

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

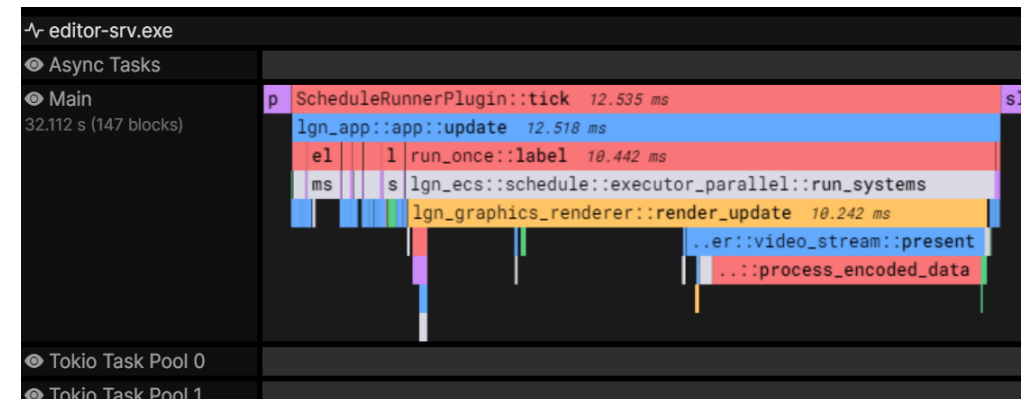
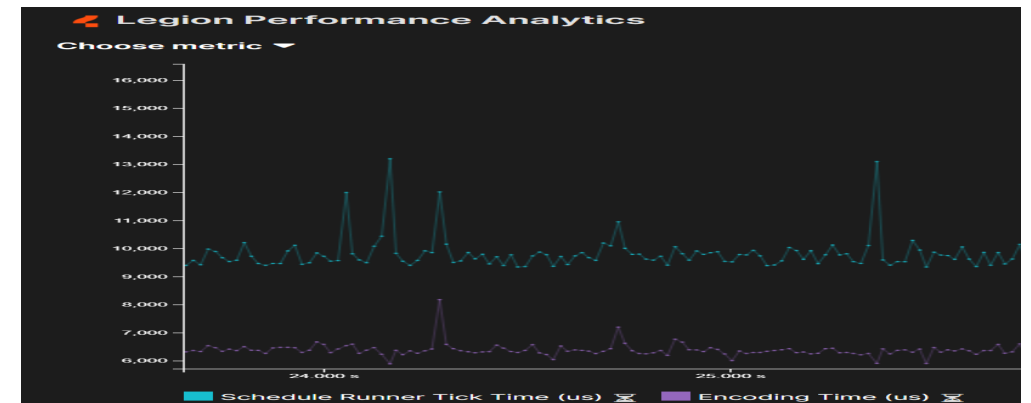
May 2022

Legion Performance Analytics

Introduction

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

Info	00:00:00.000	LogCook	Mobile FDK setting 1
Debug	00:00:00.996	LogFileCache	Scanning file cache for directory 'D:/games/testg
Warn	00:00:01.356	LogModuleManager	ModuleManager: Unable to load module 'Sequen
Info	00:00:01.356	LogInit	Engine is initialized. Leaving FEngineLoop::Init()
Debug	00:00:01.359	SourceControl	Source control is disabled
Trace	00:00:01.359	LogHAL	
Debug	00:00:01.359	LogUnrealEdMisc	Loading editor; pre map load, took 11.692
Debug	00:00:01.359	Cmd	MAP LOAD FILE=".\\..\\..\\..\\games/testgame/Con
Debug	00:00:01.359	LightingResults	New page: Lighting Build
Debug	00:00:01.361	LogWorld	UWorld::CleanupWorld for Untitled, bSessionEnd
Debug	00:00:01.361	LogSlate	InvalidateAllWidgets triggered. All widgets were i



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

