

## PRIMARY &amp; SECONDARY INDEX IN ABAP OPEN SQL

📅 November 20, 2015 👤 Siva Prasad 💬 Leave a comment



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**Step1.** Go to SE11 open the table VBAK and click on the Indexes button. Here it shows 4 secondary index. Let's check the property of each one. Double click on each one .

**Dictionary: Display Table**

Transp. Table: VBAK ✓ Active  
Short Description: Sales Document: Header Data

Attributes: Delivery and Maintenance Fields Entry help/check Currency/Quantity Fields

Field Key Initi... Data element Data Type Length Decim... Short Description Group

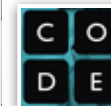
MANDT	✓	✓	MANDT	CLNT	3		0 Client	
VBELN	✓	✓	VBELN VA	CHAR	10		0 Sales Document	
ERDAT			ERDAT	DATS	8		0 Date on Which Record Was Created	
ERZET			ERZET	TIMS	6		0 Entry time	
ERNAM			ERNAM	CHAR	12		0 Name of Person who Created the Object	
ANGDT			ANGDT V	DATS	8		0 Quotation/Inquiry is valid from	
BNDT			BNDT	DATS	8		0 Date until which bid/quotation is binding (valid-to date)	
AUDAT			AUDAT	DATS	8		0 Document Date (Date Received/Sent)	
VBTP			VBTP	CHAR	1		0 SD document category	

Indices for Table VBAK

Ind	Ext	Short text	Status	Unique	Last Changed By	Date	DB index name	D	IE	DBS	DBS	DBS	DBS	Switch	Switch Position
AUD		Index for order date ✓	Active		SAP	03.09.2014	VBAK~AUD ✓		E						
ERD		Index for order entry date	Active		SAP	03.09.2014		O	E						
KUN	✓		Active		SAP	11.08.2014		O	E					SD_SFWS_SC1	on
OIO	✓	Sold-to,SalesOrg,Creator,ExgAgrmnt - F4(optional index)	New		SAP	22.06.2005		O	E					OIO_COMMON_DS	off

**Step2.** This is active and the index VBAK~AUD is created in the DB.

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**Dictionary: Display Index**


Index Name: VBAK AUD

Short Description: Index for order date


Last changed: SAP 03.09.2014 Original language: DE German

Status: Active ☒ Saved Package: VA

Index VBAK~AUD exists in database system MSSQL


☒ Non-unique Index 

☒ Index on all database systems ☒

☐ For selected database systems 

☐ No database index

☐ Unique Index (database Index required)

 Table Fields

Field name	Short Description	DType	Length
MANDT	Client	CLNT	3
AUDAT	Document Date (Date Received/Sent)	DATS	8

Step3. This is active and the index VBAK-ERD is not created in the DB.

- Access Control Management
- Test Web Service / WSDL File using SoapUI
- Web Service – Service Provider
- CDS Custom Entity
- Virtual Elements in CDS
- Use of keyword WITH in ABAP SQL
- ABAP Function- CONCAT\_LINES\_OF()
- Dynamic Select in AMDP

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### Dictionary: Display Index

Index Name: VBAK ERD

Short Description: Index for order entry date

Last changed: SAP 03.09.2014 Original language: DE German

Status: Active Saved Package: VA

Index does not exist in database system MSSQL

☒ Non-unique index

- ☐ Index on all database systems
- ☐ For selected database systems
- ☒ No database index

☐ Unique Index (database Index required)

Table Fields

Field name	Short Description	DType	Length
MANDT	Client	CLNT	3
ERDAT	Date on Which Record Was Created	DATS	8

Step4. This is active and the index VBAK-KUN is not created in the DB.

### Dictionary: Display Extension Index


Index Name: VBAK KUN Switched On Switch: SD\_SFWS\_SC1

Short Description: Index für Vertriebsbelege eines Kunden


Last changed: SAP 11.08.2014 Original language: DE German

Status: Active ☒ Saved Package: VA\_SFWS\_SC1

Index does not exist in database system MSSQL


☒ Non-unique index 

☐ Index on all database systems

☐ For selected database systems 

☒ No database index ☒

☐ Unique Index (database Index required)

 Table Fields

Field name	Short Description	DType	Length
MANDT	Client	CLNT	3
KUNNR	Sold-to party	CHAR	10
ERDAT	Date on Which Record Was Created	DATS	8

Step5. This is NOT active and the index VBAK-OI0 is not created in the DB.

### Dictionary: Display Extension Index


Index Name: VBAK OI0 Switched Off Switch: OI0\_COMMON\_DS

Short Description: Sold-to,SalesOrg,Creator,ExgAgrmnt - F4(optional index)


Last changed: SAP 22.06.2005 Original language: EN English

Status: New ☒ Saved Package: OI0\_COMMON

Index does not exist in database system MSSQL


☒ Non-unique index 

☐ Index on all database systems

☐ For selected database systems 

☒ No database index ☒

☐ Unique Index (database Index required)

 Table Fields

Field name	Short Description	DType	Length
MANDT	Client	CLNT	3
KUNNR	Sold-to party	CHAR	10
VKORG	Sales Organization	CHAR	4
ERNAM	Name of Person who Created the Object	CHAR	12
OIEXGNUM			0

Step6. Go to Tcode- DB02.

 DB02  

Step7. From the left side tree, double click on single table analysis.

**Overview**

Full Screen On/Off Refresh

Connected to: [Server Name]

Database: [Database Name]

Overview Files Objects

**Data**

Number of files	4
Total Size [MB]	217.320
Allocated [MB]	194.914 = 89,69 %
Free [MB]	22.406 = 10,31 %

**Log**

Number of files	1
Total Size [MB]	22.975
Allocated [MB]	344 = 1,50 %
Free [MB]	22.631 = 98,50 %
Recovery model	FULL
Reuse wait reason	LOG_BACKUP

**Oldest open transaction**

Started	
---------	--

Step8. In the right part of the screen provide the table name as VBAK and hot enter to load its details.

**Single Table Analysis VBAK**

Full Screen On/Off Refresh Update usage Sp\_recompile Data Dictionary Table history Index Analysis

Connected to: [Server Name]

Table/view name: VBAK

Database: [Database Name] Schema: [Schema Name]

Overview **Indexes** Runtime Statistics Fields DBCC checktable

**Size**

Reserved size (KB)	1.160	In row size (KB)	696
Data size (KB)	696	In row used (KB)	784
Index size (KB)	144	In row reserved (KB)	1.104
Unused size (KB)	320	Lob used (KB)	0
Rows	628	Lob reserved (KB)	0
Min. row size	44	Overflow size (KB)	0
Max. row size	2.048	Overflow reserved	0
Row mod. counter	173		

Step9. as we saw in above we have 4 secondary index but out of then one is active with creation in DB. So here we have two indexes one is primary and another is secondary. There are lot of numbers to the right side of each index showing how many times these are hit by sql queries and others.

Table/view name: VBAK ✓

Database: Schema:

Overview **Indexes** Runtime Statistics Fields DBCC checktable

Indexes

Index name	Index columns	Last update stats	Density	Depth	Size	Reserved	Used	Comptype	Row no.	Min row sz	Max row sz	Auto stats	Index description
VBAK~0	MANDT,VBELN	Jul 31 2014 12:37PM	1	2	696	1.160	840	ROW	173	44	2.048	ON	clustered,unique,primary key,located on
VBAK~AUD	MANDT,AUDAT	Jul 31 2014 12:37PM	1	2	40	56	56	NONE	1-	1	83	ON	nonclustered,located on PRIMARY

Step10. We have the below program to show what is the time taken when primary index, secondary index & when no index is used to fetch the data..

**ABAP Editor: Change Report ZINDEX\_WORK**

```

1 REPORT zindex_work.
2 DATA: ls TYPE vbak.
3 DATA: s_rn_tm TYPE i,
4       e_rn_tm TYPE i,
5       a_rn_tm TYPE i.
6 PARAMETERS: pri_indx RADIOBUTTON GROUP g1,
7             sec_indx RADIOBUTTON GROUP g1,
8             no_indx RADIOBUTTON GROUP g1.
9 IF pri_indx = 'X'.
10  GET RUN TIME FIELD s_rn_tm.
11  SELECT SINGLE * FROM vbak INTO ls WHERE vbeln = '0000000001'.
12  GET RUN TIME FIELD e_rn_tm.
13  ENDIF.
14 IF sec_indx = 'X'.
15  GET RUN TIME FIELD s_rn_tm.
16  SELECT SINGLE * FROM vbak INTO ls WHERE audat = '20111208'.
17  GET RUN TIME FIELD e_rn_tm.
18  ENDIF.
19 IF no_indx = 'X'.
20  GET RUN TIME FIELD s_rn_tm.
21  SELECT SINGLE * FROM vbak INTO ls WHERE ERdat = '20111219'.
22  GET RUN TIME FIELD e_rn_tm.
23  ENDIF.
24 a_rn_tm = e_rn_tm - s_rn_tm.
25 IF LS IS NOT INITIAL.
26  WRITE : / 'Actual Run time to get the data', A_RN_TM.
27  WRITE : / ls-vbeln , ls-ERdat, ls-audat.
28  ENDIF.

```

**Data Browser: Table VBAK Select Entries 200**

Table: VBAK  
Displayed Fields: 27 of 141 Fixed Columns: List Width 0250

MANDT	VBELN	ERDAT	ERZET	ERNAM	ANGDT	BNDDT	AUDAT	VB
001	0000000001	07.12.2011	17:04:23	RACHAMALLA	00.00.0000	00.00.0000	07.12.2011	C
001	0000000002	07.12.2011	17:20:09	GILLKAN	00.00.0000	00.00.0000	07.12.2011	C
001	0000000003	08.12.2011	07:38:08	GILLKAN	00.00.0000	00.00.0000	08.12.2011	C
001	0000000004	08.12.2011	07:58:04	GILLKAN	00.00.0000	00.00.0000	08.12.2011	C
001	0000000005	08.12.2011	08:32:03	GILLKAN	00.00.0000	00.00.0000	08.12.2011	C
001	0000000006	08.12.2011	09:09:03	GILLKAN	00.00.0000	00.00.0000	08.12.2011	C
001	0000000007	08.12.2011	09:34:39	GILLKAN	00.00.0000	00.00.0000	08.12.2011	C
001	0000000008	08.12.2011	19:57:28	RANGANATHASU	00.00.0000	00.00.0000	08.12.2011	C
001	0000000009	08.12.2011	20:35:20	RANGANATHASU	00.00.0000	00.00.0000	08.12.2011	C
001	0000000010	12.12.2011	08:45:57	GILLKAN	00.00.0000	00.00.0000	12.12.2011	C
001	0000000011	19.12.2011	16:16:35	BANSALASHI	00.00.0000	00.00.0000	19.12.2011	C
001	0000000013	19.12.2011	17:35:00	RACHAMALLA	00.00.0000	00.00.0000	19.12.2011	C
001	0000000014	19.12.2011	18:21:49	RACHAMALLA	00.00.0000	00.00.0000	19.12.2011	C
001	0000000018	19.12.2011	18:43:08	RACHAMALLA	00.00.0000	00.00.0000	19.12.2011	C
001	0000000019	19.12.2011	18:47:28	RACHAMALLA	00.00.0000	00.00.0000	19.12.2011	C
001	0000000020	19.12.2011	19:04:15	RACHAMALLA	00.00.0000	00.00.0000	19.12.2011	C
001	0000000021	19.12.2011	19:13:53	RACHAMALLA	00.00.0000	00.00.0000	19.12.2011	C
001	0000000022	21.12.2011	18:30:44	BANSALASHI	00.00.0000	00.00.0000	21.12.2011	C

Step11. Run with primary index mode.

Index details of table	
<input checked="" type="radio"/> PRI_INDIX <input type="radio"/> SEC_INDIX <input type="radio"/> NO_INDIX	Index details of table
Actual Run time to get the data	
1	07.12.2011 07.12.2011 <u>1.346</u>

Step12. Run for the secondary index mode.

**Index details of table**

☐ PRI\_INDEX  
☒ SEC\_INDEX ✓  
☐ NO\_INDEX

**Index details of table**

Index details of table

---

Actual Run time to get the data	1.481
3            08.12.2011 08.12.2011	<u>          </u>

Step13. Run with no index mode. Actually whether primary or secondary or no index will be used determined by the condition provided in the select query. So there is subsequent time optimization when primary index is used.

**Index details of table**

☐ PRI\_INDEX  
☐ SEC\_INDEX  
☒ NO\_INDEX

**Index details of table**

Index details of table

---

Actual Run time to get the data	1.656
11            19.12.2011 19.12.2011	<u>          </u>

Step14. Note the number in the primary index of vbak table in DB02 transaction. Run the program.



Table/view name: VBAK

Database: [ ] Schema: [ ]

Overview | Indexes | Runtime Statistics | Fields | DBCC checktable

### Usage Statistics

Index name	User seeks	User scans	Usr lookup
VBAK~0	6,406	3	10
VBAK~AUD	12	0	0

### Operational Statistics

Index name	Rng scans	Sng lookup	Rowlocks	Pg locks	Lck promo	Lck promo	pgioitcwt	pgioitcwt
VBAK~0	5,625	620	57	57	0	0	4,728	0,000
VBAK~AUD	13	0	62	32	0	0	6,107	0,000

Index details of table

Actual Run time to get the data: 1.298

1 07.12.2011 07.12.2011

☒ PRI\_INDEX  
☐ SEC\_INDEX  
☐ NO\_INDEX

**Step15.** We have the O/P. Now refresh the screen in DB02 tcode. it is observed that the number under USER SEEKS increased by one against the primary index. VBAK~0.

Table/view name: VBAK

Database: [ ] Schema: [ ]

Overview | Indexes | Runtime Statistics | Fields | DBCC checktable

### Usage Statistics

Index name	User seeks	User scans	Usr lookup
VBAK~0	6,407	3	10
VBAK~AUD	12	0	0

### Operational Statistics

Index name	Rng scans	Sng lookup	Rowlocks	Pg locks	Lck promo	Lck promo	pgioitcwt	pgioitcwt
VBAK~0	5,625	621	57	57	0	0	4,728	0,000
VBAK~AUD	13	0	62	32	0	0	6,107	0,000

Index details of table

Actual Run time to get the data: 1.298

1 07.12.2011 07.12.2011

✓

**Step16.** Just a before and after comparison of the DB02 transaction before and after the report is run.

Table/view name: VBAK

Database: [ ] Schema: [ ]

Overview | Indexes | Runtime Statistics | Fields | DBCC checktable

### Usage Statistics BEFORE

Index name	User seeks	User scans	Usr lookup
VBAK~0	6,406	3	10
VBAK~AUD	12	0	0

### Usage Statistics AFTER

Index name	User seeks	User scans	Usr lookup
VBAK~0	6,407	3	10
VBAK~AUD	12	0	0

### Operational Statistics

Index name	Rng scans	Sng lookup	Rowlocks	Pg locks	Lck promo	Lck promo	pgioitcwt	pgioitcwt
VBAK~0	5,625	620	57	57	0	0	4,728	0,000
VBAK~AUD	13	0	62	32	0	0	6,107	0,000

Step17. Similarly run the program so that it will hit the secondary index.

Microsoft SQL Server: Dat...

SAP on Microsoft SQL S

Performance

Space

Overview

Single Table Analysis

Largest Tables

Fastest Growing Tables

History

Additional Functions

Backup and Recovery

Configuration

Jobs

Alerts

Diagnostics

Download

Table/view name

VBAK

Database

CL3

Schema

d3

Overview

Indexes

Runtime Statistics

Fields

DBCC checktable

Useage Statistics

Index name	User seeks	User scans	Usr lookup
VBAK~0	6.407	3	10
VBAK~AUD	12	0	0

Operational Statistics

Index name	Rng scans	Sng lookup	Rowlocks	Pg locks	Lck promo	Lck promo	pgloltchwt	pglitchwa
VBAK~0	5.625	621	57	57	0	0	4,728	0,000
VBAK~AUD	13	0	62	32	0	0	6,107	0,000

PRI\_INDEX

SEC\_INDEX

NO\_INDEX

Step18. After the program executed, refresh the DB02 transaction and we have the below figures.

System CL3

Microsoft SQL Server: Dat...

SAP on Microsoft SQL S

Performance

Space

Overview

Single Table Analysis

Largest Tables

Fastest Growing Tables

History

Additional Functions

Backup and Recovery

Configuration

Jobs

Alerts

Diagnostics

Download

Table/view name

VBAK

Database

CL3

Schema

d3

Overview

Indexes

Runtime Statistics

Fields

DBCC checktable

Useage Statistics

Index name	User seeks	User scans	Usr lookup
VBAK~0	6.407	3	11
VBAK~AUD	13	0	0

Operational Statistics

Index name	Rng scans	Sng lookup	Rowlocks	Pg locks	Lck promo	Lck promo	pgloltchwt	pglitchwa
VBAK~0	5.625	622	57	57	0	0	4,728	0,000
VBAK~AUD	14	0	62	32	0	0	6,107	0,000

Index details of table

Index details of table

Actual Run time to get the data

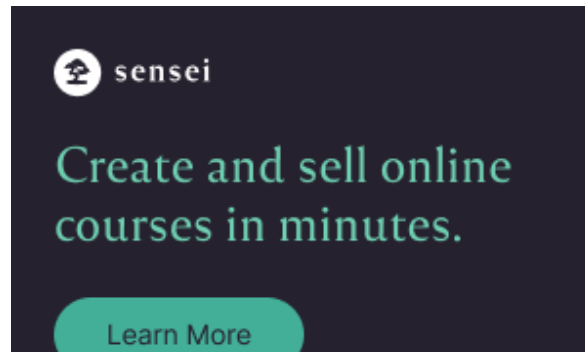
1.769

3

08.12.2011

08.12.2011

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