STEP

Performance Assessment

Agenda

- Performance assessment process

- Non-functional requirements

- Performance testing

- STEP Health Check

- Technical environment viewpoint

- Functional viewpoint

- Deliverables

Performance Assessment Process

Performance Assessment

◆ The goal of the STEP performance assessment is to analyze the STEP system from a performance perspective, identify the pain points, and give recommendations to optimize performance for the client or partner to execute on.

◆ This document describes an overview of the STEP performance assessment, analysis and recommendations. The details are in the corresponding Word document.

◆ The performance guidelines and recommendations are based on the facts and figures gathered and analysis done by Stibo Systems for the configuration and implementation of a STEP system optimized for performance.

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Performance Assessment Process (1)

1. The performance assessment process starts with an agreement between the client and Stibo Systems to execute a performance assessment process.

2. Stibo Systems sends the template for identifying the main performance problems, non-functional performance requirements and performance use cases to the client for the client to fill out.

3. An online call of approximately 2 hours is scheduled to discuss the main performance problems, non-functional performance requirements and performance use cases the client had filled out with the goal to fully understand the performance problems and be able to reproduce these.

4. Stibo System uses the filled-out template to reproduce the performance problems offsite and performs the performance analysis based on this document. This initial performance analysis offsite takes about 3 days.

Performance Assessment Process (2)

5. Stibo Systems has an onsite visit with client for 2 days to
   - Present the initial performance analysis done by Stibo Systems offsite
   - Determine the most important recommendations with client
   - Implement the most important recommendations with the client as far as feasible
   - Execute the defined performance use cases again and discuss possible performance improvements with the client
   - Determine next steps with the client

6. Stibo System finalizes the performance assessment by finalizing the execution of the performance use cases and writing the conclusions this document. The finalization takes about 1 day.

7. Stibo System hands over the document to the client in an online call of about 2 hours.

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Non-Functional Requirements

Non-Functional Requirements

- The non-functional requirements should indicate what is expected by the client from a STEP performance perspective.

- The non-functional requirements should be defined and agreed upon in an earlier stage.

- For example: Import `"Supplier A"` in Excel needs to be finished within 3 hours.

Performance Use Cases

◆ Every non-functional requirement should have one or more use cases

◆ The performance use case describes step-by-step how to reproduce the non-functional requirement.

◆ For example: Import `"Supplier A"` in Excel needs to be finished within 3 hours

- Login STEP Workbench

- Run import

  - Configuration "Import Supplier A"

  - Excel sheet "Import Supplier A"

- Wait until import has finished

Performance Testing

Performance testing

- Performance testing should be part of the STEP implementation process and release.

- However, the client often doesn't include STEP performance testing as part of the STEP implementation project for several reasons. Nevertheless, it's highly recommended to include STEP performance testing as part of the STEP implementation process.

- If the client doesn't have the means to execute STEP performance testing themselves, then a recommended 3rd party can be included for this purpose.

Large scale performance testing highlights (1)

♦ STEP provides means to perform some performance testing such as measuring the import and export execution times (background process times) and measuring the execution times of business rules (via the Admin Portal).

♦ However, large scale performance testing is something different and can be seen as a separate exercise. The client and/or partner can e.g. use Neoload to do large scale performance testing on the STEP environment.

♦ Any largescale performance testing must respect a couple of basic and very important rules for making realistic performance testing such as:

1. A good representative and realistic data set must be in place on a STEP system observing all hardware requirements specified by Stibo Systems.

2. Each time a performance test has run the database has to be reset so that every test starts from exactly the same point for origin. For example, just manually deleting what is thought to be the test data is not good enough; there must be a restore from backup holding the agreed test data.

3. Simulating the behavior of multiple users working in parallel will require that the data these users are working with are parameterized. For example, it's usually not very realistic behavior to start 1000 users working on the same product.

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Large scale performance testing highlights (2)

4. If user scenarios are recorded to be executed by the test robot, delays between consecutive user actions must be introduced reflecting realistic user behavior. For example, a human being does not make multiple mouse clicks per millisecond.

5. Care must be taken about how to start the test. For example, it's usually not very realistic behavior when starting 1000 users within the same millisecond in bulk.

6. Running strongly parallelized bulk updates or imports requires careful planning so that the test does not end up in massive updates of the same resources leading to massive and not very realistic locking in the database leading to terrible performance timings.

7. Be sure that expectations are well-defined before executing any tests. What is a good result and what is a bad result. What is the goal of the performance test? Usually the absolute results of the performance tests do not represent realistic behaviors, but performance test results should be compared with previous performance test results to interpret the STEP system behavior over time.

8. Gather relevant monitoring data from the test. As a minimum, it's recommended to have a complete copy of STEPs diag folder for every test run. It is also useful to collect Oracle data statspack/awr and OS information sar/nmon. It is advisable to keep this data at least until a few more tests have been carried out.

STEP Health Check

STEP Health Check

◆ There's an option in the Admin Portal of STEP version 8.1 and higher to check the health of the STEP system.

◆ Before any other performance analysis are done and recommendations are followed up, it's recommended to run the STEP Health Checks one by one.

STEP Health Check

The objective behind the Healthcheck functionality is, to visualize information which have not previously been accessible to customers and hence, give you as a customer the opportunity to intervene and rectify the current state before it potentially escalates to a real performance issue. Please note, that this functionality is designed to be run on a regular basis, which allows you to continuously monitor and thus avoid minor issues to evolve into more critical situation. Please find detailed information in the 'My Issues/Document Repository' area, in JIRA.

Server time: 03/30/2018 13:51

Available Tests

	Test	Last Run	Execution Time (Last Run)	Executed By	Detected Problems ▼
☐	Check for Common Web UI Configuration Errors	ⓘ Mon Jul 24 15:17:02 CEST 2017	7 sec	STEPSYS	5
☑	Revised values should be unrevised	ⓘ CEST 2017	0 sec	STEPSYS	2
☑	Check sequences	ⓘ CEST 2017	0 sec	STEPSYS	1
☐	Assets Missing a Front Revision	ⓘ CET 2018	0 sec	STEPSYS	0
☐	Assets Without a History Entry	ⓘ CET 2018	0 sec	STEPSYS	0
☐	Attributes that have both revised and not revised (externally maintained/not externally...	ⓘ CEST 2017	0 sec	STEPSYS	0
☐	Check LOV Used for Status by BGPs	ⓘ Mon Jul 24 15:11:00 CEST 2017	0 sec	STEPSYS	0
☐	Change Log Total Size	ⓘ Mon Jul 24 15:11:21 CEST 2017	0 sec	STEPSYS	0
☐	Change Logs Entries Per Node	ⓘ Mon Jul 24 16:15:14 CEST 2017	0 sec	STEPSYS	0

Tooltip: Checks web UI for some of the most common configuration errors, that can cause performance problems.

✗ Cancel Selected Tests   ✓ Run Selected Tests

Detected Problems

	Test	Object	Problem Type	Details	Fix Available	Fixed	Fix Applied By
☑	Revised values should be unrevised	Multiple (2)	Data Error		Yes	ⓘ	
☐	Check sequences	AUTOIDSEQ	Data Error	The sequence AUTOIDSEQ is invalid. The current sequence is 107088, however a row exists with the higher number 910836. used to create external ids (node table.name) is out of sync. This might bring back a false positive, as users can have created an numeric external ID larger than the sequence.	No		

✓ Export Selected Items to CSV   🔍 View Fix Log   ▶ Fix Selected Issues

🔍 100% ▼

Technical Environment Viewpoint

STEP infrastructure recommendation document

- Stibo Systems has handed over the STEP infrastructure recommendation document.

- The STEP infrastructure recommendation document describes how the STEP environments should be setup.

- If the STEP Infrastructure Recommendation document is outdated, then it should be updated and the STEP servers should be setup accordingly.

- The STEP server configurations should be according to the recommendations.

STEP client environment

- Analysis of the client workstations

- Analysis of the internet connection of the client computers

- Analysis of the connection between client computers and the STEP application server

- It's the responsibility of the client to make sure the client computers and internet connections are well performing.

STEP server environment

◆ The STEP server environments are analyzed via basic analysis on the STEP application server as well as the STEP database server.

◆ For deeper system and infrastructure analysis, recommendations and execution, it's highly recommended to involve a Stibo Systems System Architect (Infrastructure Architect) together with the System Architect of the client.

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STEP server environment activities (1)

- The STEP servers are setup according to infrastructure recommendation document

- In case the STEP load is significantly increased, then update STEP infrastructure recommendation document

- The STEP server configurations in the shared configuration properties file hasn't been changed without consulting Stibo Systems

- The STEP production environment should not be virtualized without consulting Stibo Systems

- In case the STEP production environment is virtualized, then it should be virtualized according to virtualization recommendations

- The network latency of the STEP server environment should be stable and about 0.2 milliseconds

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STEP server environment activities (2)

- In case the STEP environment uses shared folders on other servers, then the latency should meet the recommendations described in infrastructure recommendation document

- The STEP servers should have normal CPU and Memory load, otherwise this should be analyzed further by Stibo Systems and probably the heap size should be increased

- The STEP servers should have balanced CPU and Memory loads, otherwise this should be analyzed further by Stibo Systems and probably the load balanced configuration should be reconsidered

- The STEP database should perform a redo log switch of about 50 times per day (every 30 minutes)

- The STEP database alert log should be analyzed on errors such as TEMP tablespace errors and deadlock errors

Functional Viewpoint

Functional viewpoint

- When STEP users suffer poor performance, especially in operation on STEP production, it's necessary to check the performance of STEP from a functional viewpoint

- The functional viewpoint includes the setup and configuration of the STEP application.

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Base setup

◆ The base setup should be designed based on performance as well since a complex base setup can have a negative impact on the performance in general.

◆ For example:

- Only configure dimension dependency when required
- Only use dimension dependency for assets when required
- Avoid hierarchies with many children where possible

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Attribute and attribute group configurations

◆ There are attribute and attribute group configuration which might have influence on the STEP performance.

◆ For example:

- Disable the display of attribute groups where possible
- Disable manually sorted where possible
- Disable full text indexing where possible
- Disable dimension dependency where possible
- Avoid using large lists of values where possible
- Avoid using calculated attributes where possible

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Optimistic locking

◆ STEP runs with optimistic locking policy. Optimistic locking errors may be caused by long transactions of e.g. imports, exports, asset push, business rules. The longer a transaction, the higher the probability of introducing an optimistic locking failure when running long transactions simultaneously.

◆ STEP will put the transaction on hold when optimistic locking occurs, and will try to process the transaction again after some time. Optimistic locking errors therefore degrade the performance of imports, exports, asset push, business rules, etc. and degrade the performance of the STEP system.

Data profiling

◆ Use data profiling only when required. If used, then optimize the memory usage for data profiling.

◆ For example:

- Disable data profiling where possible
- Optimize memory usage for data profiling

WebUI

◆ The WebUI designer is flexible and can configure a WebUI in many ways.

◆ However, not all configurations perform equally well. Therefore, it is important to consider performance when configuring a WebUI.

◆ For example:

- Use multiple dedicated WebUIs where possible
- Use Type Ahead for large LOVs in WebUI screens where possible
- Use small dedicated WebUI screens where possible
- Use Lazy Loading for WebUI screens where possible
- Configure Status Selectors in WebUI correctly

Business rules

◆ If there're a lot of business rules running and if the business rules are complex, then this will degrade performance simply because STEP is very busy processing these business rules.

◆ For example:

- Do not update data via business conditions

- Keep business rule transactions small

- Avoid large business rule libraries

- Apply correct exception handling

- Set business rule logging correctly

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Imports

◆ A clean, simple, optimized import without any processing may perform about a hundred records per second, whereas a cluttered, complex import with complex processing may perform one record per second or even slower.

◆ For example:

- Avoid import errors (completed with errors)

- Regarding import files, e.g. missing targets, forward declarations

- Execution of business rules on import

- Workflow initiations on import

- Approvals on import

Exports

◆ One of the primary goals of most STEP implementations is to reduce the time to market requiring the flow of data from STEP and therefore it's recommended to analyze exports.

◆ For example:

- Use event based exports over static exports
- Limit the number of Outbound Integration End Points
- Limit the volume of exported data
- Optimize the triggering definitions with triggering attributes and references
- Optimize the batch size
- Use cross-context exports

Scheduled processes

◆ The scheduled processes might have an influence on the performance of the system and therefore it's recommended is to analyze the scheduled processes and see if the collections (searches) can be optimized and / or the business rules can be optimized.

◆ For example:

- Analyze if the collections (searches) can be optimized

- Analyze if the business rules can be optimized

Revision control

◆ Many revisions however may have a negative impact on the performance of the system, and therefore it's key to keep the number of revisions under control and remove unnecessary revisions.

◆ For example:

- Set revision threshold correctly
- Purge old revisions
- Analyze revisions on Integration End Points

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Privileges

◆ Running STEP as a user with a large number of very specific privileges will influence the performance of basically any action in STEP that goes across a large number of nodes, values, or references.

◆ For example:

- Analyze privilege configuration
- Analyze privileges at import and export
- Analyze privileges in WebUI

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Searches

◆ STEP searches can lead to a degraded performance when the recommendations are not followed up.

◆ For example:

- Use specific search criteria as much as possible

- Use as many characters as possible before using wildcards

- Avoid using wildcard as first character

- Avoid enable "Full Text Indexable" attributes unless necessary

- Avoid using "Include Inherited Values" where possible

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Matching and linking

◆ The flexibility of matching and linking comes a high level of responsibility. The system load of this functionality may have effect on the performance of STEP.

◆ For example:

- Separate the approval of the golden record from the matching and linking process if possible
- Avoid using the multi-context survivorship rules as much as possible

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Deliverables

Deliverables

◆ Performance analysis and recommendation document including

- Performance analysis
- Performance improvement recommendations
- Most relevant performance improvement recommendations

◆ Performance analysis and recommendation document can be used to schedule and execute changes to STEP production system to optimize performance