

1. HANA performance tweaks

1.1. Produmex WMS stored procedure recompilation on HANA

Problem description

As of SAP HANA 122.05, it can happen that the HANA server periodically recompiles some of the Produmex WMS stored procedures (namely: PMX_SP_TransactionNotificationStock and PMX_SP_TransactionNotificationChecks). This recompilation is quite time consuming: it can take between 25 and 40 seconds per stored procedure, depending on the HANA server.

These recompilations occur when the statistics related to these stored procedures change. When the statistics change too frequently, the recompilations also occur very frequently, thus generating a considerable performance issue.

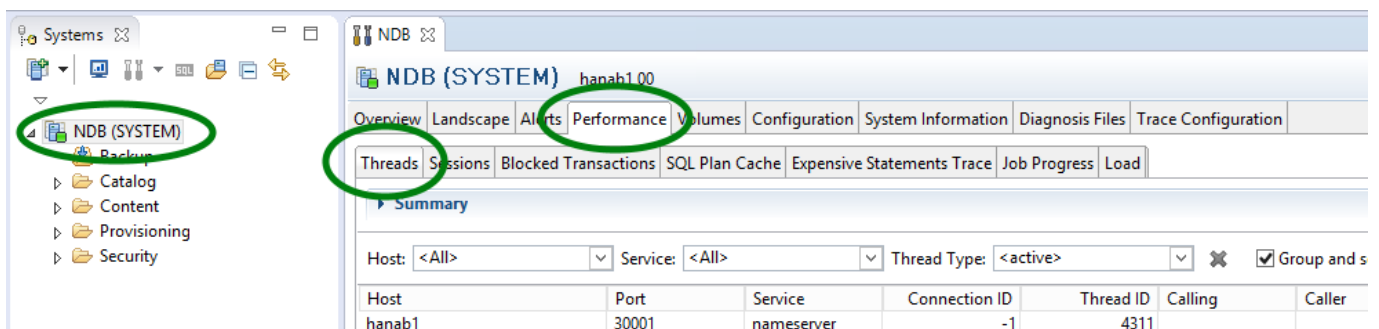
How to identify the problem

If there are some performance issues on a HANA system when running SBO and Produmex WMS, it is of crucial importance to first clearly identify the root cause of this performance issue. This section only focuses on one very specific issue, which is the frequent recompilation of the 2 abovementioned Produmex stored procedures.

The recommended method to identify this issue is to monitor the threads on the HANA server while a long processing occurs in SBO or Produmex WMS.

The threads can be found the following way in SAP HANA Studio:

- Double-click on the server
- Open the 'Performance' tab
- Open the 'Threads' sub-tab
- Enable auto-refresh with 5 seconds delay



Then start working with SBO or Produmex WMS, in a way that will trigger the slow process. While waiting for the slow process to occur, look if a line meeting the following criteria appears:

- Thread Method: COMPILE
- Thread Detail: (...)PMX_SP_TransactionNotification(...)
- Duration (ms): should be growing up to at least 20,000 ms

Here's an example of such a recompilation as it can be seen in the threads list:

NDB 33

NDB (SYSTEM)

hanab1 00

Last Update: Dec 9, 2016 2:47:52

Interval: 5 Seconds

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Summary

Host: <All>

Service: <All>

Thread Type: <active>

☒ Group and sort
 ☐ Create call stacks

Hide Sessions

Save as File

Host	Port	Service	Connection ID	Thread ID	Calling	Caller	Thread Type	Thread Method	Thread Detail	Duration (ms)	User	Application User
hanab1	30001	nameserver	-1	4311			BackupMonitor.Tr...			5,461,749		
hanab1	30003	indexserver	300671	4299	4239@hanab1:3...		SqlExecutor	ExecutePrepared	CALL 'SBO_SP_TRANSACTIONNOTIFICATION'(0,2,2,7,7)	51,609	SYSTEM	
hanab1	30010	compilesrver	300671	4239	4299@hanab1:3...		Request	COMPILE	sp/oid_2349436/200/...PMX_SP_TransactionNotificationSto...	23,978	SYSTEM	
hanab1	30003	indexserver	300699	4328	4631		SqlExecutor	ExecuteStatement	SELECT 'THREADS':HOST AS HOST,THREADS::PORT AS PORT,...	15	SYSTEM	produmex
hanab1	30003	indexserver	300699	4631	4288		JobWorker	PlanExecutor calc	plan43393@hanab1:30003/pop10 (RowPlanOperator)	10	SYSTEM	produmex
hanab1	30003	indexserver	300699	4288	4645@hanab1:...	4631	RemoteService			1	SYSTEM	produmex
hanab1	30003	indexserver	300699	4645		4288@hanab1:...	Request	core/stat		0	SYSTEM	produmex
hanab1	30010	compilesrver	300699	4567		hanab1:*	Request	core/stat		0	SYSTEM	produmex
hanab1	30006	webdispatcher	300699	4580		hanab1:*	Request	core/stat		0	SYSTEM	produmex
hanab1	30004	scriptserver	300699	4516		hanab1:*	Request	core/stat		0	SYSTEM	produmex
hanab1	30002	preprocessor	300699	4238		hanab1:*	Request	core/stat		0	SYSTEM	produmex
hanab1	30007	xsengine	300699	4530		hanab1:*	Request	core/stat		0	SYSTEM	produmex
hanab1	30001	nameserver	300699	3892		hanab1:*	Request	core/stat		0	SYSTEM	produmex

Resolution

In order to resolve this problem, you can upgrade to SAP HANA 122.09 or higher. That version includes a fix where statistics changes will not trigger a recompilation of stored procedures.

If it's not possible to upgrade to SAP HANA 122.09 or higher, then you can also alter some HANA server settings that will have the same effect: statistics changes will not trigger a recompilation of stored procedures.

First, check if the setting already exists and has the correct value. In SAP HANA Studio, in the 'Configuration' tab, check if the `cs_statistics_cache_invalidation_threshold_factor` setting exists. It should be within `indexserver.ini`, under the 'cache' section.

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Filter:

Name	Default	System	Host - imdbhdb
> attributes.ini			
> compilesrver.ini			
> daemon.ini		◆	◆
> diserver.ini			
> dpserver.ini			
> esserver.ini			
> executor.ini			
> extensions.ini			
> global.ini		◆	
▼ indexserver.ini		◆	
> [] answers			
> [] authentication			
> [] authorization			
▼ [] cache		◆	
cs_statistics_cache_invalidation_threshold_factor		0	
cs_statisticscache_clear_reconfig	no		

If the setting doesn't exist yet, or doesn't have the value '0', then execute the following command, which will create and update the setting:

```
ALTER SYSTEM ALTER CONFIGURATION ('indexserver.ini','SYSTEM') SET  
('cache','cs_statistics_cache_invalidation_threshold_factor') = '0' WITH  
RECONFIGURE;
```

Additionally, the `with reconfigure` part automatically applies the changes without needing to restart the HANA server.

The expected result of that command is:

```
Statement 'ALTER SYSTEM ALTER CONFIGURATION ('indexserver.ini','SYSTEM') SET  
...' successfully executed in 410 ms 501 µs (server processing time: 398 ms 15  
µs) - Rows Affected: 0
```

If the setting already exists and has the value '0', then you don't have to modify it. In that situation, if you're still suffering from the recompilation of stored procedures as described above, try to restart the HANA server.

1.2. Optimizing plan cache size

A full and comprehensive guide for setting the plan cache size can be found at [this link](#).

Please note that in the case of SAP Business One, the “non-ABAP” instructions should be followed.

1.3. Slow connection to the SAP HANA server

In some environments, you could notice a delay of about 1 second in the direct database connection to the SAP HANA server. This usually results in a very poor overall performance of the Produmex addons, without any particular server load.

Even though the delay is only 1 second, this delay will occur at every single database connection, and it adds up a lot to generate tremendous performance issues.

On such environments, the solution is to add the SAP HANA server's IP address mapping to the affected server's hosts file. For example, in the `C:\Windows\System32\drivers\etc\hosts` file, add the following line:

```
192.168.1.33 hanaserver
```

Our recommendation is to always add the SAP HANA server's IP address mapping to the hosts file, on all systems that connect to the SAP HANA server, even if these systems are not affected by this particular issue.

This issue is documented in [SAP Note 2525371](#)

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