

A close-up photograph of a person's hand holding a stethoscope. The stethoscope has a silver-colored metal chest piece with a circular pressure gauge. The gauge has a white face with black and green markings, and a black needle. The person is wearing a blue medical scrub top. The background is dark and out of focus.

Legion Performance Analytics

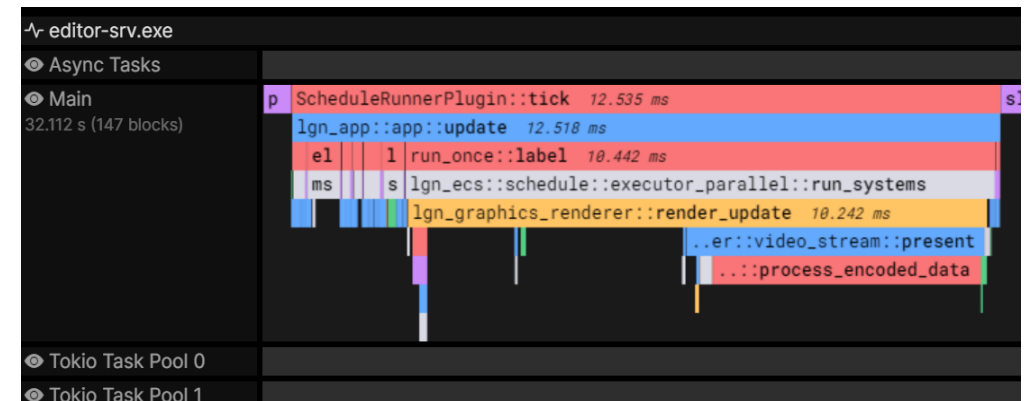
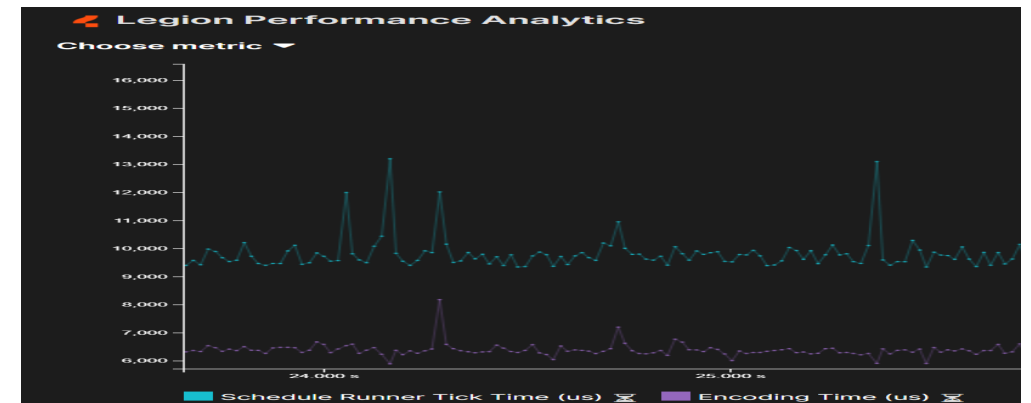
May 2022

Legion Performance Analytics

Introduction

- Logs, metrics, traces
- Latency, stability, satisfaction
- For local, distributed & cloud native applications

Severity	Time Stamp	Target	Message
Debug	00:00:02.085	LogD3D12RHl	Creating RT Sampler Heap with 2048 entries
Debug	00:00:02.102	LogD3D12RHl	Creating RTPSO with 8 shaders (0 cached, 8 new) took 15.12 ms.
Debug	00:00:02.130	LogD3D12RHl	Creating RT View Heap with 250000 entries
Debug	00:00:02.269	LogD3D12RHl	Creating RT Sampler Heap with 2048 entries
Debug	00:00:02.269	LogD3D12RHl	Creating RTPSO with 3 shaders (2 cached, 1 new) took 136.54 ms.
Debug	00:00:02.295	LogD3D12RHl	Creating RT View Heap with 250000 entries
Debug	00:00:02.295	LogD3D12RHl	Creating RT Sampler Heap with 2048 entries
Trace	00:00:02.484	...IveClassHierarchy	Native class hierarchy updated for 'HierarchicalLODOutliner' in 0.00 seconds
Warn	00:00:02.484	LogInput	Action Jump uses invalid key OculusGo_Left_Trigger_Click.
Warn	00:00:02.484	LogInput	Action ResetVR uses invalid key OculusGo_Left_Trackpad_Click.
Warn	00:00:02.484	LogInput	Use -RemoveInvalidKeys to remove instances of these keys from the
Debug	00:00:02.484	LogLoad	(Engine Initialization) Total time: 12.82 seconds
Debug	00:00:02.484	LogLoad	(Engine Initialization) Total Blueprint compile time: 0.00 seconds
Debug	00:00:02.528	LogAssetRegistry	Asset discovery search completed in 8.1979 seconds
Debug	00:00:02.531	...ollectionManager	Fixed up redirectors for 0 collections in 0.000003 seconds (update
Debug	00:00:02.532	...ontentStreaming	Texture pool size now 1000 MB
Debug	00:00:02.700	LogD3D12RHl	Creating RT View Heap with 250000 entries
Debug	00:00:02.732	LogD3D12RHl	Creating RT Sampler Heap with 2048 entries
Debug	00:00:02.742	LogD3D12RHl	Creating RT View Heap with 250000 entries
Debug	00:00:02.762	LogD3D12RHl	Creating RT Sampler Heap with 2048 entries
Debug	00:00:02.770	LogD3D12RHl	Creating RT View Heap with 250000 entries



Legion Performance Analytics

Full stack solution

- One protocol
 - Structured events
 - time series are not general enough
- One data lake
 - no loose files
- One UI
 - High performance web user interface
 - Tight integration between the logs, metrics & traces

Legion Performance Analytics

Designed for scale

- High event density: 40 ns overhead / event
 - platform-specific memory layout
 - the protocol is the memory layout
- Store everything: event batch stored in S3
 - shallow metadata index in SQL database
- Distributed ingestion
 - optimized & stateless

Legion Performance Analytics

Analytics is the new profiling

- Designed for iterating in development
 - data available as soon as it is sent
 - no nightly indexing job
- Faster reaction time
 - know the bugs *before* they become problems
- Understand the issue without reproducing it
- Spend time on the worst issues, not the first one you find

Status Quo

Data	Development	Live
Client Logs	loose files	ELK/sampling
Client Metrics	debug overlay	low frequency
Client Traces	interactive profiling	✗
Server Logs	loose files	ELK
Server Metrics	✗	Prometheus, Grafana
Server Traces	loose files	✗

Comparison

Capability	Legion Performance Analytics	Splunk/Datadog	Logz	RAD Telemetry
Logs	✓	✓	✓	✗
Time series	✓	✓	✓	✓
Traces	✓	✓	✗	✓
\$calable	♥	✗	✓	⊖

Architecture

