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FW: Knowledge Sharing on Indexing on SQL Server (Performance Tuning)

3 messages

Mondal, Sumit <Sumit.Mondal@fisglobal.com> Wed, Dec 13, 2023 at 9:11 AM
To: "hiisumit2u@gmail.com" <hiisumit2u@gmail.com>

Thanks & Regards,

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From: Mondal, Sumit
Sent: Tuesday, October 31, 2023 7:32 AM
To: Awari, Vipul <Vipul.Awari@fisglobal.com>; Nikhade, Shreyash <Shreyash.Nikhade@fisglobal.com>; Kashyap, Gaurav <Gaurav.Kashyap@fisglobal.com>; Shastri, Vijay <Vijay.Shastri@fisglobal.com>; DayanandSwami, Nandini <Nandini.DayanandSwami@fisglobal.com>; Warpe, Ashwini <Ashwini.Warpe@fisglobal.com>; Rajput, Mahendra <Mahendra.Rajput@fisglobal.com>; Singh, Akshata <Akshata.Singh@fisglobal.com>; Gauriar, Akanksha <Akanksha.Gauriar@fisglobal.com>
Cc: Sangle, Priti <Priti.Sangle@fisglobal.com>
Subject: Knowledge Sharing on Indexing on SQL Server (Performance Tuning)

Hi Team,

I hope you are doing well!

Please review some tips regarding the Performance Tuning of Indexing on SQL Server:

Rebuild and Reorganize index concept:

1. "**Reorganize index**" is a process of cleaning, organizing, and defragmenting of "leaf level" of the B-tree (really, data pages). **Rebuilding** of the index is changing the whole B-tree, recreating the index.

2. **Rebuild** indexes when we have greater than 30% fragmentation and **Reorganize** when they are in between 5% and 30% fragmentation

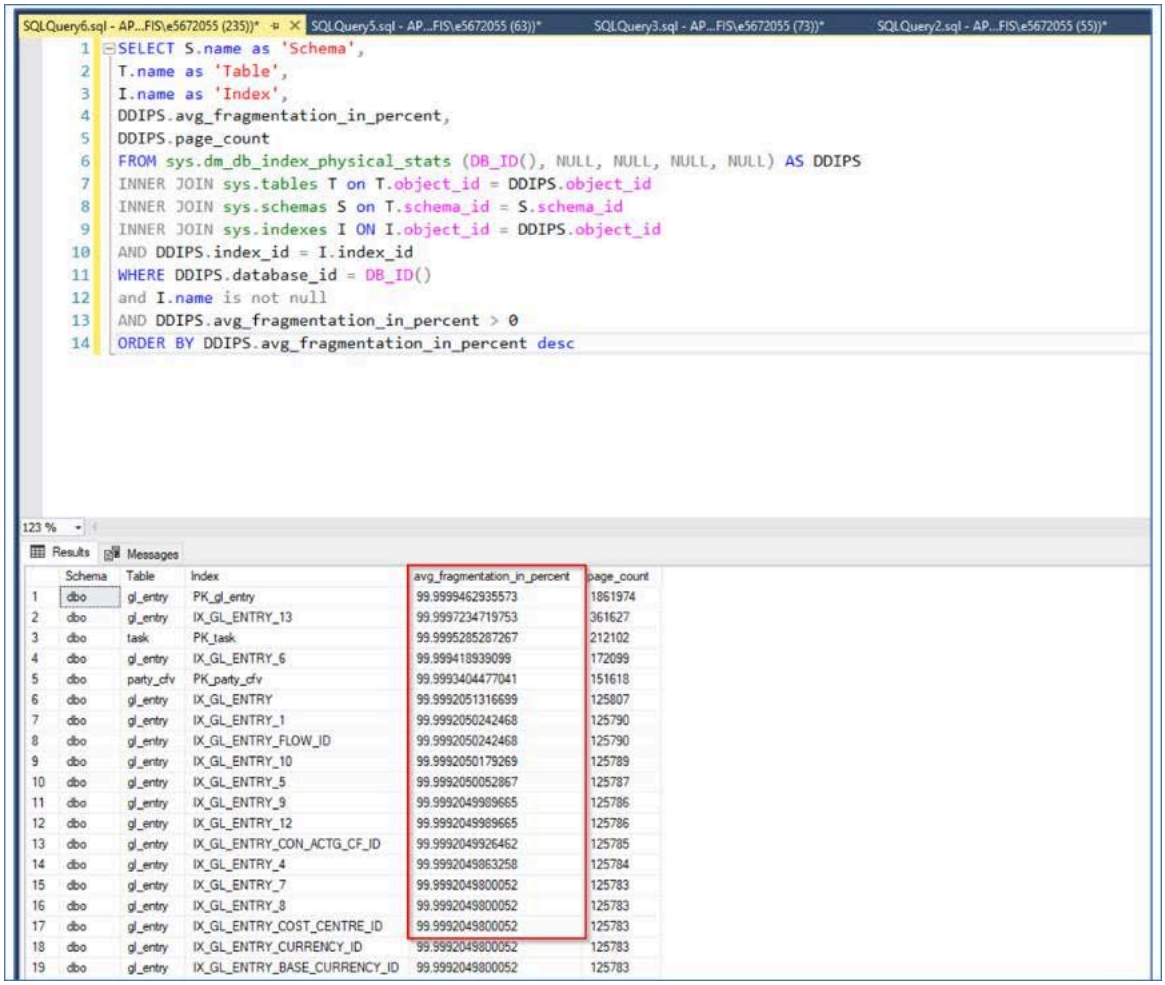
3. The indexes fragmentation increases due to the number of transactions is happening on the DB, increasing DB size, etc

4. Timely check the fill factor and fragmentation of the index and rebuild/reorganize the indexes

You can run below query to check the fragmentation:

- Ran the query to check the fragmentation in the DB for all indexes.

```
SELECT S.name as 'Schema',
T.name as 'Table',
I.name as 'Index',
DDIPS.avg_fragmentation_in_percent,
DDIPS.page_count
FROM sys.dm_db_index_physical_stats (DB_ID(), NULL, NULL, NULL, NULL) AS DDIPS
INNER JOIN sys.tables T on T.object_id = DDIPS.object_id
INNER JOIN sys.schemas S on T.schema_id = S.schema_id
INNER JOIN sys.indexes I ON I.object_id = DDIPS.object_id
AND DDIPS.index_id = I.index_id
WHERE DDIPS.database_id = DB_ID()
and I.name is not null
AND DDIPS.avg_fragmentation_in_percent > 0
ORDER BY DDIPS.avg_fragmentation_in_percent desc
```



```sql
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AND DDIPS.index_id = I.index_id
WHERE DDIPS.database_id = DB_ID()
and I.name is not null
AND DDIPS.avg_fragmentation_in_percent > 0
ORDER BY DDIPS.avg_fragmentation_in_percent desc
```

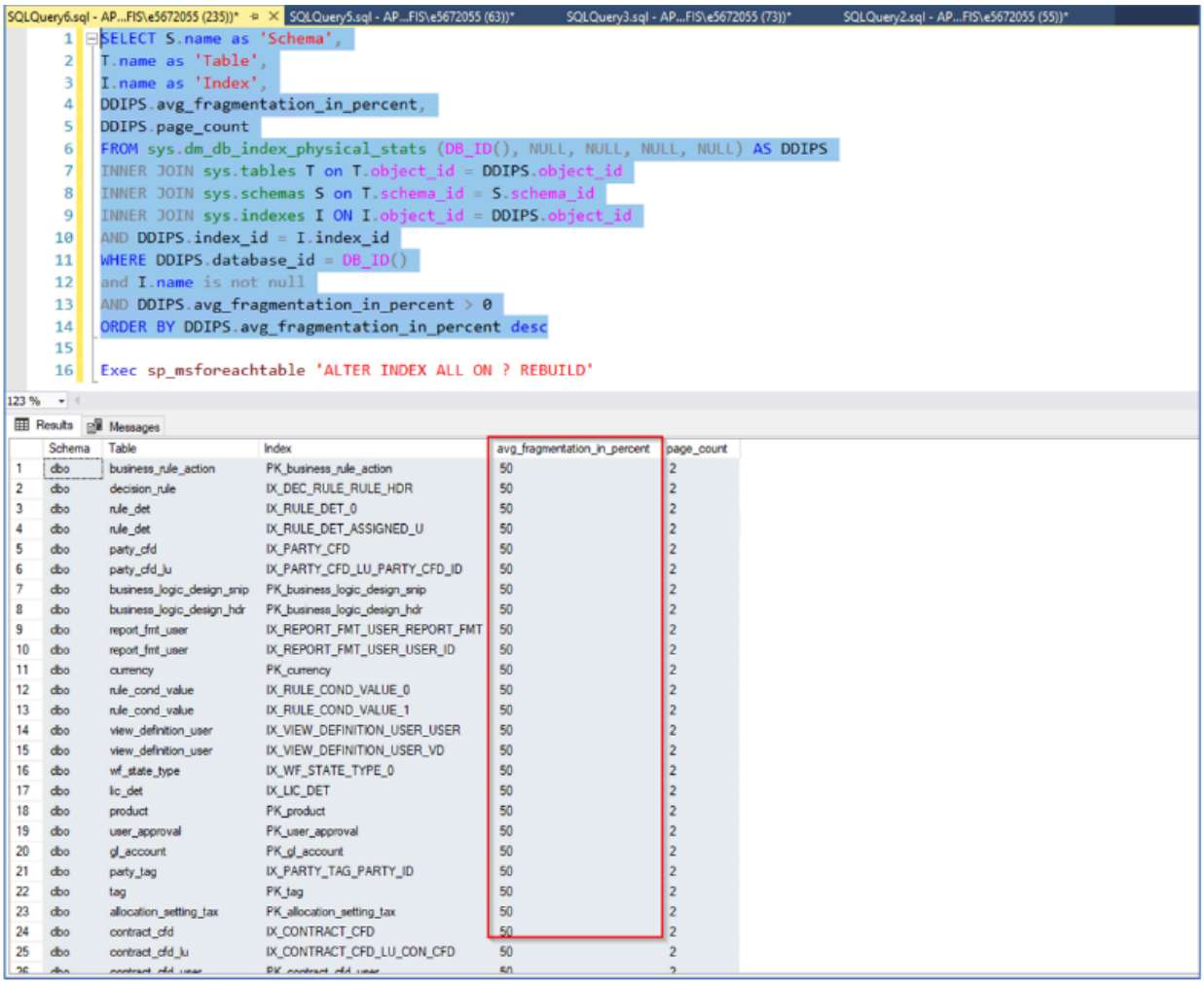
Results Messages

	Schema	Table	Index	avg_fragmentation_in_percent	page_count
1	dbo	gl_entry	PK_gl_entry	99.9999462935573	1861974
2	dbo	gl_entry	IX_GL_ENTRY_13	99.9997234719753	361627
3	dbo	task	PK_task	99.9995285287267	212102
4	dbo	gl_entry	IX_GL_ENTRY_6	99.999418939099	172099
5	dbo	party_cfv	PK_party_cfv	99.9993404477041	151618
6	dbo	gl_entry	IX_GL_ENTRY	99.9992051316699	125807
7	dbo	gl_entry	IX_GL_ENTRY_1	99.9992050242468	125790
8	dbo	gl_entry	IX_GL_ENTRY_FLOW_ID	99.9992050242468	125790
9	dbo	gl_entry	IX_GL_ENTRY_10	99.9992050179269	125789
10	dbo	gl_entry	IX_GL_ENTRY_5	99.9992050052867	125787
11	dbo	gl_entry	IX_GL_ENTRY_9	99.9992049989665	125786
12	dbo	gl_entry	IX_GL_ENTRY_12	99.9992049989665	125786
13	dbo	gl_entry	IX_GL_ENTRY_CON_ACTG_CF_ID	99.9992049926462	125785
14	dbo	gl_entry	IX_GL_ENTRY_4	99.9992049863258	125784
15	dbo	gl_entry	IX_GL_ENTRY_7	99.9992049800052	125783
16	dbo	gl_entry	IX_GL_ENTRY_8	99.9992049800052	125783
17	dbo	gl_entry	IX_GL_ENTRY_COST_CENTRE_ID	99.9992049800052	125783
18	dbo	gl_entry	IX_GL_ENTRY_CURRENCY_ID	99.9992049800052	125783
19	dbo	gl_entry	IX_GL_ENTRY_BASE_CURRENCY_ID	99.9992049800052	125783

Ran the below, for increasing performance: (**Please note:** The below query will run the Rebuild/Reorganize indexes for all the tables in DB so it might take sometime to finish, depend on the DB size.)

```sql
Exec sp_msforeachtable 'ALTER INDEX ALL ON ? REBUILD'
```

```sql
Exec sp_msforeachtable 'ALTER INDEX ALL ON ? REORGANIZE'
```



```
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INNER JOIN sys.schemas S on T.schema_id = S.schema_id
INNER JOIN sys.indexes I ON I.object_id = DDIPS.object_id
AND DDIPS.index_id = I.index_id
WHERE DDIPS.database_id = DB_ID()
and I.name is not null
AND DDIPS.avg_fragmentation_in_percent > 0
ORDER BY DDIPS.avg_fragmentation_in_percent desc

Exec sp_msforeachtable 'ALTER INDEX ALL ON ? REBUILD'
```

	Schema	Table	Index	avg_fragmentation_in_percent	page_count
1	dbo	business_rule_action	PK_business_rule_action	50	2
2	dbo	decision_rule	IX_DEC_RULE_RULE_HDR	50	2
3	dbo	rule_det	IX_RULE_DET_0	50	2
4	dbo	rule_det	IX_RULE_DET_ASSIGNED_U	50	2
5	dbo	party_cfd	IX_PARTY_CFD	50	2
6	dbo	party_cfd_lu	IX_PARTY_CFD_LU_PARTY_CFD_ID	50	2
7	dbo	business_logic_design_snip	PK_business_logic_design_snip	50	2
8	dbo	business_logic_design_hdr	PK_business_logic_design_hdr	50	2
9	dbo	report_fmt_user	IX_REPORT_FMT_USER_REPORT_FMT	50	2
10	dbo	report_fmt_user	IX_REPORT_FMT_USER_USER_ID	50	2
11	dbo	currency	PK_currency	50	2
12	dbo	rule_cond_value	IX_RULE_COND_VALUE_0	50	2
13	dbo	rule_cond_value	IX_RULE_COND_VALUE_1	50	2
14	dbo	view_definition_user	IX_VIEW_DEFINITION_USER_USER	50	2
15	dbo	view_definition_user	IX_VIEW_DEFINITION_USER_VD	50	2
16	dbo	wf_state_type	IX_WF_STATE_TYPE_0	50	2
17	dbo	lic_det	IX_LIC_DET	50	2
18	dbo	product	PK_product	50	2
19	dbo	user_approval	PK_user_approval	50	2
20	dbo	gl_account	PK_gl_account	50	2
21	dbo	party_tag	IX_PARTY_TAG_PARTY_ID	50	2
22	dbo	tag	PK_tag	50	2
23	dbo	allocation_setting_tax	PK_allocation_setting_tax	50	2
24	dbo	contract_cfd	IX_CONTRACT_CFD	50	2
25	dbo	contract_cfd_lu	IX_CONTRACT_CFD_LU_CON_CFD	50	2

Thanks & Regards,

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Mondal, Sumit <Sumit.Mondal@fisglobal.com> Fri, Mar 8, 2024 at 12:04 PM