Wednesday, 18 September 2024

Isha Load Test Report: V2

System Config

- Postgres version 16.4
- AppServer: c6a.2xlarge
- PostgresServer: c7g.4xlarge
- TestingK6Server: c6a.4xlarge

Test systems

- Go-Gin
- FastAPI
- Litestar

Test Cases

- **Test1**: Reads a sample form JSON from Redis cache, modifies it by filling default values (as would happen for pre-filled forms), and returns the updated JSON. This is used by the `GetFormAPI`.
- **Test2**: Takes a JSON request, queries the database, updates some data, and returns 100 rows as a JSON response. This process is used by APIs like `UpdateAPI`, `GetSubmissions`, and `GetMyPrograms`.
- **Test3**: Takes a request, validates it by querying the database, writes a row to the database, and returns a success response. This is the process used by the `Submit API`.

Tables Config

- Read Table (100K rows) (15 columns with 1 JSON column) (Test 1, 2 & 3)
- Write Table (10K rows) (10 columns with 1 JSON column) (Test 3)

Test Methodology

- We have used K6 to test the system.
- All systems used similar numbers of pooling connections to ensure test integrity.
- There are optimisations possible in both python & go, however this test is with the purpose of providing a ratio of performance for decently optimised code.
- Source Code: https://github.com/KakshilIsha/load_tests

Test Results

Test1: Read, modify, and return form JSON

Platform	100 vau req/s	1000 vau req/s	Error	Start M	Max M	Diff M	CPU
Gin-Go	3016	2953	0.0	304	404	100	99% all Cores
Litestar-Python	2992	2768	0.0	558	616	58	99% all Cores
FastAPI-Python	819	713	0.0	599	677	78	99% all Cores

Test2: Query DB, update, return 100 rows as JSON

Platform	100 vau req/s	1000 vau req/s	Error	Start M	Max M	Diff M	CPU
Gin-Go	2688	2646	0.0	285	428	143	99% all Cores
Litestar-Python	2685	2343	0.0	575	680	105	99% all Cores
FastAPI-Python	378 *	353*	0.0	601	712	111	99% all Cores

Test3: Validate, write to DB, return success

Platform	100 VAU req/s	100 vau req/s@2xdb	1000 VAU req/s	Error rate
Gin-Go	620	1219	611	0.00
Litestar-Python	620	-	608	0.00
FastAPI-Python	620	-	618	0.00