Performance Report - GRC [ITRM - TVI Registration]
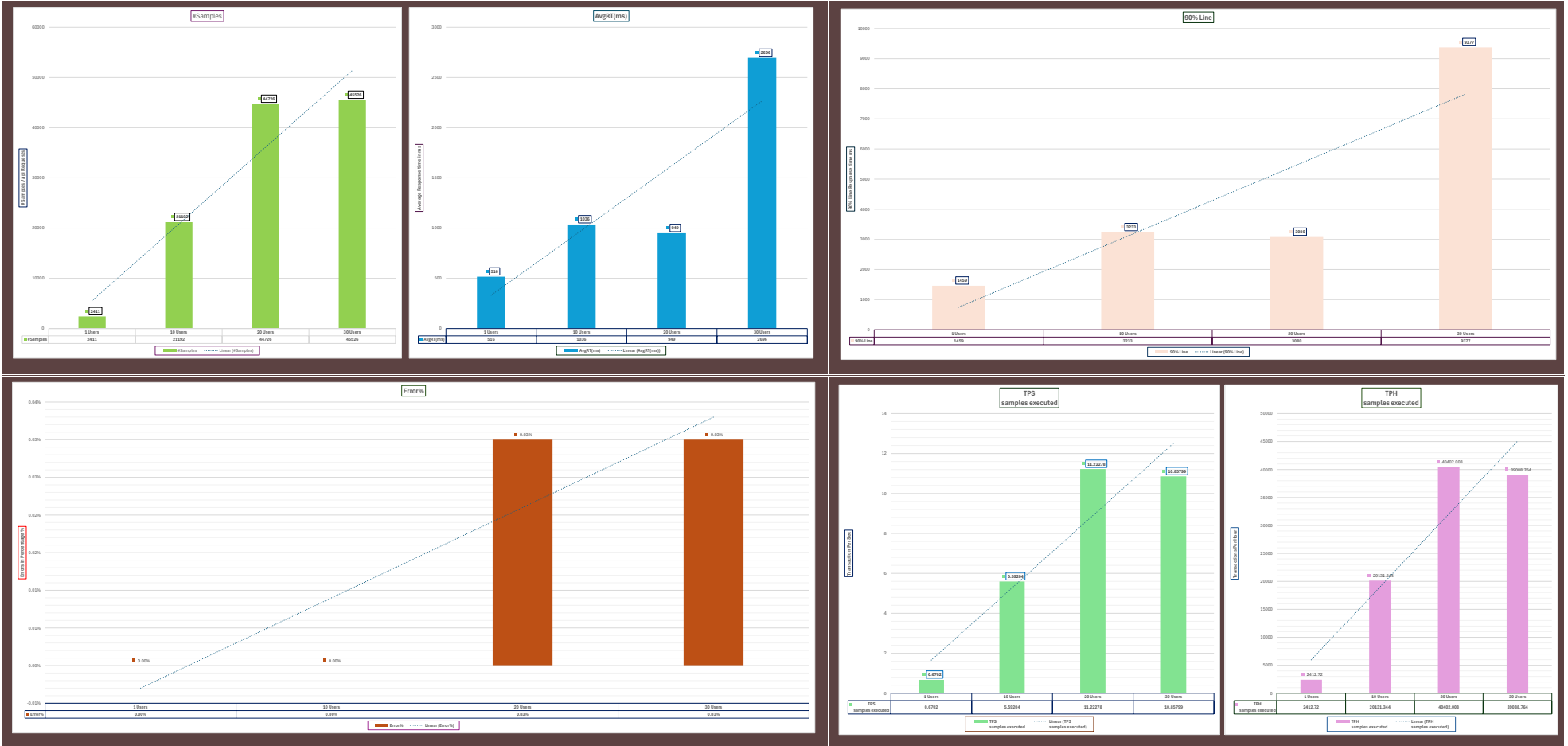
BCT Performance Testing Team

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Performance Summary Report in Graph representation
1. Average Response Time vs User Load
2. 90% Line Response Time vs User Load
3. Number of Samples / api requests in an hour
4. TPS & TPH
5. Error %

#Samples

	1 Users	10 Users	20 Users	30 Users
#Samples	2411	21192	44726	45526

AvgRT(ms)

	1 Users	10 Users	20 Users	30 Users
AvgRT(ms)	516	1036	949	2696

90% Line

	1 Users	10 Users	20 Users	30 Users
90% Line	1459	3333	3088	9377

Error%

	1 Users	10 Users	20 Users	30 Users
Error%	0.00%	0.00%	0.03%	0.03%

TPS
samples executed

	1 Users	10 Users	20 Users	30 Users
TPS samples executed	0.6782	5.59304	11.22278	10.85799

TPH
samples executed

	1 Users	10 Users	20 Users	30 Users
TPH samples executed	2412.72	20131.344	40402.008	39088.764

Performance Report GRC
Module Name : ITRM - TVI Registration

Overall Performance Report with Stability Analysis
Execution Overview
- Concurrent Users: 40, highest load tested.
- Test Duration: 60 minutes, including ramp-up and ramp-down.
- Total Samples Executed: 21,637, indicating system stress at peak load.
Performance Metrics
- Average Response Time: 12,374 ms (12.37 seconds)—significantly higher than previous runs, indicating serious performance degradation.
- Overall Throughput (TPS): 4.92549 transactions/sec, lower than the previous 10.85 TPS, showing scaling challenges.
- Error Rate: 0.01%, low but worth monitoring.
Resource Utilization
- CPU Utilization: 80.50%, near saturation—this suggests performance limits are being reached.
- Memory Utilization: 58.00%, stable but nearing potential scalability concerns.
Application Stability Analysis
Based on the reports:
- The application showed consistent stability up to 20 concurrent users, maintaining a reasonable response time of 949 ms and a high TPS of 11.22/sec.
- At 30 concurrent users, response times spiked to 2696 ms, indicating resource strain but still functioning within operational limits.
- At 40 users, response times ballooned to 12,374 ms, showing significant performance degradation and possible system bottlenecks.
- CPU usage surpassed 80%, meaning additional load could result in system instability or failures.
Optimization Recommendations
- Maintain optimal user load at 20 users for stability.
- Scale infrastructure (horizontal scaling or load balancing) to sustain higher concurrency.
- Migrate PostgreSQL to a separate VM to prevent resource contention.
- Optimize API response with caching, pagination, and indexing.

Reports:
http://192.168.0.160:3000/d/1XaPI0Ink/19688-appserver-metrices?orgId=1&from=1748949180000&to=1748952840000

file:///C:/Users/Hemanth/Desktop/BCT/apache-jmeter-5.6.3/TestScripts/Performance_Sripts_ITRM_TVI_User_Management_Modules/40Users_1Hr/40Users_1Hr/index.html

For 50 and 60 user load Worker node utilization

http://192.168.0.160:3000/d/1XaPI0Ink/19688-appserver-metrices?orgId=1&from=1748953800000&to=1748957400000

http://192.168.0.160:3000/d/1XaPI0Ink/19688-appserver-metrices?orgId=1&from=1748961000000&to=1748964600000

Application and Environment Details	
Application Server	OracleVM : Windows Server 2019 [BCTHYV-NS4] CPU : 8 Core MEM / RAM : 32 GiB Disk Space : 500GB
DataBase Server	OracleVM : Windows Server 2019 [BCTHYV-NS4] DB : PostgreSQL CPU : 8 Core MEM / RAM : 32 GiB Disk Space : 500GB
Application	GRC
Modules	ITRM ITRM - TVI Registration

PostgreSQL Database Size in Terms of Records:

Total Number of Assets:

Total Assets Count in DB: 1000+

Total Number of Users:

Total Users Count in DB: 110

Load Test Execution Details GRC - ITRM Module Name : ITRM - TVI Registration				
Load Test Execution Summary - GRC [ITRM - TVI Registration]				
Test Execution Date	**5-Jun-25**	**5-Jun-25**	**5-Jun-25**	**5-Jun-25**
User Work Flow	**ITRM_ITRM - TVI Registration**	**ITRM_ITRM - TVI Registration**	**ITRM_ITRM - TVI Registration**	**ITRM_ITRM - TVI Registration**
No Of Concurrent Users	1	10	20	30
Test Duration	60 minutes	60 minutes	60 minutes	60 minutes
Total Test Duration Including Ramp Up + Ramp Down	60 minutes	60 minutes	60 minutes	60 minutes
Total Samples Executed	2411	21192	44726	45526
Average Response times in milli seconds	516	1036	949	2696
Overall Throughput [TPS]	0.6702 /sec	5.59204 /sec	11.22278 /sec	10.85799 /sec
Error Rate	0.00%	0.00%	0.04%	0.03%
Average CPU Utilization (Worker Node)	6.13%	15.10%	27.80%	59.80%
Average Memory Utilization (Worker Node)	52.00%	56.00%	58.00%	58.00%

User Workflow or Scenario : S001_GRC_ITRM_CFA Sample / API Request Wise TPS				
Total Users	**#Samples**	**AvgRT(ms)**	**Error%**	**TPS samples executed**
1 Users	2411	516	0.00%	0.6702
10 Users	21192	1036	0.00%	5.59204
20 Users	44726	949	0.04%	11.22278
30 Users	45526	2696	0.03%	10.85799

- #Samples -- Total number of api's executed
- AvgRT(ms) -- Average api response time in milli seconds
- 90% Line -- The 90th percentile is the value for which 90% of the data points / response times are smaller in milli seconds
- Error% -- Error% denotes the percent of api requests with errors in percentage
- TPS -- api requests that the system can handle per second during a performance test
- TPH -- api requests that the system can handle per hour during a performance test

User Workflow Response Times : S001_GRC_ITRM_CFA User Action / Transaction Response time												
	1 Users 60 minutes			**10 Users 60 minutes**			**20 Users 60 minutes**			**30 Users 60 minutes**		
Transaction Name	Steady State test run : 60 min Total Test Duration : 60 min Think Time : 5 Sec			Steady State test run : 60 min Total Test Duration : 60 min Think Time : 5 Sec			Steady State test run : 60 min Total Test Duration : 60 min Think Time : 5 Sec			Steady State test run : 60 min Total Test Duration : 60 min Think Time : 5 Sec		
	# Samples	**90% Line**	**Error %**	**# Samples**	**90% Line**	**Error %**	**# Samples**	**90% Line**	**Error %**	**# Samples**	**90% Line**	**Error %**
T001_Launch_Application	34	176	0.00%	294	1652	0.00%	621	504	0.00%	638	1832	0.00%
T002_Valid_Login	33	6172	0.00%	293	10669	0.00%	620	8608	0.32%	637	13383	0.31%
T003_Itrm_TVI_Registration	33	2159	0.00%	291	5151	0.00%	618	4491	0.00%	635	13641	0.47%
T004_Open_Create_Single_TVI_Matrix_Form	33	236	0.00%	290	1624	0.00%	618	454	0.00%	631	5080	0.00%
T005_Cancel_Single_TVI_Matrix_Form	33	1443	0.00%	290	5112	0.00%	618	5026	0.00%	626	13222	0.00%
T006_Create_Single_TVI_Matrix	33	1971	0.00%	290	6421	0.00%	618	5492	0.00%	626	19412	0.16%
T007_View_Recent_Single_TVI_Matrix	33	306	0.00%	290	2169	0.00%	617	1064	0.00%	623	6760	0.00%
T008_View_ Back_Recent_Single_TVI_Matrix	33	1482	0.00%	290	4808	0.00%	616	5036	0.00%	621	13309	0.00%
T009_Edit _Recent_Single_TVI_Matrix	33	179	0.00%	290	1853	0.00%	615	1037	0.00%	620	6742	0.00%
T010_Update_Recent_Single_TVI_Matrix	33	1763	0.00%	290	5797	0.00%	610	5372	0.33%	616	15308	0.00%
T011_Create_Bulk_Upload_TVI_Matrix	33	1922	0.00%	290	6050	0.00%	605	5483	0.00%	615	17042	0.00%
T012_Delete_Recent_Single_TVI_Matrix	33	1916	0.00%	287	5204	0.00%	602	5637	0.33%	611	17413	0.00%
T013_Delete_Bulk_TVI_Matrix_3	33	1562	0.00%	287	5159	0.00%	598	5035	0.33%	606	16223	0.17%
T014_Logout	33	300	0.00%	286	1631	0.00%	595	704	0.00%	602	1937	0.00%
TOTAL (Actions)	463	1541.928571	0.00%	3198	4664.181818	0.00%	6776	3869.727273	5.92%	6888	11430.09091	8.60%
TOTAL (Actions + Samples)	2411	1459	0.00%	21192	3233	0.00%	44726	3080	0.04%	45526	9377	0.03%

High Response time API's (90th Percentile >= 3 sec)
• riskusermgmt/1/users/user/view • grc/itriskmgmt/1/assessment/find/all

Performance Report GRC									
Sl No	**Performance Parameters**	**Definition**	**Metric**	**Benchmark**	**Test Execution Results**				**Why it's Important ?**
					1 Users	**10 Users**	**20 Users**	**30 Users**	
1	Concurrent Users / Load	The number of users simultaneously using the system during testing.	Measured by the number of concurrent users.		1 Users	10 Users	20 Users	30 Users	To see how the system handles multiple users and whether it can scale.
2	Avg Response Time	The time it takes for the system to respond to a user request.	Measured in milliseconds or seconds.	100 ms – 500 ms:	516	1036	949	2696	Ensures the system responds within acceptable limits for end users.
3	Throughput	The number of transactions the system can handle over a specific period.	Measured in requests per second (RPS) or transactions per second (TPS).	RPS: 500 RPS TPS: Small: 50 – 500 requests per second (RPS).Medium/Large: 500 – 5,000 RPS.	0.6702 /sec	5.592 /sec	11.222 /sec	10.857 /sec	Determines the system's capacity to handle concurrent user requests.
4	Error Rate	The percentage of requests that fail compared to total requests made.	Measured as a percentage (%).	0% - 1%: Expected under normal conditions. < 0.1%: Ideal error rate for mission- critical systems. > 1%: Indicates underlying issues and needs immediate investigation.	0.00%	0.00%	0.03%	0.03%	High error rates indicate issues in the system that need to be addressed.
5	Peak Load	The maximum load that the system can handle without degradation in performance.	Maximum number of requests or users.	100% increase from normal load should be handled without performance degradation for most applications. Systems should ideally handle 2x – 5x peak loads (especially for e-commerce, financial services, etc.) during special events like product launches or holiday	2411	21192	44726	45526	Determines the upper limits of system performance.

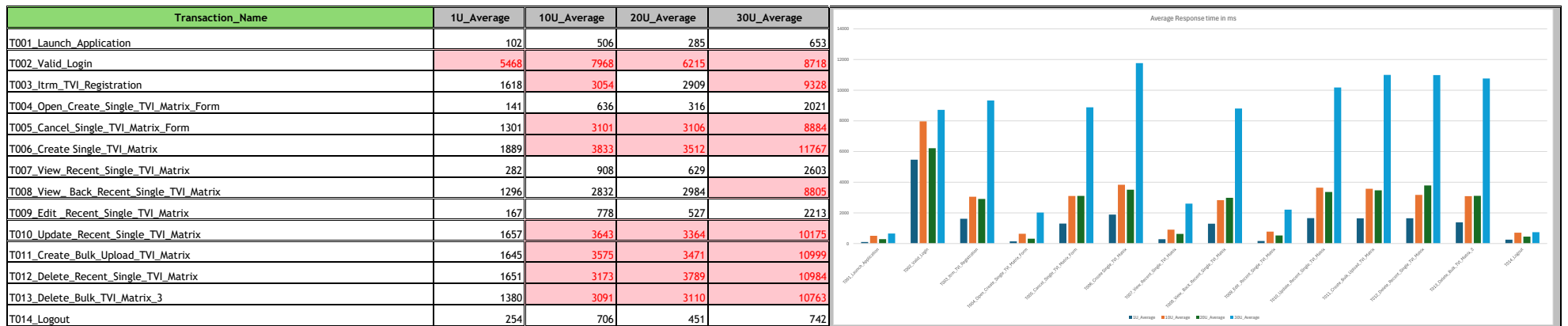| Sl No	Performance Parameters	Definition	Metric	Benchmark	Test Execution Results				Why it's Important ?
					1 Users	10 Users	20 Users	30 Users	
6	Avg Page Load Time	The time it takes for a page or element to load completely.	Measured in seconds.	< 1 second: Ideal for a seamless user experience. 1 – 2 seconds: Acceptable, but improvements may be needed. > 2 seconds: Slow; likely to result in user frustration and higher bounce rates.	1.34 Sec	2.80 Sec	2.48 sec	6.92 sec	Slow page loads can negatively affect user experience.
7	App Server CPU Usage	The amount of CPU resources being used by the system during load.	Measured in percentage (%).	30% – 70%: Healthy range under normal load. 70% – 85%: System is approaching high usage; consider optimization. > 85%: System may become unstable or slow, requiring load balancing, vertical scaling, or code optimizations.	6.13%	15.10%	27.80%	59.80%	High CPU utilization can signal bottlenecks and potential resource shortages.
8	App Server Memory Usage	The amount of memory being used by the system under load.	Measured in MB/GB or as a percentage (%).	40% – 70%: Healthy range under load. > 70%: Consider tuning or memory leak investigation. > 90%: Likely to cause out-of-memory errors or slow performance.	52.00%	56.00%	58.00%	58.00%	Excessive memory usage can lead to out-of- memory issues and poor performance.
9	Database Performance	Time taken by the database to handle queries and transactions.	Measured in terms of query response time, number of transactions processed per second, and deadlock rates.	100 ms – 500 ms: Acceptable for transactional databases.	No Dead Locks	No Dead Locks	No Dead Locks	No Dead Locks	A slow database can severely impact overall system performance.

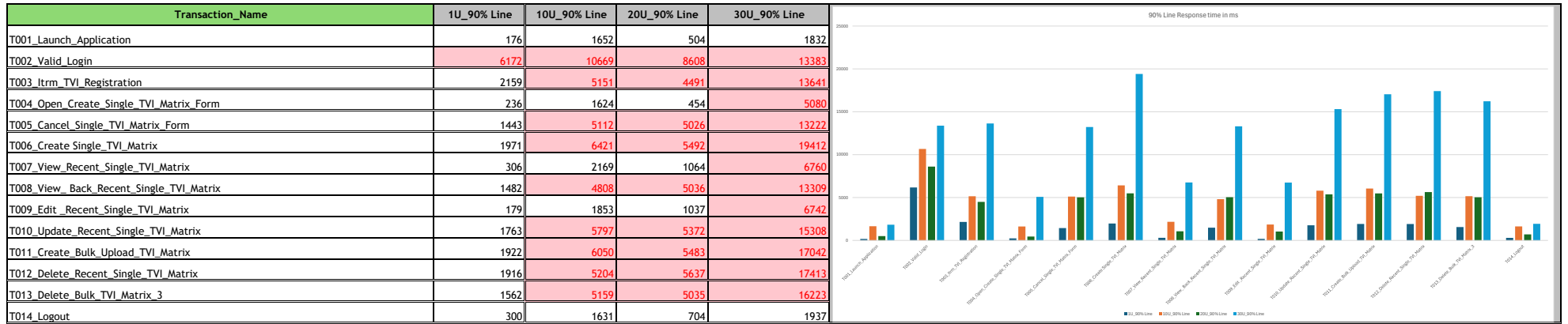| Sl No	Performance Parameters	Definition	Metric	Benchmark	Test Execution Results				Why it's Important ?
					1 Users	10 Users	20 Users	30 Users	
10	DB Server CPU Usage	The amount of CPU resources being used by the system during load.	Measured in percentage (%).	30% – 70%: Healthy range under normal load. 70% – 85%: System is approaching high usage; consider optimization. > 85%: System may become unstable or slow, requiring load balancing, vertical scaling, or query optimizations.	6.13%	15.10%	27.80%	59.80%	High CPU utilization can signal bottlenecks and potential resource shortages.
11	DB Server Memory Usage	The amount of memory being used by the system under load.	Measured in MB/GB or as a percentage (%).	40% – 70%: Healthy range under load. > 70%: Consider query tuning . > 90%: Likely to cause slow performance , Require Horizantal scaling, or query optimizations.	52.00%	56.00%	58.00%	58.00%	High Memory utilization can signal bottlenecks and potential resource shortages.
12	DB Server Queue Length	The number of requests waiting to be processed by the system.	Number of queued requests.	< 10 items in the queue at any time for smooth operation. 10 – 50 items: Monitor closely; system could be under stress. > 50 items: Indicates a bottleneck, possibly due to high traffic or resource limitations.	0	0	0	0	Long queue lengths can indicate that the system is overwhelmed by the load.

Sl No	Performance Parameters	Definition	Metric	Benchmark	Test Execution Results				Why it's Important ?
					1 Users	10 Users	20 Users	30 Users	
13	Scalability	How well the system can handle increasing loads by scaling up or out.	Linear or non-linear performance increase with added resources.	Linear scalability: As resources (CPU, memory, etc.) are added, performance should improve proportionally. Non-linear performance degradation: A warning sign that the system needs better resource management or architectural improvements.	Optimizing queries and using indexing effectively can significantly improve the performance of all GET calls.	Optimizing queries and using indexing effectively can significantly improve the performance of all GET calls.	Optimizing queries and using indexing effectively can significantly improve the performance of all GET calls.	To address the "High Response Time: Due to lack of pagination and high cpu utilization" issue, increasing the JDBC pool size can be an effective solution.	Ensures the system can scale efficiently with growing user or transaction volume.
					Implementing pagination for all GET calls is a great way to improve system performance and ensure quicker responses from the server. **Benefits of Pagination** Improved Performance: Reduces the amount of data transferred and processed at once. Better User Experience: Faster response times and easier navigation through large datasets. Scalability: Helps manage large datasets more efficiently.	Implementing pagination for all GET calls is a great way to improve system performance and ensure quicker responses from the server. **Benefits of Pagination** Improved Performance: Reduces the amount of data transferred and processed at once. Better User Experience: Faster response times and easier navigation through large datasets. Scalability: Helps manage large datasets more efficiently.	Implementing pagination for all GET calls is a great way to improve system performance and ensure quicker responses from the server. **Benefits of Pagination** Improved Performance: Reduces the amount of data transferred and processed at once. Better User Experience: Faster response times and easier navigation through large datasets. Scalability: Helps manage large datasets more efficiently.	Implementing Pagination: Breaking down large data sets into smaller, manageable chunks can reduce the amount of data processed at once, thus improving response times. SQL Queries: Use LIMIT and OFFSET for SQL databases. API Responses: Include parameters in API calls to fetch data in pages. Optimizing SHA-2 Digest Operations Efficient Hashing: Parallel Processing: Implementing multi-threading or multi-processing to handle SHA-2 digest operations concurrently.	

Module Name : ITRM - TVI Registration
Aggregate Report Performance Report GRC - ITRA
User Workflow or Scenario : S001_GRC_ITRM_TVI_REGISTRATION
Detailed metrics on response times and error rates for individual requests / Api's

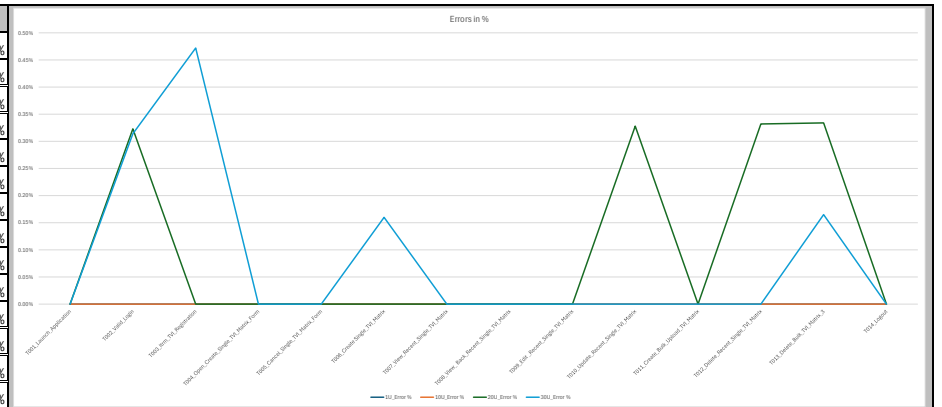| Transaction / Request Name	1 Users 60 min			10 Users 60 min			20 Users 60 min			30 Users 60 min		
Label	# Samples	90% Line	Error %	# Samples	90% Line	Error %	# Samples	90% Line	Error %	# Samples	90% Line	Error %
S001_TC_001_01_Launch/grc	34	176	0.00%	294	1652	0.00%	621	504	0.00%	638	1832	0.00%
T001_Launch_Application	34	176	0.00%	294	1652	0.00%	621	504	0.00%	638	1832	0.00%
S001_TC_002_01_token	33	94	0.00%	293	1033	0.00%	621	401	0.00%	638	1204	0.00%
S001_TC_002_02_token	33	224	0.00%	293	398	0.00%	621	306	0.00%	638	552	0.00%
S001_TC_002_03_grcoauth/1/oauth/token?grant_type	33	26	0.00%	293	207	0.00%	621	126	0.00%	638	308	0.00%
S001_TC_002_04_grcoauth/1/oauth/token?grant_type	33	479	0.00%	293	663	0.00%	621	468	0.32%	638	695	0.31%
S001_TC_002_05_riskusermgmt/1/users/user/view (Login)	33	46	0.00%	293	108	0.00%	619	75	0.00%	636	190	0.00%
S001_TC_002_06_itrmrisk/1.0/dashboard/residual/heatmapcounts (Login)	33	60	0.00%	293	89	0.00%	619	67	0.00%	636	157	0.00%
S001_TC_002_07_itrmrisk/1.0/dashboard/inherent/heatmapcounts (Login)	33	38	0.00%	293	98	0.00%	619	64	0.00%	636	124	0.00%
S001_TC_002_08_riskusermgmt/1/country/dropdown (Login)	33	43	0.00%	293	82	0.00%	619	61	0.00%	636	113	0.00%
S001_TC_002_09_itrmrisk/1.0/dashboard/residual/heatmapcounts (Login)	33	198	0.00%	293	192	0.00%	619	125	0.00%	636	191	0.00%
S001_TC_002_12_itrmrisk/1.0/dashboard/inherent/heatmapcounts (Login)	33	251	0.00%	293	254	0.00%	619	177	0.00%	636	247	0.00%
S001_TC_002_13_riskusermgmt/1/country/dropdown (Login)	33	166	0.00%	293	173	0.00%	619	103	0.00%	636	134	0.00%
S001_TC_002_15_riskusermgmt/1/users/user/view (Login)	33	4040	0.00%	293	7803	0.00%	619	5830	0.00%	636	9395	0.00%
S001_TC_002_16_riskusermgmt/1/users/user/Perfuser008/view (Login)	33	36	0.00%	293	189	0.00%	618	78	0.00%	635	292	0.00%
S001_TC_002_17_riskusermgmt/1/menus/menu (Login)	33	26	0.00%	293	156	0.00%	618	66	0.00%	635	250	0.00%
S001_TC_002_18_riskusermgmt/1/menus/menu (Login)	33	167	0.00%	293	187	0.00%	618	93	0.00%	635	231	0.00%
S001_TC_002_19_riskusermgmt/1/users/user/Perfuser008/view (Login)	33	279	0.00%	293	484	0.00%	618	300	0.00%	635	438	0.00%
T002_Valid_Login	33	6172	0.00%	293	10669	0.00%	620	8608	0.32%	637	13383	0.31%
S001_TC_003_01_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	60	0.00%	292	745	0.00%	618	251	0.00%	635	548	0.00%
S001_TC_003_02_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	2126	0.00%	292	4610	0.00%	618	4267	0.00%	635	13491	0.47%
T003_Itrm_TVI_Registration	33	2159	0.00%	291	5151	0.00%	618	4491	0.00%	635	13641	0.47%
S001_TC_004_01_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	51	0.00%	290	841	0.00%	618	232	0.00%	631	701	0.00%
S001_TC_004_02_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	175	0.00%	290	613	0.00%	618	199	0.00%	631	4883	0.00%
T004_Open_Create_Single_TVI_Matrix_Form	33	236	0.00%	290	1624	0.00%	618	454	0.00%	631	5080	0.00%
S001_TC_005_01_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	48	0.00%	290	874	0.00%	618	367	0.00%	631	602	0.00%
S001_TC_005_02_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1413	0.00%	290	4467	0.00%	618	4697	0.00%	630	12908	0.00%
T005_Cancel_Single_TVI_Matrix_Form	33	1443	0.00%	290	5112	0.00%	618	5026	0.00%	626	13222	0.00%
S001_TC_006_01_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	51	0.00%	290	801	0.00%	618	290	0.00%	626	586	0.00%
S001_TC_006_02_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	70	0.00%	290	639	0.00%	618	219	0.00%	626	4209	0.16%
S001_TC_006_03_grctvi/1/tvi/matrix/new (lib_tvi)	33	28	0.00%	290	249	0.00%	618	91	0.00%	625	510	0.00%
S001_TC_006_04_grctvi/1/tvi/matrix/new (lib_tvi)	33	290	0.00%	290	550	0.00%	618	395	0.00%	625	3293	0.00%
S001_TC_006_05_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	31	0.00%	290	134	0.00%	618	91	0.00%	625	327	0.00%
S001_TC_006_06_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1559	0.00%	290	4569	0.00%	618	4186	0.00%	625	12669	0.00%
T006_Create_Single_TVI_Matrix	33	1971	0.00%	290	6421	0.00%	618	5492	0.00%	626	19412	0.16%
S001_TC_007_01_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	53	0.00%	290	891	0.00%	617	271	0.00%	623	880	0.00%

Transaction / Request Name	1 Users 60 min			10 Users 60 min			20 Users 60 min			30 Users 60 min		
Label	# Samples	90% Line	Error %	# Samples	90% Line	Error %	# Samples	90% Line	Error %	# Samples	90% Line	Error %
S001_TC_007_02_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	72	0.00%	290	782	0.00%	617	244	0.00%	623	3345	0.00%
S001_TC_007_03_grctvi/1/tvi/matrix/find/1716 (lib_tvi)	33	27	0.00%	290	179	0.00%	617	113	0.00%	623	456	0.00%
S001_TC_007_04_grctvi/1/tvi/matrix/find/1716 (lib_tvi)	33	178	0.00%	290	315	0.00%	617	251	0.00%	623	2398	0.00%
T007_View_Recent_Single_TVI_Matrix	33	306	0.00%	290	2169	0.00%	617	1064	0.00%	623	6760	0.00%
S001_TC_008_01_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	47	0.00%	290	572	0.00%	616	260	0.00%	622	622	0.00%
S001_TC_008_02_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1440	0.00%	290	4290	0.00%	616	4888	0.00%	622	12898	0.00%
T008_View_ Back_Recent_Single_TVI_Matrix	33	1482	0.00%	290	4808	0.00%	616	5036	0.00%	621	13309	0.00%
S001_TC_009_01_grctvi/1/tvi/matrix/find/1716 (lib_tvi)	33	50	0.00%	290	876	0.00%	615	303	0.00%	620	532	0.00%
S001_TC_009_02_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	28	0.00%	290	315	0.00%	615	176	0.00%	620	323	0.00%
S001_TC_009_03_grctvi/1/tvi/matrix/find/1716 (lib_tvi)	33	67	0.00%	290	327	0.00%	615	202	0.00%	620	3718	0.00%
S001_TC_009_04_grctvi/1/tvi/dropdownvalues (lib_tvi)	33	68	0.00%	290	210	0.00%	615	149	0.00%	620	1965	0.00%
T009_Edit _Recent_Single_TVI_Matrix	33	179	0.00%	290	1853	0.00%	615	1037	0.00%	620	6742	0.00%
S001_TC_010_01_grctvi/1/tvi/matrix/modify (lib_tvi)	33	65	0.00%	290	905	0.00%	611	289	0.00%	619	846	0.00%
S001_TC_010_02_grctvi/1/tvi/matrix/modify (lib_tvi)	33	298	0.00%	290	780	0.00%	611	468	0.33%	619	3747	0.00%
S001_TC_010_03_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	34	0.00%	290	196	0.00%	609	102	0.00%	619	439	0.00%
S001_TC_010_04_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1448	0.00%	290	4398	0.00%	609	4417	0.00%	619	12579	0.00%
T010_Update_Recent_Single_TVI_Matrix	33	1763	0.00%	290	5797	0.00%	610	5372	0.33%	616	15308	0.00%
S001_TC_011_01_grctvi/1/tvi/matrix/bulk/new (lib_tvi)	33	43	0.00%	290	907	0.00%	608	272	0.00%	616	696	0.00%
S001_TC_011_02_grctvi/1/tvi/matrix/bulk/new (lib_tvi)	33	233	0.00%	290	718	0.00%	608	349	0.00%	616	4869	0.00%
S001_TC_011_03_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	44	0.00%	290	168	0.00%	608	104	0.00%	616	453	0.00%
S001_TC_011_04_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1607	0.00%	290	4842	0.00%	608	4485	0.00%	616	12764	0.00%
T011_Create_Bulk_Upload_TVI_Matrix	33	1922	0.00%	290	6050	0.00%	605	5483	0.00%	615	17042	0.00%
S001_TC_012_01_grctvi/1/tvi/matrix/remove (lib_tvi)	33	61	0.00%	289	765	0.00%	603	234	0.00%	613	685	0.00%
S001_TC_012_02_grctvi/1/tvi/matrix/remove (lib_tvi)	33	193	0.00%	289	586	0.00%	603	371	0.17%	612	4650	0.00%
S001_TC_012_03_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	28	0.00%	289	206	0.00%	602	90	0.00%	612	517	0.00%
S001_TC_012_04_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1711	0.00%	289	3946	0.00%	602	4789	0.17%	612	13129	0.00%
T012_Delete_Recent_Single_TVI_Matrix	33	1916	0.00%	287	5204	0.00%	602	5637	0.33%	611	17413	0.00%
S001_TC_013_01_grctvi/1/tvi/matrix/remove/list (lib_tvi)	33	46	0.00%	287	889	0.00%	598	255	0.00%	610	710	0.00%
S001_TC_013_02_/grctvi/1/tvi/matrix/remove/list (lib_tvi)	33	88	0.00%	287	479	0.00%	598	232	0.33%	610	4603	0.00%
S001_TC_013_03_/grctvi/1/tvi/matrix/find/all (lib_tvi)	33	27	0.00%	287	202	0.00%	596	119	0.00%	610	454	0.00%
S001_TC_013_04_grctvi/1/tvi/matrix/find/all (lib_tvi)	33	1398	0.00%	287	4029	0.00%	596	4346	0.00%	610	12318	0.16%
T013_Delete_Bulk_TVI_Matrix_3	33	1562	0.00%	287	5159	0.00%	598	5035	0.33%	606	16223	0.17%
S001_TC_014_01_grcoauth/1/oauth/token (lib_tvi)	33	47	0.00%	286	725	0.00%	595	277	0.00%	603	594	0.00%
S001_TC_014_02_grcoauth/1/oauth/token (lib_tvi)	33	50	0.00%	286	387	0.00%	595	169	0.00%	603	418	0.00%
S001_TC_014_03_revoke (lib_tvi)	33	50	0.00%	286	311	0.00%	595	174	0.00%	603	503	0.00%
S001_TC_014_04_revoke (lib_tvi)	33	165	0.00%	286	106	0.00%	595	84	0.00%	602	227	0.00%
T014_Logout	33	300	0.00%	286	1631	0.00%	595	704	0.00%	602	1937	0.00%
TOTAL	2411	1459	0.00%	21192	3233	0.00%	44726	3080	0.04%	45526	9377	0.03%

Graph representation of the performance results for user actions
1. Average Response Time vs User Load
2. 90% Line Response Time vs User Load
3. Error Rate vs User Load
4. TPS vs User Load

Transaction_Name	1U_Average	10U_Average	20U_Average	30U_Average
T001_Launch_Application	102	506	285	653
T002_Valid_Login	5468	7968	6215	8718
T003_Itrm_TVI_Registration	1618	3054	2909	9328
T004_Open_Create_Single_TVI_Matrix_Form	141	636	316	2021
T005_Cancel_Single_TVI_Matrix_Form	1301	3101	3106	8884
T006_Create Single_TVI_Matrix	1889	3833	3512	11767
T007_View_Recent_Single_TVI_Matrix	282	908	629	2603
T008_View_ Back_Recent_Single_TVI_Matrix	1296	2832	2984	8805
T009_Edit _Recent_Single_TVI_Matrix	167	778	527	2213
T010_Update_Recent_Single_TVI_Matrix	1657	3643	3364	10175
T011_Create_Bulk_Upload_TVI_Matrix	1645	3575	3471	10999
T012_Delete_Recent_Single_TVI_Matrix	1651	3173	3789	10984
T013_Delete_Bulk_TVI_Matrix_3	1380	3091	3110	10763
T014_Logout	254	706	451	742

Average Response time in ms

Transaction_Name	1U_90% Line	10U_90% Line	20U_90% Line	30U_90% Line
T001_Launch_Application	176	1652	504	1832
T002_Valid_Login	6172	10669	8608	13383
T003_Itrm_TVI_Registration	2159	5151	4491	13641
T004_Open_Create_Single_TVI_Matrix_Form	236	1624	454	5080
T005_Cancel_Single_TVI_Matrix_Form	1443	5112	5026	13222
T006_Create Single_TVI_Matrix	1971	6421	5492	19412
T007_View_Recent_Single_TVI_Matrix	306	2169	1064	6760
T008_View_ Back_Recent_Single_TVI_Matrix	1482	4808	5036	13309
T009_Edit _Recent_Single_TVI_Matrix	179	1853	1037	6742
T010_Update_Recent_Single_TVI_Matrix	1763	5797	5372	15308
T011_Create_Bulk_Upload_TVI_Matrix	1922	6050	5483	17042
T012_Delete_Recent_Single_TVI_Matrix	1916	5204	5637	17413
T013_Delete_Bulk_TVI_Matrix_3	1562	5159	5035	16223
T014_Logout	300	1631	704	1937

90% Line Response time in ms

Transaction_Name	1U_Error %	10U_Error %	20U_Error %	30U_Error %
T001_Launch_Application	0.00%	0.00%	0.00%	0.00%
T002_Valid_Login	0.00%	0.00%	0.32%	0.31%
T003_Itrm_TVI_Registration	0.00%	0.00%	0.00%	0.47%
T004_Open_Create_Single_TVI_Matrix_Form	0.00%	0.00%	0.00%	0.00%
T005_Cancel_Single_TVI_Matrix_Form	0.00%	0.00%	0.00%	0.00%
T006_Create Single_TVI_Matrix	0.00%	0.00%	0.00%	0.16%
T007_View_Recent_Single_TVI_Matrix	0.00%	0.00%	0.00%	0.00%
T008_View_ Back_Recent_Single_TVI_Matrix	0.00%	0.00%	0.00%	0.00%
T009_Edit _Recent_Single_TVI_Matrix	0.00%	0.00%	0.00%	0.00%
T010_Update_Recent_Single_TVI_Matrix	0.00%	0.00%	0.33%	0.00%
T011_Create_Bulk_Upload_TVI_Matrix	0.00%	0.00%	0.00%	0.00%
T012_Delete_Recent_Single_TVI_Matrix	0.00%	0.00%	0.33%	0.00%
T013_Delete_Bulk_TVI_Matrix_3	0.00%	0.00%	0.33%	0.17%
T014_Logout	0.00%	0.00%	0.00%	0.00%

Errors in %

Transaction_Name	1U_TPS	10U_TPS	20U_TPS	30U_TPS
T001_Launch_Application	0.00945	0.07822	0.158	0.15346
T002_Valid_Login	0.00945	0.07774	0.15755	0.15305
T003_Itrm_TVI_Registration	0.00946	0.07822	0.15728	0.15265
T004_Open_Create_Single_TVI_Matrix_Form	0.00947	0.07842	0.15741	0.15173
T005_Cancel_Single_TVI_Matrix_Form	0.00946	0.0784	0.15735	0.15167
T006_Create_Single_TVI_Matrix	0.00946	0.07837	0.15736	0.15159
T007_View_Recent_Single_TVI_Matrix	0.00946	0.07841	0.1572	0.15263
T008_View_ Back_Recent_Single_TVI_Matrix	0.00946	0.07838	0.15692	0.15201
T009_Edit _Recent_Single_TVI_Matrix	0.00946	0.07841	0.15673	0.152
T010_Update_Recent_Single_TVI_Matrix	0.00946	0.07834	0.15625	0.15102
T011_Create_Bulk_Upload_TVI_Matrix	0.00946	0.07829	0.1551	0.15069
T012_Delete_Recent_Single_TVI_Matrix	0.00946	0.07748	0.15767	0.15104
T013_Delete_Bulk_TVI_Matrix_3	0.00946	0.07749	0.1566	0.15017
T014_Logout	0.00946	0.07855	0.15602	0.14928

Dependency service to execute the load test

Main Module : IT Risk management
Sub Module : Control FrameWork Assessment
Services :
OAuth Service
Wso2 Service
UserManagement Service
GRC-ITRisk-0.0.1-SNAPSHOT.war
TVI-Registration.war
TomCat Server [Frontend Server]
PostgreSQL [DataBase Server]

Total Users	#Samples	AvgRT(ms)	Error%	TPS samples executed	TPH samples executed	90% Line
1 Users	2411	516	0.00%	0.6702	2412.72	1459
10 Users	21192	1036	0.00%	5.59204	20131.344	3233
20 Users	44726	949	0.03%	11.22278	40402.008	3080
30 Users	45526	2696	0.03%	10.85799	39088.764	9377