								_			•				
<ul> <li>RTX SUN DENOISER</li> </ul>															
✓ RAYTRACE-SUN-DENOISER							Deveration				185	Church ha			
✓ RAYTRACE-SUN-TEMPORAL							Ray generation	on Traver	1881		Hit?	Yes Cosest hit			
2212 Dispatch(120, 68, 1)							1.74%	87.05	%			0.04%			
RAYTRACE-SUN-HISTORY-CLAMPING										1	<b>T</b>		-		
<ul> <li>Transitions</li> <li>2213 ResourceBarrier()</li> </ul>								I		1	NO				
2213 Resourcebarrier() 2214 Dispatch(120, 68, 1)								+		1					
✓ RAYTRACE-SUN-SPATIAL															
Transitions															
2215 ResourceBarrier()								Intersec	ction 🔶 A	ny hit		Miss			
2216 Dispatch(120, 68, 1)  Transitions															
2217 ResourceBarrier()									10	0.87%		0.02%			
2218 Dispatch(120, 68, 1)		Shader Table													
<ul> <li>Transitions</li> </ul>		Allocated resources ar	e driven	by the chi	adar tabla antria	with the	highest pressure on	each resource, regardle	es of the call count					Show filters	Shader search 🔎
2219 ResourceBarrier()		-							~					· Show meers	
✓ RAYTRACE-SUN-UPSCALE		Export name	Туре			LDS (B)	Scratch memory (B			Instruction hit count			Internal pipeline hash		
2220 Dispatch(240, 135, 1)   Transitions		AnyHitMeshClipFromRed	Any hit		16	0	0	3,845,272	10.84	353,054	2,737	0xC2A949F98B6034C1	0x7CE111F73E00123FE5B4BCE0A43F091		
2221 ResourceBarrier()		AnyHitIgnore AnyHitBspBlendFromAlpha	Any hit Any hit		16 16	0	0	9,597	0.03	2,010	201	0xB878C2C4938F44C1 0xA2CD3EEA921675AB	0x7CE111F73E00123FE5B4BCE0A43F091 0x7CE111F73E00123FE5B4BCE0A43F091		
RB_DefaultGfxDeviceState		AnyHitBspBlendFromRed	Any hit		16	0	0	0	0.00	0	0	0x610FB6C6BF69F68A	0x7CE111F73E00123FE5B4BCE0A43F091		
RB_CodeResource_InitializeResourcesForScope: DEFERRED		AnyHitBspClipFromAlpha	Any hit		16	0	0	0	0.00	0	0	0x8E123D04695306D8	0x7CE111F73E00123FE5B4BCE0A43F091		
✓ Transitions		AnyHitBspClipFromRed	Any hit		16	0	0	0	0.00	0	0	0x89311874A793532C	0x7CE111F73E00123FE5B4BCE0A43F091		
2222 ResourceBarrier()		AnyHitUber	Any hit		16	0	0	0	0.00	0	0	0x2358A54314AE9984	0x7CE111F73E00123FE5B4BCE0A43F091		
2223 CmdBarrierDiscardResourceStall() 2224 CmdBarrierDiscardResource()		AnyHitMeshClipFromAlpha	Any hit		16 16	0	0	0	0.00	0	0	0xD70500CFDBAA63D7			
2225 DiscardResource()		AnyHitMeshBlendFromAlpha AnyHitMeshBlendFromRed			16	0	0	0	0.00	0	0		0x7CE111F73E00123FE5B4BCE0A43F091 0x7CE111F73E00123FE5B4BCE0A43F091		
✓ Transitions		. aly advestored for the	July Int			•	•		0.00			CASCONDOUCD-FUTT SA	0.1 02 1 11 1 0 00 1 2 0 1 2 0 1 0 0 1 0 0 1 0 0 1		
2226 ResourceBarrier()															
SetRenderTarget SCENE(14)															
<ul> <li>Transitions</li> <li>2227 ResourceBarrier()</li> </ul>															
<ul> <li>Permuted Tiling</li> </ul>															
✓ 3131e57ab31041c7															
2228 Dispatch(1, 1, 1)															
✓ Transitions															
2229 ResourceBarrier() ~ 31a04b1121b263d1															
<ul> <li>31a04b1121b263d1</li> <li>2230 Dispatch(30, 17, 1)</li> </ul>															
<ul> <li>Transitions</li> </ul>															
2231 ResourceBarrier()															
✓ 219d8bb06dd19b6a															
2232 Dispatch(1, 1, 1)															
✓ Transitions															
<ul> <li>Transitions</li> <li>2233 ResourceBarrier()</li> </ul>		* These are sampled value	es from t	he analyze	ed wavefronts in	the instruc	tion timing data.								
✓ Transitions		* These are sampled value	es from t	the analyze	ed wavefronts in	the instruc	tion timing data.								



## WHICH SHADERS IN MY PIPELINE ARE LIMITING MY OCCUPANCY?

### • Events -> Pipeline state





### WHICH SHADERS IN MY PIPELINE ARE LIMITING MY OCCUPANCY?

#### • Events -> Pipeline state

felp	g: Full frame - Radeon GPU Profiler - \	1.13.0.30										- 0
	EVENTS											SETTI
avefront occupancy Event tim	ing Pipeline state	Instruction timing										
apse tree 🗸 Group by user events												Filter event tree
167 DispatchRays <indirect>(3768320, 1, 1)</indirect>												
168 ResourceBarrier()	Shader table	e ISA Information										
169 Dispatch(320, 180, 1)	Shauer table	E ISA Information										
170 ResourceBarrier()												
71 DrawIndexedInstanced(3, 1, 0, 0, 0)												
72 DrawIndexedInstanced(6, 1, 0, 0, 0)				Pav	generation	Traversa			Hit?	Closest hit		
73 ResourceBarrier()				Koy	generation	Traversa	✓			Close at The		
74 DrawIndexedInstanced(600, 1, 0, 0, 0)					5.11%	57.25%		· · · · · · · · · · · · · · · · · · ·		25.44%		
75 DrawIndexedInstanced(600, 1, 0, 0, 0)								1	Y			
76 CmdBarrierResolveQueryTimestampStall()								1	No			
77 CmdBarrierResolveQueryCopy()						1						
78 CmdBarrierBlitSync() 79 CmdPreComputeColorClear()												
80 ClearRenderTargetView()												
81 CmdPostComputeColorClear()												
82 DrawIndexedInstanced(120, 1, 0, 0, 0)						Intersectio	an 🔁 A	kny hit		Miss		
83 Drawindexedinstanced(120, 1, 0, 0, 0)										-	-	
184 DrawIndexedInstanced(120, 1, 0, 0, 0)								0.32%		1.51%		
85 DrawindexedInstanced(120, 1, 0, 0, 0)	Shader Ta	ble										
86 DrawIndexedInstanced(864, 1, 0, 0, 0)		ed resources are driven by t	a chadar tal	his optring with t	he highest	processing on each receiv	wee recordless of th	e cell count				Show filters Shader search
87 DrawIndexedInstanced(1584, 1, 0, 0, 0)	Allocati	ed resources are driven by t	le shader ta	ble entries with t	ne nignest	pressure on each resol	urce, regardless of th	le call count.				Show niters Shader search
88 DrawindexedInstanced(864, 1, 0, 0, 0)	Export nar	ne Type	VGPRS	Stack size (B)	LDS (B)	Scratch memory (B)	Total latency (clks)	* Instruction cost (%)	Instruction hit count	* Call count *	API shader hash	Internal pipeline hash
89 DrawIndexedInstanced(1584, 1, 0, 0, 0)	0x1A0A5610	DAD4C5226_RayG Ray generation	tion 127	544	0	0	0	0.00	0	0	0x1A0A5610AD4C5226	0x273DDED2F36AAB931A0A5610AD4C5
90 CmdBarrierResolveQueryTimestampStall()	0xF02913E8	166AA8F6_RayGe Ray genera	tion 127	592	0	0	0	0.00	0	0	0xF02913E8166AA8F6	0x33704E152E1C24F3F02913E8166AA8F
91 CmdBarrierResolveQueryCopy()	0xC38CEAF4	B977B427_RayGe Ray generation	tion 127	528	0	0	0	0.00	0	0	0xC38CEAF4B977B427	0x4FD75128FB61B072C38CEAF4B977B42
92 ResourceBarrier()		DBF82B3B_RayGe Ray genera		464	0	0	0	0.00	0	0	0x771E42F5DBF82B3B	0x5612BCC68522ED2C771E42F5DBF82B3
93 DrawIndexedInstanced(3, 1, 0, 0, 0)		BE68BDD8_RayG Ray generation		352	0	0	0	0.00	0	0	0xB22761D4BE68BDD8	0x6E7CDFCD35C6246EB22761D4BE68BD
94 ResourceBarrier() 05 Disastati (220, 120, 1)		5B73F86A_RayGe Ray genera		464	0	0	0	0.00	0	0	0xC7889F875B73F86A	0x818974F806DAD9CAC7889F875B73F8
95 Dispatch(320, 180, 1)		69EA78F1_RayGe Ray genera		464	0	0	0	0.00	0	0	0xF594427069EA78F1	0x91B22BB0DB4DBDF3F594427069EA78
96 Dispatch(160, 90, 1) 97 ResourceBarrier()		377965C87_RayGe Ray genera		64	0	•	0	0.00	0	0	0x9A4F1A1B77965C87	0x9326F8A27F002A5B9A4F1A1B77965C
97 ResourceBarner() 98 ClearDepthStencilView()		DA5030B8_RayG Ray genera		64	0	•	0	0.00	0	0	0xF8751A4DDA5030B8	0x97EFAEC3962F4795F8751A4DDA5030
98 ClearDepthStencilview() 99 DrawIndexedInstanced(48, 1800, 0, 0, 0)		0EBA4A24_RayGe Ray genera		576 64	0		0	0.00	0	0	0x6B5896F80EBA4A24	0x9F9B1682700B74716B5896F80EBA4A2
00 DrawIndexedInstanced(48, 1800, 0, 0, 0)		27185131D_RayGe Ray generation		464	0	0	0	0.00	0	0	0x575FD07271B5131D 0x4E0E9FF0A61F9550	0xA3986C945D04F832575FD07271B513 0xB1B6551EF41CBCEE4E0E9FF0A61F955
01 ResourceBarrier()		A61F9550_RayGe Ray genera BEA7E49F0_RayGe Ray genera		304	0	0	0	0.00	0	0	0x51A8B3A8EA7E49F0	0x8CE855621AA38E0451A8B3A8EA7E49
02 DrawIndexedInstanced(3, 1, 0, 0, 0)		A82A820B8_RayG Ray general Ray general		336	0	0	0	0.00	0	0	0xD5C8C05A82A820B8	0xD1141AB871A53B53D5C8C05A82A82
03 ResourceBarrier()		03B6F4E75_RayGe Ray general 03B6F4E75_RayGe Ray general		464	0	7	0	0.00	0	0	0x7BCC12BD3B6F4E75	0xDE736BEBC27B71A97BCC12BD3B6F4E
04 DrawIndexedInstanced(3, 1, 0, 0, 0)		93471898 RayGe Ray general		640	0		0	0.00	0	0	0xDF02310F93471B9B	0xE3CEDF0F4AF33D11DF02310F9347185
05 CopyTextureRegion()		18EF57E21_RayGe Ray general		512	0	0	0	0.00	0	0	0x1C4C3D318EF57E21	0xF071A8D78D319C1A1C4C3D318EF57E
06 CmdBarrierBlitSync()		6ECED0DE_RayG Ray genera		64	0		0	0.00	0	0	0x323D3B1E6ECED0DE	0xF22D58049F7C15C2323D3B1E6ECED0
		00D9E0529 RayG Ray genera		384	0	0	0	0.00	0	0		
207 CmdBarrierResolveQueryTimestampStall() 208 CmdBarrierResolveQueryCopy()		VALLEACE Dange Davidence	tion 176	200	0	0	0	0.00	0	0	N-CONTENEDCALEERICE	0-72D7E0577610DD50/077676DC4EEEA/
207 CmdBarrierResolveQueryTimestampStall()	0						n	0.00	0	0	N-CONTENEDCALEEACE	0~72D7E0E3764000E0C037636DCAEEEAC



elp					
ST	ART OVERVIEW EVENTS				SET
31	ARI OVERVIEW EVENIS				351
front occ	cupancy Event timing P	ipeline state	Instruction timing		
PI PSO 0xD	05E5EFA25E81D851 V Event 167 V	Export name 0xD5	26F1146f95 (15.11% a	st) VS HS DS GS PS CS RT	Wavefront
					Latencies
line	Search P No result	s 🗸 Clks normaliz	ed by hit counts	avefront Latencies: selection total	Histogram 1805 dk Wavefronts: 988 2769
			lit count Instruction c		Raytracing
17	<pre>buffer_load_dword v3, v4, s[16:19 s mov b32 s40, s8</pre>		88 0.00 88 0.00	1 clk 1 clk	167 DispatchRays <indirect>(3768320, 1, 1)</indirect>
19	s_movk_i32 s42, 0x1000		88 0.00	1 clk	
20	s mov b32 s43, 0x2104bfac		88 0.00	1 clk	Identifiers
21	s_mov_b32 s44, s12		0.00	1 clk	
22	s_movk_i32 s46, 0x1000		88 0.00	1 clk	API PSO hash
23	s_mov_b32 s47, 0x2104bfac		88 0.00 88 0.01	1 clk	0xD5E5EFA25E81D851
24	<pre>s_buffer_load_dwordx2 s[8:9], s[4 s_buffer_load_dwordx2 s[10:11], s</pre>			9 clk 1 clk	
26	s waitent vment(0)		88 0.66	527 clk	
27	buffer_load_dword v101, v3, s[36:		88 0.00	1 clk	Wavefront statistics
28	s_waitont vmont(0)	ç	0.86	680 clk	Timeline
29	v_cvt_f32_u32_sdwa v5, v101 dst_s			1 clk	Timeine
80 81	<pre>v_cvt_f32_u32_sdwa v6, v101 dst_s s waitcnt lgkmcnt(0)</pre>	sel:DWORD dst_u	88 0.00 88 0.01	1 clk 4 clk	front an exciting of the second se
32	v subrev f32 e32 v5, s10, v5		88 0.00	1 clk	
33	v_subrev_f32_e32_v8, s11, v6		88 0.00	1 clk	Branches total 635,582
34	v_cvt_f32_u32_e32 v7, s9		88 0.00	1 clk	Branches taken 42.31%
35	v_cvt_f32_u32_e32 v6, s8		0.00	1 clk	
86	v_cmp_ge_f32_sdwa s8, v5, v6 src(	_sel:DWORD src 9	88 0.01	6 clk	
37 38	v_cmp_ge_f32_e32 vcc_lo, v8, v7 s_or_b32 vcc_lo, s8, vcc_lo		88 0.00 88 0.02	1 clk 16 clk	Instruction Hit count
39	s_mov_b32_s24, exec_10		88 0.00	1 clk	
40	<pre>s_andn2_b32 exec_lo, s24, vcc_lo</pre>		88 0.00	2 clk	VALU 4,004,589
41	s_obranch_execz_L3	9	0.01	9 clk	SALU 1,758,682
12 BBF0_3					VMEM 128,453
13	buffer_load_dword v4, v4, s[16:19			3 clk	SMEM 165,795
14	<pre>buffer_load_dwordx2 v[102:103], v s waitcnt vmcnt(0)</pre>		0.00	1 clk 362 clk	LDS 140.279
16	s clause 0x1		66 0.00	1 clk	
17	scratch_store_dword off, v102, s	22 offset:280	66 0.00	1 clk	IMMEDIATE 680,157
8	buffer_load_dwordx2 v[99:100], v3	3, s[36:39], 0 .9	66 0.00	1 clk	EXPORT 0
19	s_mov_b32 s30, exec_lo		0.00	1 clk	MISC 988
50 51	v_cmpx_ge_u32_e64 v4, -2 v_mov_b32_e32 v105, 0x60ad78ec		66 0.02 66 0.00	15 clk 2 clk	RAYTRACE 47,539
52	v mov b32 e32 v105, 0x60ad/8ed v mov b32 e32 v8, 0		66 0.00	2 clk	Total 7,715,509
53	v_mov_b32_e32 v7, 0	9	66 0.00	2 clk	IUtal 1,113,303
54	v_mov_b32_e32 v6, 0		0.00	2 clk	
5	v_mov_b32_e32 v5, 0		66 0.00	1 clk	Hardware utilization
56 57	<pre>s_andn2_b32 exec_lo, s30, exec_lo</pre>		66 0.01 66 0.01	8 clk 9 clk	natuware utilization
58 BBF0 4	s_cbranch_execz _L4 4:	5	0.01	3 CIK	
59	<pre>s_buffer_load_dwordx4 s[8:11], s</pre>	[44:47], 0xba0	66 0.00	3 clk	
50	s_load_dword s84, s[26:27], 0xc	ç	66 0.00	1 clk	12.00
51	s_load_dwordx4 s[12:15], s[28:29]		0.00	1 clk	42.8%
52	<pre>s_buffer_load_dword s48, s[40:43]</pre>		66 0.00	1 clk	15.1%
53 54	buffer_load_dwordx3 v[116:118], v		0.00 0.07	1 clk 54 clk	4.2% 1.4% 4.6%
55	<pre>s_waitcnt lgkmcnt(0) buffer load dword v7, v3, s[12:15</pre>		66 0.00	54 clk 1 clk	VALU SALU VMEM SMEM LDS
66	v cmp neg f32 e64 s36, s10, 0		66 0.02	16 clk	
67	v_cndmask_b32_e64 v12, 0, 0x20000		66 0.00	2 clk	Shader statistics



p	D3D12 - Instruction tracing: Full frame - Radec				- 0
1					
	OVERVIEW EVENTS				
efront occupane	ncy Event timing Pipel	ine state Instru	iction timing		
PI PSO 0xD5E5EF	FA25E81D851 V Event 167 A Exc	ort name 0xD526F114	6f95 (15.11% cost)	VS HS DS GS PS CS RT	Wavefront
1100 0.0002020	TraceB	avsAmdInternal (57.25%)	rost) 🔺		Latencies
line	Search P No rest 0xD52	6F1146f95 (15.11% cos	) Vavefro	nt Latencies: selection total	Histogram 1805 dk Wavefronts: 988 2769
	OxEE4	A4D00f810 (6.35% cos	t) uction cost (%	b) Latency	Protocolor.
7 buff	fer_load_dword v3, v4, s[16:0x023	2FAF83bb87 (6.04% cos	t)	1 clk	Raytracing
18 <u>s_mo</u> r	ov_b32 s40, s8 0x023	2FAF8ee998 (3.85% cos	t)	1 clk	167 DispatchRays <indirect>(3768320, 1, 1)</indirect>
	ovk_132 s42, 0x1000 OxEEE4	A4D0c4b43 (3.39% cos	t)	1 clk	Identifiers
	ov_b32 s43, 0x2104bfac ov_b32 s44, s12 0x768	39BD24e189 (1.86% cos	t)	1 clk 1 clk	Auchanicia
2 s_mo	ovk_i32 s46, 0x1000 0x892	31A8F4adfdb (1.47% co	st)	1 clk	API PSO hash
14	ov_b32 s47, 0x2104bfac 0xFF85	5E952ba06 (0.87% cos	t)	1 clk	0xD5E5EFA25E81D851
24 <u>s_bu</u> 25 <u>s_bu</u>	uffer_load_dwordx2 s[8:9], s uffer_load_dwordx2 s[10:11],Ox6BA		t) =	9 clk 1 clk	
6 <u>s_wa</u>	aitont vmont(0)	988	0.66	527 clk	
	fer_load_dword v101, v3, s[36:39]		0.00	1 clk	Wavefront statistics
	aitont vmont(0) vt_f32_u32_sdwa v5, v101 dst_sel:	988 WORD dat u: 988	0.00	1 clk	Timeline
0 v_cv	vt_f32_u32_sdwa v6, v101 dst_sel:	WORD dst_u: 988	0.00	1 clk	An extension of the second
	aitent lgkment(0)	988	0.01	4 clk	
	ubrev_f32_e32 v5, s10, v5 ubrev f32 e32 v8, s11, v6	988	0.00	1 clk 1 clk	Branches total 635,582
34 v_cv	vt_f32_u32_e32 v7, s9	988	0.00	1 clk	Branches taken 42.31%
	vt_f32_u32_e32 v6, s8	988	0.00	1 clk	
	<pre>mp_ge_f32_sdwa s8, v5, v6 src0_se mp_ge_f32_e32 vcc_lo, v8, v7</pre>	2:DWORD src 988	0.01	6 clk 1 clk	
38 <b>s_or</b>	r_b32 vcc_lo, s8, vcc_lo	988	0.02	16 clk	Instruction Hit count
	ov_b32 s24, exec_lo	988	0.00	1 clk	VALU 4.004.589
	ndn2_b32 exec_lo, s24, vcc_lo branch_execz _L3	988	0.00	2 clk 9 clk	SALU 1.758.682
2 BBF0_3:					VMEM 128.453
	fer_load_dword v4, v4, s[16:19],		0.00	3 clk	SMEM 165,795
	<pre>fer_load_dwordx2 v[102:103], v3, aitcnt vmcnt(0)</pre>	<b>[36:39], 0</b> 966 966	0.00	1 clk 362 clk	LDS 140.279
6 s_cl	lause 0x1	966	0.00	1 clk	IDS 140,279 IMMEDIATE 680,157
	atch_store_dword off, v102, s22 o		0.00	1 clk	
	<pre>fer_load_dwordx2 v[99:100], v3, s ov_b32 s30, exec_lo</pre>	[36:39], 0 966 966	0.00	1 clk 1 clk	
0 <b>v_cm</b>	mpx_ge_u32_e64 v4, -2	966	0.02	15 clk	MISC 988
51 <b>v_mo</b>	ov_b32_e32 v105, 0x60ad78ec	966	0.00	2 clk	RAYTRACE 47,539
	ov_b32_e32 v8, 0 ov_b32_e32 v7, 0	966 966	0.00	2 clk 2 clk	Total 7,715,509
	ov_b32_e32 v6, 0	966	0.00	2 clk	
	ov_b32_e32 v5, 0	966	0.00	1 clk	Hardware utilization
	ndn2_b32 exec_lo, s30, exec_lo branch_execz_L4	966 966	0.01	8 clk 9 clk	
8 BBF0_4:					
	uffer_load_dwordx4 s[8:11], s[44:	7], 0xba0 966	0.00	3 clk	
	<pre>oad_dword s84, s[26:27], 0xc oad dwordx4 s[12:15], s[28:29], 0;</pre>	966 \$80 966	0.00	1 clk 1 clk	42.8%
	uffer_load_dword_s48, s[40:43], 0		0.00	1 clk	
3 buff	<pre>fer_load_dwordx3 v[116:118], v3,</pre>	s[36:39], 0 966	0.00	1 clk	15.1% 4.2% 1.4% 4.6%
	aitont lgkmont(0)	966 Jidxen 966	0.07	54 clk	VALU SALU VMEM SMEM LDS
	<pre>fer_load_dword v7, v3, s[12:15], mp neq f32 e64 s36, s10, 0</pre>	966	0.00	1 clk 16 clk	
	ndmask_b32_e64 v12, 0, 0x2000000,		0.00	2 clk	Shader statistics



elp					
ST	ART OVERVIEW EVENTS				SET
31	ART OVERVIEW EVENTS				351
front occ	cupancy Event timing P	ipeline state	Instruction timing		
PI PSO 0xD	05E5EFA25E81D851 V Event 167 V	Export name 0xD5	26F1146f95 (15.11% c	st) VS HS DS GS PS CS RT	Wavefront
					Latencies
line	Search P No result	s 🗸 Clks normaliz	ed by hit counts	avefront Latencies: selection total	Histogram 1805 dk Wavefronts: 988 2769
			lit count Instruction of		Raytracing
17	<pre>buffer_load_dword v3, v4, s[16:19 s mov b32 s40, s8</pre>		88 0.00 88 0.00	1 clk 1 clk	167 DispatchRays <indirect>(3768320, 1, 1)</indirect>
19	s_movk_i32 s42, 0x1000		88 0.00	1 clk	
20	s mov b32 s43, 0x2104bfac		88 0.00	1 clk	Identifiers
21	s_mov_b32 s44, s12		0.00	1 clk	
22	s_movk_i32 s46, 0x1000		88 0.00	1 clk	API PSO hash
23	s_mov_b32 s47, 0x2104bfac		88 0.00 88 0.01	1 clk	0xD5E5EFA25E81D851
24	<pre>s_buffer_load_dwordx2 s[8:9], s[4 s_buffer_load_dwordx2 s[10:11], s</pre>			9 clk 1 clk	
26	s waitent vment(0)		88 0.66	527 clk	
27	buffer_load_dword v101, v3, s[36		0.00	1 clk	Wavefront statistics
28	s_waitont vmont(0)	ç	0.86	680 clk	Timeline
29	v_cvt_f32_u32_sdwa v5, v101 dst_s			1 clk	Timeine
80 81	<pre>v_cvt_f32_u32_sdwa v6, v101 dst_s s waitcnt lgkmcnt(0)</pre>	sel:DWORD dst_u	88 0.00 88 0.01	1 clk 4 clk	front an exciting of the second se
32	v subrev f32 e32 v5, s10, v5		0.01	1 clk	
33	v_subrev_f32_e32_v8, s11, v6		88 0.00	1 clk	Branches total 635,582
34	v_cvt_f32_u32_e32 v7, s9		0.00	1 clk	Branches taken 42.31%
35	v_cvt_f32_u32_e32 v6, s8		0.00	1 clk	
86	v_cmp_ge_f32_sdwa s8, v5, v6 src(	_sel:DWORD src 9	88 0.01	6 clk	
37 38	v_cmp_ge_f32_e32 vcc_lo, v8, v7 s_or_b32 vcc_lo, s8, vcc_lo		88 0.00 88 0.02	1 clk 16 clk	Instruction Hit count
39	s_mov_b32_s24, exec_10		88 0.00	1 clk	
40	<pre>s_andn2_b32 exec_lo, s24, vcc_lo</pre>		88 0.00	2 clk	VALU 4,004,589
11	s_obranch_execz_L3	9	0.01	9 clk	SALU 1,758,682
2 BBF0_3					VMEM 128,453
13	buffer_load_dword v4, v4, s[16:19			3 clk	SMEM 165,795
14	<pre>buffer_load_dwordx2 v[102:103], v s waitcnt vmcnt(0)</pre>		66 0.00 66 0.45	1 clk 362 clk	LDS 140.279
46	s clause 0x1		66 0.00	1 clk	
17	scratch_store_dword off, v102, s	22 offset:280	66 0.00	1 clk	IMMEDIATE 680,157
18	buffer_load_dwordx2 v[99:100], v3	3, s[36:39], 0 9	0.00	1 clk	EXPORT 0
19	s_mov_b32 s30, exec_lo		0.00	1 clk	MISC 988
50 51	v_cmpx_ge_u32_e64 v4, -2 v_mov_b32_e32 v105, 0x60ad78ec		66 0.02 66 0.00	15 clk 2 clk	RAYTRACE 47,539
52	v_mov_b32_e32_v105, 0x60ad/8ed v_mov_b32_e32_v8, 0		66 0.00	2 clk	Total 7,715,509
53	v_mov_b32_e32 v7, 0		66 0.00	2 clk	IOTAI 1,113,309
54	v_mov_b32_e32 v6, 0	9	0.00	2 clk	
5	v_mov_b32_e32 v5, 0		66 0.00	1 clk	Handunan utilization
56 57	<pre>s_andn2_b32 exec_lo, s30, exec_lo</pre>		66 0.01 66 0.01	8 clk	Hardware utilization
58 BBF0 4	s_cbranch_execz _L4	5	0.01	9 clk	
59 BBr0_1	<pre>s_buffer_load_dwordx4 s[8:11], s</pre>	[44:47], 0xba0	0.00	3 clk	
50	s_load_dword s84, s[26:27], 0xc	ç	0.00	1 clk	12.00
51	s_load_dwordx4 s[12:15], s[28:29]		0.00	1 clk	42.8%
52	<pre>s_buffer_load_dword s48, s[40:43]</pre>		66 0.00	1 clk	15.1%
53 54	buffer_load_dwordx3 v[116:118], v			1 clk	4.2% 1.4% 4.6%
55	<pre>s_waitcnt lgkmcnt(0) buffer load dword v7, v3, s[12:15</pre>		66 0.07 66 0.00	54 clk	VALU SALU VMEM SMEM LDS
66	v cmp neg f32 e64 s36, s10, 0		66 0.02	16 clk	
67	v_cndmask_b32_e64 v12, 0, 0x20000		66 0.00	2 clk	Shader statistics



lp	D3D12 - Instruction tracing: Full fram					- 0
p						
START	OVERVIEW EVENTS					
efront occupar	ncy Event timing	Pipeline state	Instruc	tion timing		
API PSO 0xD5E5E	EFA25E81D851 V Event 167	V Export name Tra	sceRaysAmdIn	ternal (51.56% cost)	VS HS DS GS PS CS RT	Wavefront Latencies
to line	Search 🔎 No re	sults 🗸 Clks normal	lized by hit co	unts 🛛 🗸 Wavefront L	atencies: selection total	Histogram 195296 dk Wavefronts: 20 276
			Hit count	Instruction cost (%)	Latency	
1 TraceRaysA	AmdInternal:		The count		Latency	Raytracing
	version 0x4004			0.04	30 clk	67 DispatchRays <indirect>(3768320, 1, 1)</indirect>
	<pre>vaitcnt vmcnt(0) expcnt(0) : vaitcnt vscnt null, 0x0</pre>	Lgkmont(0)		0.00	2 clk 245 clk	Identifiers
	waitent_vsent null, 0x0 nov_b32 s10, s31			0.00	1 clk	Auciditers
	add u32 s31, s31, 0x80			0.00	1 clk	API PSO hash
7 50	or_saveexec_b32 s11, -1		56	0.00	1 clk	0xD5E5EFA25E81D851
	ratch_store_dwordx2 off, v[			0.01	9 clk	UXDSESEFA2SE81D851
	<pre>ratch_store_dword off, v87, nov b32 exec_lo, s11</pre>	s10 offset:116		0.00	1 clk 1 clk	
	writelane b32 v87, s54, 0			0.00	1 clk 11 clk	Wavefront statistics
	writelane_b32 v87, s54, 0		56	0.00	1 clk	
13 <b>v_w</b>	writelane_b32 v87, s52, 2		56	0.00	1 clk	Timeline
	writelane_b32 v87, s51, 3			0.00	1 clk	أستخدمها تحمر وتحجز ويعرجنا وتلوا تناهي
15 v_w 16 v w	<pre>vritelane_b32 v87, s50, 4 vritelane_b32 v87, s49, 5</pre>			0.00	3 clk 1 clk	
	vritelane_b32 v87, s49, 5 vritelane b32 v87, s48, 6			0.00	1 clk	Branches total 33,140
	writelane_b32 v87, s47, 7		56	0.00	1 clk	Branches taken 43.58%
19 <b>v_w</b>	writelane_b32 v87, s46, 8			0.00	1 clk	Surviva and a survival survi
	writelane_b32 v87, s45, 9			0.00	1 clk	
	vritelane_b32 v87, s44, 10 vritelane_b32 v87, s43, 11			0.00	1 clk 1 clk	Instruction Hit count
	vritelane_b32 v87, \$43, 11 vritelane_b32 v87, \$42, 12			0.00	1 clk	
	vritelane_b32 v87, s41, 13		56	0.00	1 clk	VALU 210,442
25 <b>v_w</b>	vritelane_b32 v87, s40, 14			0.00	1 clk	SALU 90,015
	writelane_b32 v87, s39, 15			0.00	1 clk	VMEM 9,671
	<pre>vritelane_b32 v87, s38, 16 vritelane_b32 v87, s37, 17</pre>			0.00	1 clk 1 clk	SMEM 10.669
	vritelane_b32 v87, s37, 17 vritelane_b32 v87, s36, 18			0.00	1 clk	LDS 7.879
	vritelane_b32 v87, s35, 19		56	0.00	1 clk	
31 V w	writelane_b32 v87, s34, 20		56	0.00	1 clk	IMMEDIATE 34,782
	writelane_b32 v87, s33, 21			0.00	1 clk	EXPORT 0
	<pre>writelane_b32 v87, s32, 22 writelane_b32 v87, s30, 23</pre>			0.00	1 clk 1 clk	MISC 20
	vritelane_b32 v87, s30, 23			0.00	1 clk	RAYTRACE 2,334
36 <b>v_w</b>	writelane_b32 v87, s28, 25		56	0.00	1 clk	Total 405,451
37 V_W	vritelane_b32 v87, s27, 26			0.00	1 clk	
	writelane_b32 v87, s26, 27			0.00	1 clk	
	<pre>vritelane_b32 v87, s25, 28 vritelane_b32 v87, s24, 29</pre>			0.00	1 clk 1 clk	Hardware utilization
	writelane b32 v87, s24, 29			0.00	1 clk	
42 <b>v_w</b>	writelane_b32 v87, s22, 31		56	0.00	1 clk	
43 <b>s</b> m	nov_b32 s22, s10			0.01	7 clk	
	nov_b32 s24, s8			0.00	1 clk	
45 s_m 46 vm	nov_b32 s25, s9 nov_b32_e32 v54, v17			0.00	1 clk 1 clk	
40 V_m 47 Vm	nov_b32_e32_v54, v1/ nov_b32_e32_v55, v16			0.00	3 clk	2.70
	nov_b32_e32 v52, v15		56	0.00	1 clk	2.7% 0.9% 0.4% 0.1% 0.3%
49 <b>v</b> m	nov_b32_e32 v56, v14		56	0.00	1 clk	VALU SALU VMEM SMEM LDS
	nov_b32_e32 v53, v9			0.00	1 clk	Charles statistics
51 <b>v_m</b>	nov_b32_e32 v57, v8		56	0.00	1 clk	Shader statistics



lp					
	OVERVIEW EVENTS	s			SE
JIAKI					J.
avefront occupancy	Event timing	Pipeline state	Instruction	ming	
API PSO 0xD5E5EFA25E	81D851 V Event 167	✓ Export name TraceR	avsAmdInterna	(57.25% cost) VS HS DS GS PS CS RT	Wavefront
[					Latencies 1805 dk Wavefronts: 988 27
o to line	earch 🔎 No r	esults 🗸 Clks normalized	by nit counts	Wavefront Latencies: selection total Wavefront Latencies: selection total	Histogram 1805 dk Wavefronts: 988 270
		н	count Inst	Wavefront Latencies: fastest in selection	Raytracing
1 TraceRaysAmdInt 2 s versio		11	59 0.05	Wavefront Latencies: slowest in selection	167 DispatchRays <indirect>(3768320, 1, 1)</indirect>
	t vmont(0) expont(0)			2 clk	
4 s_waiten	t_vscnt null, 0x0	11	59 0.36	243 clk	Identifiers
5 s_mov_b3	2 s10, s31	11		1 clk	
	2 s31, s31, 0x80 eexec_b32 s11, -1	11		1 clk 1 clk	API PSO hash
8 scratch	store dwordx2 off, vi	[99:100], s10 offse 11		9 clk	0xD5E5EFA25E81D851
9 scratch	store_dword off, v87,	s10 offset:116 11	59 0.00	1 clk	
	2 exec_lo, s11	11		1 clk	
11 v_writel 12 v writel	ane_b32 v87, s54, 0 ane_b32 v87, s53, 1	11		15 clk 1 clk	Wavefront statistics
	ane_b32 v87, s53, 1 ane_b32 v87, s52, 2	11		1 clk	Timeline
	ane_b32 v87, s51, 3	11		1 clk	An and a second
15 v_writel	ane_b32 v87, s50, 4	11		1 clk	
	ane_b32 v87, s49, 5	11		1 clk	Branches total 635.582
	ane_b32 v87, s48, 6 ane_b32 v87, s47, 7	11		1 clk 1 clk	Branches taken 42.31%
	ane_b32 v87, s46, 8	11	59 0.00	1 clk	Branches taken 42.31%
20 v_writel	ane_b32 v87, s45, 9	11	59 0.00	1 clk	
	ane_b32 v87, s44, 10	11		1 clk	Technology 104 count
	ane_b32 v87, s43, 11 ane b32 v87, s42, 12	11		1 clk 1 clk	Instruction Hit count
	ane_b32 v87, s42, 12 ane_b32 v87, s41, 13	11		1 clk	VALU 4,004,589
25 v_writel	ane_b32 v87, s40, 14	11	59 0.00	1 clk	SALU 1,758,682
	ane_b32 v87, <b>s39</b> , 15	11		1 clk	VMEM 128,453
	ane_b32 v87, s38, 16	11		1 clk	SMEM 165,795
	ane_b32 v87, s37, 17 ane_b32 v87, s36, 18	11		1 clk 1 clk	LDS 140,279
	ane_b32 v87, s35, 19	11		1 clk	
31 v_writel	ane_b32 v87, s34, 20	11		1 clk	IMMEDIATE 680,157
	ane_b32 v87, s33, 21	11		1 clk	EXPORT 0
	ane_b32 v87, s32, 22 ane_b32 v87, s30, 23	11		1 clk 1 clk	MISC 988
	ane_b32 v87, s30, 23	11		1 clk	RAYTRACE 47,539
36 v_writel	ane_b32 v87, s28, 25	11	59 0.00	1 clk	Total 7,715,509
	ane_b32 v87, s27, 26	11		5 clk	
38 v_writel 39 v_writel	ane_b32 v87, s26, 27 ane_b32 v87, s25, 28	11		1 clk 1 clk	
	ane_b32 v87, s25, 28 ane_b32 v87, s24, 29	11		1 clk	Hardware utilization
41 v_writel	ane_b32 v87, s23, 30	11	59 0.00	1 clk	
42 v_writel	ane_b32 v87, s22, 31	11		1 clk	
	2 s22, s10	11		7 clk	
	2 s24, s8 2 s25, s9	11		1 clk 1 clk	42.8%
	2_e32_v54, v17	11		2 clk	
47 v_mov_b3	2_e32 v55, v16	11	59 0.00	3 clk	15.1% 4.2% 1.4% 4.6%
	2_e32 v52, v15	11		1 clk	VALU SALU VMEM SMEM LDS
49 v_mov_b3	2_e32 v56, v14	11		1 clk	VALU JALU VITLITI JITETI LUJ
	2_e32_v53, v9	11		1 clk 1 clk	Shader statistics
51 V_MOV_D3	2_e32 v57, v8	11	50 0.00		onduct statistics



)	- D3D12 - Instruction tracing: Full frame							
	T OVERVIEW EVENTS							
front occupa	ancy Event timing	Pipeline state	Instruct	ion timing				
	5EFA25E81D851 V Event 167	<ul> <li>Export name 0xE</li> </ul>		10 (2E 20% east)		S PS CS RT	Wavefront	
I FOU UXDOED	SEFA23E01D031 V EVEnt 107	Export name oxe	LEHAHDOIO	10 (35.29% cost) VS	HS DS	is ps cs rt	Latencies	
line	Search 🔎 No res	sults 🗸 Clks normali	zed by hit cou	unts 🔍 Wavefront Latenci	es: slowest in s	lection	Histogram 1805 dk	Wavefronts: 1 2769
			Hit count	Instruction cost (%)	Latency		Raytracing	
	waitent vment(0) expent(0) 1	gkmont(0)		0.00	2 clk			chRays <indirect>(3768320, 1, 1)</indirect>
	waitent_vsent null, 0x0			0.00	1 clk		-	(3700320, 1, 1)
7 s_1	mov_b32 s10, s31 add_u32 s31, s31, 0x60			0.00	1 clk 1 clk		Identifiers	
9 5	or saveexec b32 s11, -1		1	0.00	1 clk			
0 s_4	_add_u32 s12, 0, 0			0.00	1 clk		API PSO ha	sh
	movk_i32 m0, 0x0			0.00	1 clk		0xD5E5EFA2	5E81D851 📋
	write_addtid_b32 v36 mov_b32 exec_lo, s11				9 clk 1 clk		UND SESENCE	U
4 v_1	writelane_b32 v36, s51, 0		1	0.00	13 clk			
5 V	writelane_b32 v36, s50, 1			0.00	1 clk		Wavefront	statistics
	writelane_b32 v36, s49, 2 writelane_b32 v36, s48, 3			0.00	6 clk 3 clk		Timeline	
	writelane b32 v36, \$46, 3			0.00	1 clk			
9 <b>v</b> 1	writelane_b32 v36, s46, 5		1	0.00	1 clk		and the second se	the medical part in the state of
0 .	writelane_b32 v36, s45, 6			0.00	3 clk		Branches tota	1 725
	writelane_b32 v36, s44, 7 writelane_b32 v36, s43, 8			0.00	1 clk 1 clk			
	writelane_b32 v36, s43, 8 writelane_b32 v36, s42, 9			0.00	1 CIK 3 Clk		Branches take	n 45.42%
4 v_	writelane_b32_v36, s41, 10		1	0.00	1 clk			
5 V	writelane b32 v36, s40, 11			0.00	1 clk			11th an unt
	writelane b32 v36, s39, 12 writelane b32 v36, s38, 13			0.00	1 clk 1 clk		Instruction	
	writelane_b32 v36, s38, 13 writelane_b32 v36, s37, 14			0.00	1 clk		VALU	11,927
9 <b>v</b>	writelane_b32 v36, s36, 15		1	0.00	1 clk		SALU	4,955
	writelane_b32 v36, s35, 16			0.00	1 clk		VMEM	873
	writelane_b32 v36, s34, 17 writelane_b32 v36, s33, 18			0.00	1 clk 1 clk		SMEM	955
2 V_ 3 V 1	writelane_b32 v36, s33, 18 writelane_b32 v36, s32, 19			0.00	1 clk		LDS	458
4 v_v	writelane_b32 v36, s27, 20		1	0.00	1 clk		IMMEDIATE	
5 <b>v_</b>	writelane_b32 v36, s26, 21			0.00	1 clk			
6 v_v	writelane b32 v36, s25, 22 writelane b32 v36, s24, 23			0.00	1 clk 1 clk		EXPORT	0
	writelane_b32 v36, s24, 23			0.00	1 clk		MISC	1
9 <b>v</b>	writelane_b32 v36, s22, 25		1	0.00	1 clk		RAYTRACE	108
	inst_prefetch 0x3			0.06		158 clk	Total	23,489
	_getpc_b64 s[12:13] mov_b32 s14, s2			0.00	1 clk 5 clk			
	and b32 e32 v24, 0x1000000,	v12		0.00	1 clk			
4 v_4	add_f32_e32_v3, v32, v28		1	0.00	1 clk		Hardware	Itilization
5 <u>s_</u> 1	mov_b32 s12, exec_lo			0.00	1 clk			
6 v_0	cmpx_ne_i32_e64 v24, 0 andn2_b32 exec_lo, s12, exec	10		0.00 0.01	5 clk 18 clk			
	_andn2_B32 exec_10, \$12, exec _obranch_execz _L0	_10			9 clk			
9 BBF0_0:								
	mov_b32 s15, s13			0.00	3 clk			
	movk_i32 s18, 0x1000 mov b32 s19, 0x2104bfac			0.00	1 clk 1 clk		4.3% 1.39	6 1.1% 0.3% 0.5%
	<pre>_mov_B32 s19, 0x2104brac load dword s14, s[14:15], 0x</pre>	0			7 clk		VALU SAL	
4 v	lshl_add_u32 v18, v34, 1, v3		1	0.00	1 clk			
	waitent lgkment(0)		1		27 clk		Shader sta	ietice



## HOW CAN I FOLLOW CONTROL FLOW FROM FUNCTION TO FUNCTION?

tracing_Game.rgp -	D3D12 - Instruction tracing: Full fra	me - Radeon GPU Profiler - V1.	13.0.225		- 0
		•			ana.
▶ START	OVERVIEW EVENT	5			SE
efront occupa	ancy Event timing	Pipeline state	Instruction timing		
PI PSO 0xD5E58	EFA25E81D851 V Event 16	V Export name 0xD526	F1146f95 (15.11% cost	) VS HS DS GS PS CS RT	Wavefront Land
line	Search O No	results 🗸 Clks normalized	by hit counts Vave	efront Latencies: selection total	Latencies Histogram 1805 dk Wavefronts: 988 274
			count Instruction cost		
3 <b>_L14</b> :					
	readfirstlane_b32 s8, v3	102		6 clk	Hardware utilization
	readfirstlane_b32 s9, v4 mov_b32 s53, exec_lo	102		2 clk 17 clk	
	cmp eq u64 e32 vcc lo, s[8			17 CIK 12 CIK	
	mov b32 exec lo, vcc lo	102		18 clk	
	mov_b32_e32 v3, 0	102		14 clk	42.8%
	mov b32 e32 v4, 0	102		1 clk	12.077
1 v m	mov_b32_e32 v5, s48	102		1 clk	15.1%
	mov_b32_e32 v6, 0	102		1 clk	4.2% 1.4% 4.6%
	mov_b32_e32 v7, 0	102		1 clk	VALU SALU VMEM SMEM LDS
	mov_b32_e32 v8, 0	102		1 clk	
	mov_b32_e32 v9, 0	102		1 clk	Shader statistics
16 ν_π 17 νπ	mov_b32_e32 v10, 0	102		1 clk 1 clk	Shader duration: 5.519 ms
	mov_b32_e32 v11, 0 mov_b32_e32 v13, 0	102		1 clk	
	mov_b32_e32 v13, 0	102		1 clk	Wavefronts: 988 out of 117,760 analyzed
	mov b32 e32 v15, 0	102		1 clk	Theoretical occupancy: 8 / 16 total wavefronts per SIMD
	mov b32 e32 v16, 0	102		1 clk	
	mov_b32_e32 v17, 0	102		1 clk	Vector registers: 127 (128 allocated)
	mov_b32_e32 v18, v101	102	4 0.00	1 clk	Scalar registers: 100 (128 allocated)
	mov_b32_e32 v24, 1	102		1 clk	Local data share size: 4,096
	mov_b32_e32 v25, v116	102		1 clk	
36 <b>v_</b> m	mov_b32_e32 v26, v117	102		1 clk	Call targets
87 v_m	mov_b32_e32 v27, v118	102		1 clk	Can targets
	mov_b32_e32 v28, 0	102		1 clk 1 clk	Name Hit count Type
	mov_b32_e32 v29, v87 mov_b32_e32 v30, v104	102		1 clk	<ul> <li>0xD526F1147Bc5d125166f95 - s_swappc_b64</li> <li>RayGeneration</li> </ul>
	mov b32 e32 v30, v104	102		1 clk	
	swappc_b64 s[8:9], s[8:9]	102		1 clk	0x0232FAF835319a533963bb87 298 ClosestHit
	waitent vment(0) expent(0)			59 clk	0xEEE4A4D07132b08a554c80f810 251 ClosestHit
94 <b>s_a</b>	andn2_b32 exec_lo, s53, ex	ec_lo 102		1 clk	0x0232FAF835358d1a8816eee998 119 ClosestHit
95 5_0	obranch_execnz _L14	102	4 0.01	9 clk	0x76889BD250C88c39d2b4e189 101 ClosestHit
96 _L13:					0xEEE4A4D07132e70949cf5c4b43 80 ClosestHit
	mov_b32 exec_lo, s52	966	0.00	3 clk	0xFF855E95AE5C7af5e9f962ba06 48 ClosestHit
98 _L12:					0xFA9FC80B863 0xFF855E95AE5C7EAD_CHS_737af5e9f962ba06 etHit
	andn2_b32 exec_lo, s49, ex	ec_lo 966 966		1 clk	0x6F855E95AE5C7EAD_CHS_737af5e9f962ba06 0x6F855E95AE5C7EAD_CHS_737af5e9f962ba06 CosestHit
	mov_b32_e32 v3, 0	966		9 clk 1 clk	
2 BBF0 11:	cbranch_execz _L15	906	0.00	TOTY	
	mov b32 e32 v4, 0	0	0.00		0x4CF3A51015BDc25c6af523d7de 13 ClosestHit
	mov_b32_e32 v5, s48	0	0.00		0x171B1FD29B0B46d99ebc9dc510 11 ClosestHit
	mov b32 e32 v6, 0	0	0.00		0x72F35A931B8b337251b4b330 8 ClosestHit
ν_π	mov b32 e32 v7, 0	0	0.00		0x031C68E6BA2d6925f0e3b1e8 8 ClosestHit
07 v m	mov_b32_e32 v8, 0	0	0.00		0x18E887765493987503f4a4b4e8 7 ClosestHit
98 v_π	mov_b32_e32 v9, 0	0	0.00		0x1C5E5F6E287A5c3f5a7b132678 5 ClosestHit
	mov_b32_e32 v10, 0	0	0.00		0x6BAE65D844A1a139e13e43d 4 ClosestHit
	mov_b32_e32 v11, 0	0	0.00		
	mov_b32_e32 v13, 0	0	0.00		0xEE1686661F81aef5b071012b39 1 ClosestHit
12 v_m 13 v m	mov_b32_e32 v14, 0	0	0.00		
1.3 V II	mov_b32_e32 v15, 0	0	0.00		



## HOW CAN I ANALYZE MY ACCELERATION STRUCTURES?

### • Stay tuned!

Raytracing_Game.rgp - D3D12 - Instruction tracing: Full frame - Radeon GPU Profiler - V1.12.0.18	– 🗆 X
File Help	
START OVERVIEW EVENTS	SETTINGS
Wavefront occupancy Event timing Pipeline state Instruction timing	
🗸 Color by API shader stage 🔍 GCN shader stage	167 DispatchRays <indirect>(3768320, 1, 1) Launched from Direct queue</indirect>
15.000 ms 16.000 ms 17.000 ms 18.000 ms 19.000 ms 20.000 ms 21.000 ms 22.000 ms 23.000 ms 24.000 ms 25.000 ms	Launched from Direct queue
	Start time 18.088 ms
25%	End time 23.607 ms
	Duration         5.519 ms           Work duration         5.519 ms
	Hardware context 0
	API PSO hash
	0xD5E5EFA25E81D851
로 25% 25%	Driver internal pipeline hash
50%	0xA9F1837B2B3DD205A2BD3B64A825A0BE 📋
R 75%	Wavefronts
100%	GCN wavefront distribution:
VS HS & DS CS CS KT	LS+HS wavefronts -
	ES+GS wavefronts -
	VS Wavefronts - PS Wavefronts -
	CS Wavefronts 117,760 (100.00%)
	Total wavefronts 117,760
Marchalana and a superior and a	Total threads 3,768,320
	GCN shader stage timeline
Instruction cache hit Scalar cache hit L1 cache hit L1 cache hit L2 cache hit     V Color by queue     Vent filter V Overlay	
V Color by queue V Event filter V Overlay Duration filter Duration filter	API Shader VGPR SGPR LDS Occupancy
159 165 1667 169 171 1 195	VS
166-168-170-172-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	HS
<del>173  </del> <del>197  </del>	DS
	GS
164	PS
	CS RT 127 (128) 100 (128) 4096 8 / 16
	Workload
CP marker Graphics queue Compute queue Compute queue Difference Compute queue Compute queue Difference Compute queue queue Compute queue Compu	Shader stages
	VS HS DS GS PS CS RT



# **RAYTRACING PERFORMANCE REVEALED**

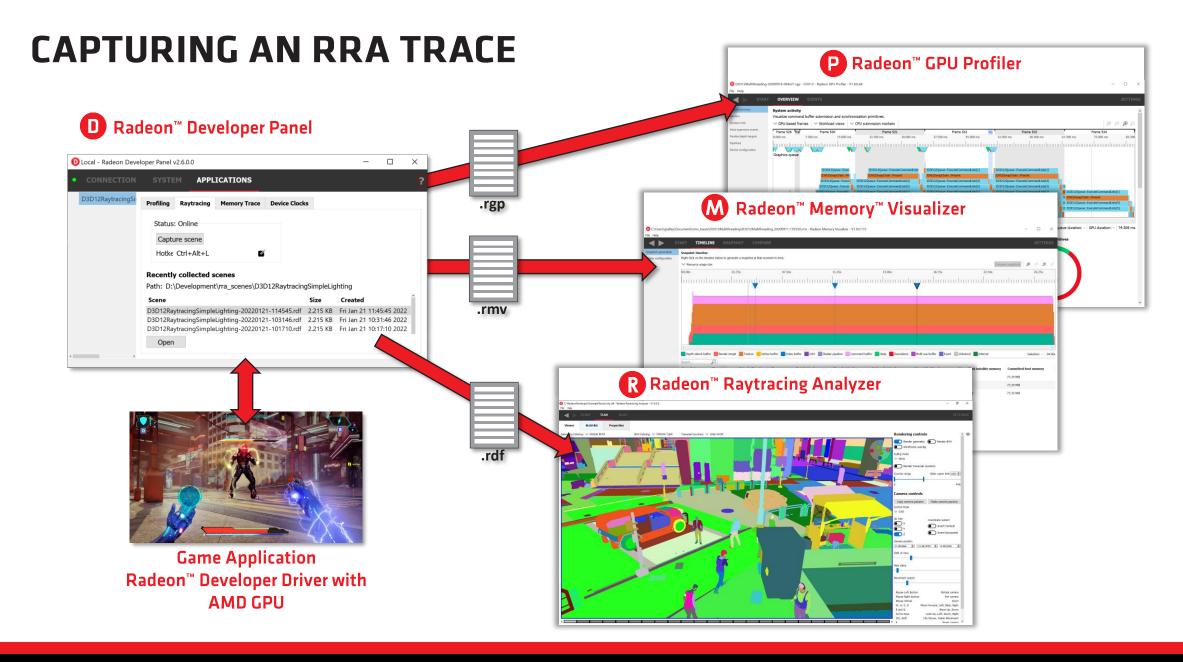
# Part 1: Radeon<sup>™</sup> GPU Profiler

- How does the use of ray tracing impact my frame?
- What is the performance of my ray tracing pipelines?
- What is the relative cost of my ray generation, traversal, any hit, closest hit, and miss shaders?

## Part 2: Radeon<sup>™</sup> Raytracing Analyzer

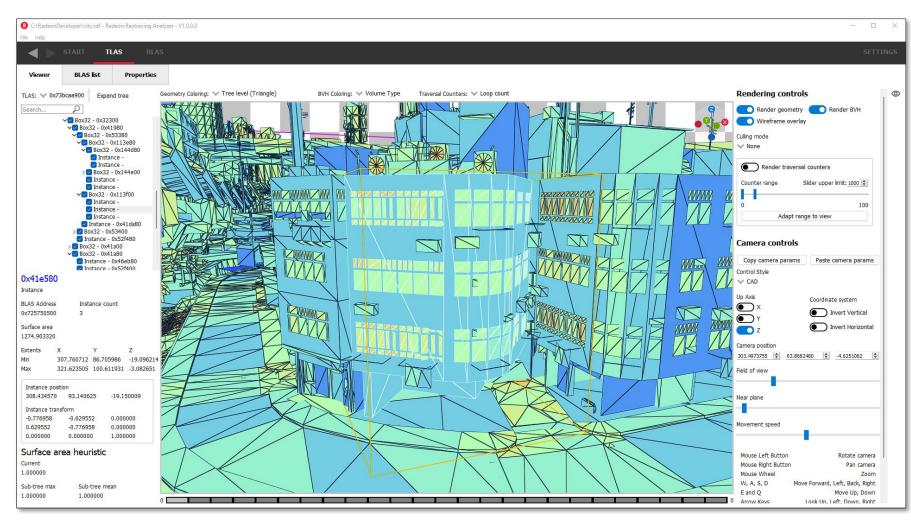
- How can I optimize an acceleration structure to reduce intersection cost?
- Did I apply the correct flags and transform onto my geometry?







### **TLAS VIEWER**



- Tree view
- Selected node information
- Coloring modes
- 3D Viewer
- Depth slider
- Rendering controls
- Camera controls
- BLAS List



### **TLAS VIEWER - BLAS LIST**

START TLAS BLAS													
Viewer	BLAS list	Properties	5										
Address	~	Instances	Nodes	Boxes	32-bit boxes	16-bit boxes	Triangles	Procedural	Root SAH	Max SAH	Mean SAH	Max. depth	Avg. depth
0x7a3bb0680		9	383	125	5	120	258	0	0.154801	0.488665	0.2086	9	6
0x7a3ba0980		1	373	121	121	0	252	0	0.339605	0.339605	0.212616	7	5
0x7a3b90080		6	8	3	1	2	5	0	0.500508	0.500508	0.234312	3	2
0x7a3b80b80		2	709	234	2	232	475	0	0.208825	0.571018	0.10635	9	6
0x7a3b71f80		1	1958	656	47	609	1302	0	0.305406	0.437703	nan	13	7
0x7a3b60280		11	132	44	1	43	88	0	0.334856	0.344761	0.178317	7	4
0x7a3b50e00		1	703	228	156	72	475	0	0.159387	0.352959	nan	11	7
0x7a3af0180		1	61	19	1	18	42	0	0.340952	0.340952	0.110343	5	4
0x7a3ae0a80		1	646	216	1	215	430	0	0.249574	0.502212	0.183095	10	7
0x7a3ad0080		60	17	5	1	4	12	0	0.281988	0.281988	0.176087	3	3
0x7a3ac0180		9	69	23	1	22	46	0	0.208575	0.351926	0.174931	5	4
0x7a3aa0080		20	4	1	1	0	3	0	0.0510343	0.25	0.200259	2	2
0x7a39d3500		1	2154	712	712	0	1442	0	0.269016	0.657119	0.112943	10	7
0x7a3980080		42	15	5	1	4	10	0	0.412484	0.412484	0.213369	3	3
0x7a3970500		1	273	90	7	83	183	0	0.0869047	0.290894	0.134451	8	5
0x7a3960900		2	564	187	1	186	377	0	0.554561	0.624031	0.132885	8	6
0x7a3950300		3	168	55	7	48	113	0	0.308089	0.439611	0.144288	7	5
0x7a3940080		33	16	5	1	4	11	0	0.438082	0.438082	0.211506	3	3

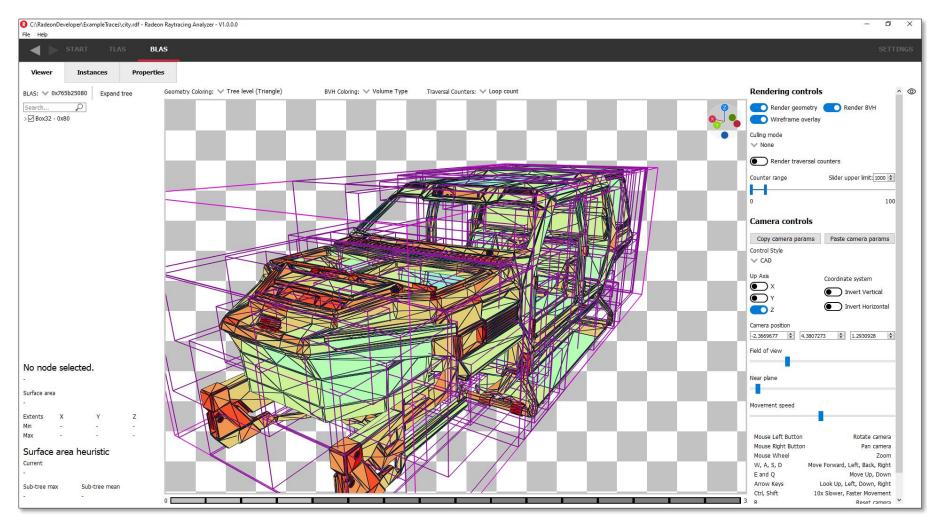
#### Statistical view of BLAS's

#### Example use:

- Sort by max SAH
- Open the BLAS by double clicking



### **BLAS VIEWER**

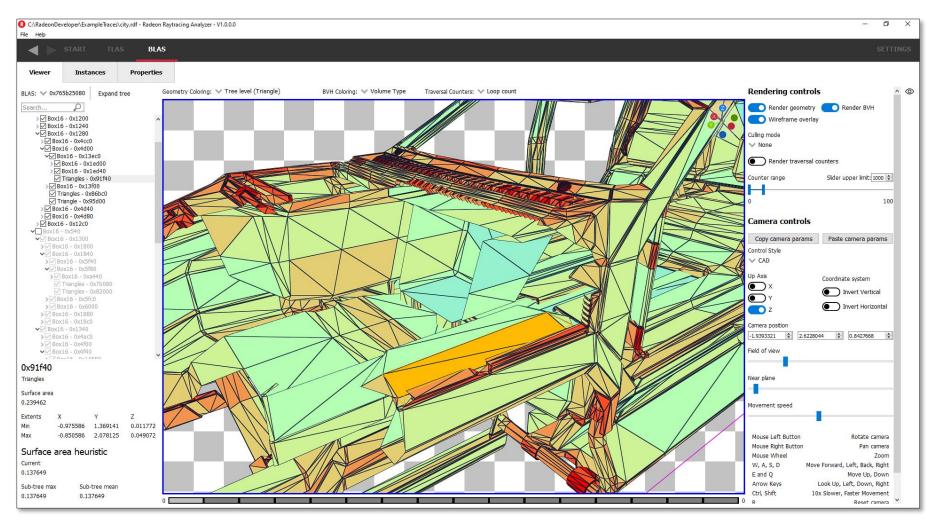


#### • Camera & Navigation

- The default control style is CAD. Control styles can be changed from the dropdown
- To find out more on how to use the camera scroll down
- Bounding Volumes
- Click and drag across range of levels to view bounding volumes.
- You can disable geometry rendering to get a better look



### **BLAS VIEWER**



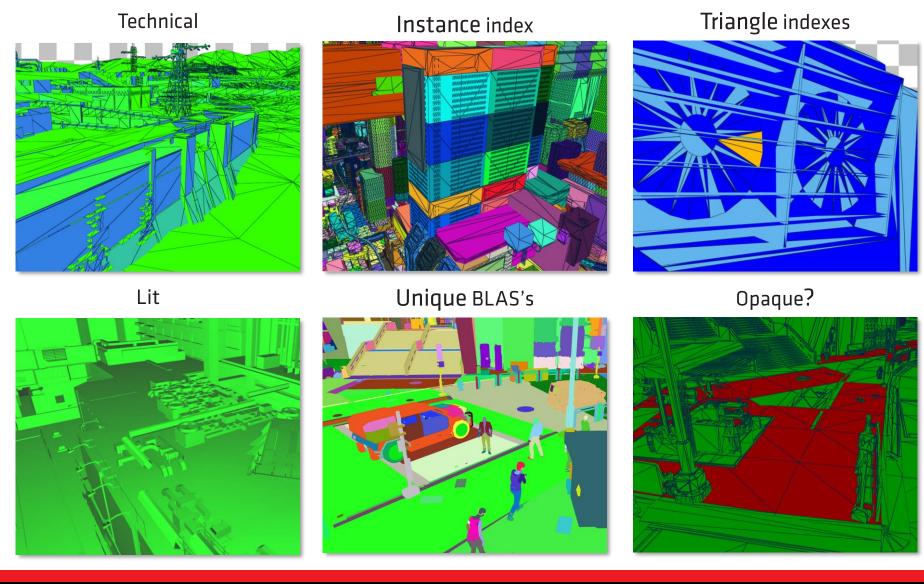
#### Interaction

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- Click on a triangle
- Press F to focus on selection
- Toggle volumes by using tree view
- Select parent volumes and focus
- Right click to open context menu
- Instances



## **GEOMETRY COLORING**



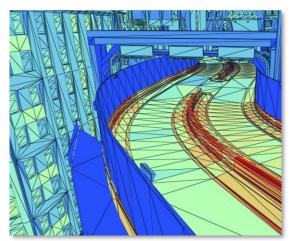


## **GEOMETRY COLORING**

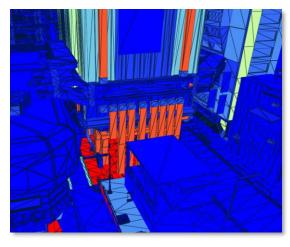
Triangle count



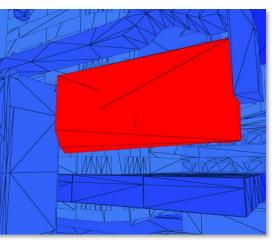
Tree depth (Triangle)



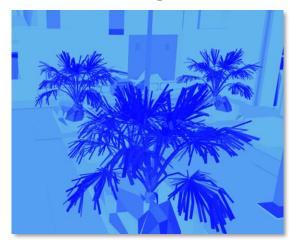
Instance count



#### Max/Avg tree depth



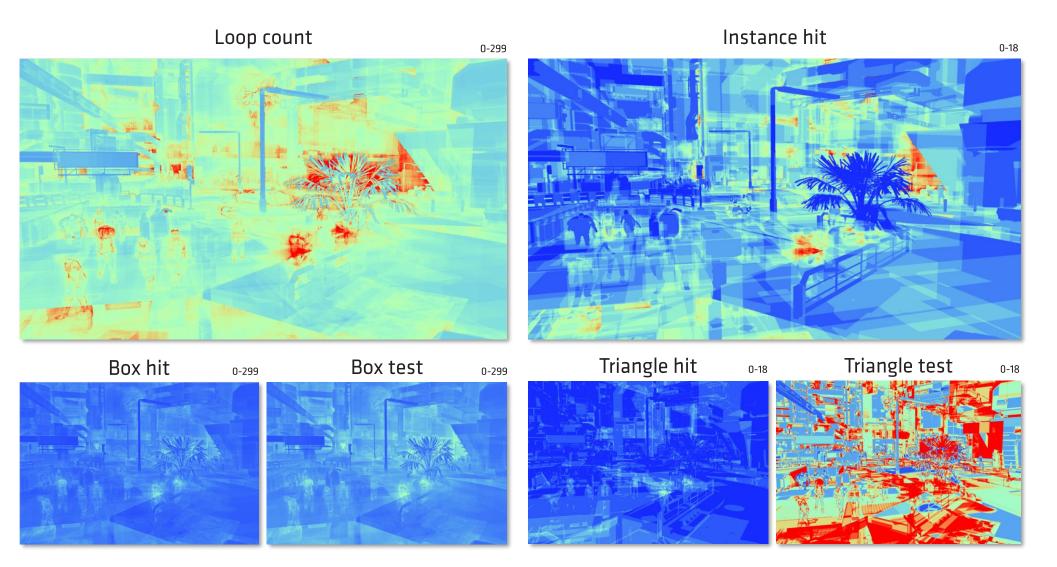
#### Max/Avg SAH



Geometry coloring gives specific information about individual pieces

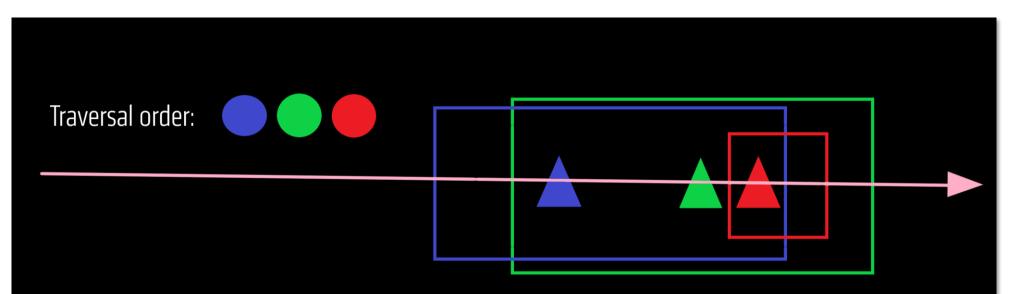


### **TRAVERSAL COUNTERS**





### **TRAVERSAL COUNTERS**



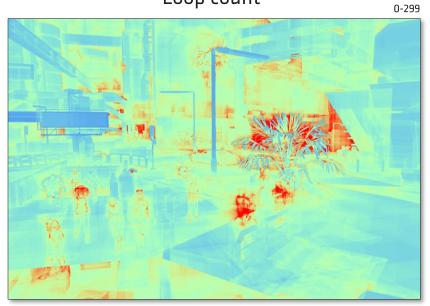
**Red** volume is completely discarded since the Blue triangle hit has been confirmed. The closest potential hit **Red** volume could provide is further away from confirmed hit.

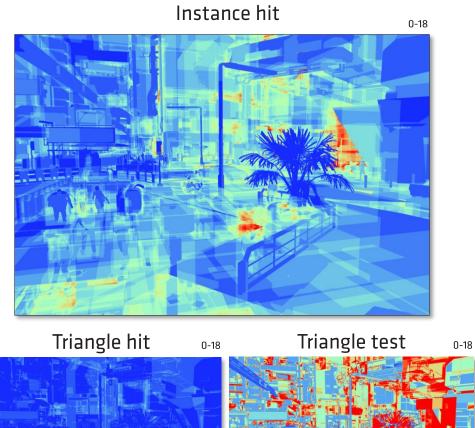
Green volume and triangle are checked, even though Blue triangle is closer. The Green volume may still provide a closer hit than the Blue triangle.

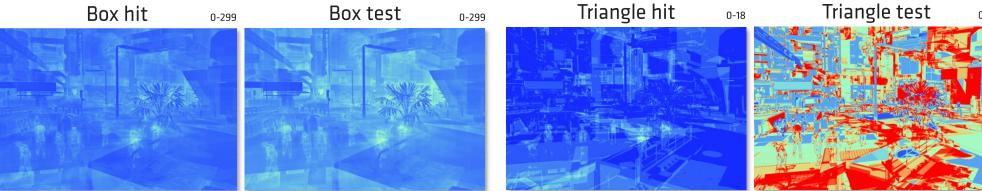


### **TRAVERSAL COUNTERS**

Loop count



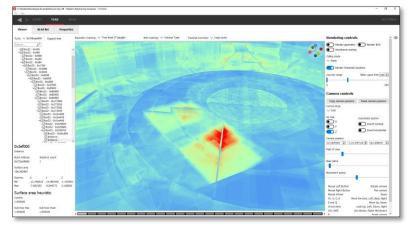




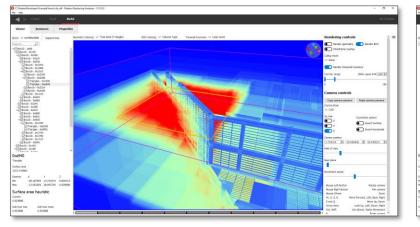


## SUGGESTED WORKFLOW

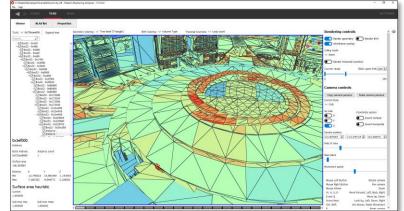
#### 1: Explore



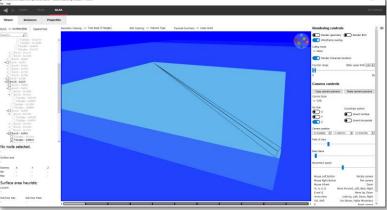
#### 4: Deep dive



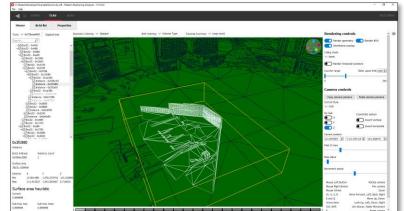
#### 2: Check instance overlaps



#### 5: Plan & Resolve



#### 3: Isolate









https://gpuopen.com/tools



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