MONITORING DB SIZE

Damir Vadas
http://damir-vadas.blogspot.com
Mirko Vrtarić
mirko.vrtaric@teb-informatika.hr

TEB Informatika d.o.o.
www.teb-informatika.hr

HROUG
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Koncept

- Smisao i značenje praćenja rasta baze
- Instalacija
- Osnovne metode
- Dva primjera iz realnog života
- Prikaz mogućnosti
- Apex sučelje
- Q and A

USPJEŠAN DBA

Onaj koji svojim radom uspije napraviti balans između fire fighter-a i proactive DBA.

Ova demonstracija pokušat će pokazati JOŠ jedan takav primjer.

Zašto nadzirati veličinu baze

- Ako znate da je baza narasla, kako znati što je to nestalo/naraslo u njoj?
- Praćenje veličina na razini:
  - segmenata (nagle promjene uvijek uzrokovane promjenama/nepravilnosti u radu sustava)
  - owera
  - tablespace-a (fragmentacija, space deficit)
  - globalno na razini cijele baze

Zašto nadzirati veličinu baze

- EBS instanca u 2 mjeseca narasla 50%, od 105 GB do 155GB. Nakon što sam kreirao SR, bio sam upitan što je to točno naraslo!?
- Kako nisam znao odgovor a problem sam trebao riješiti (po toj logici za 12 mjeseci ostajao sam bez diskovnog prostora) odlučio sam izraditi alat.
- Tako je nastao „Db Size Stat” alat za praćenje i analizu rasta baze.

Što je Db Size Stat?

- DB size daje odgovor na veličinu, broj slogova, trend, postotak na razini usporedbe između odabranih perioda.
- DB Size Stat je skup od nekoliko tipova Oracle objekata:
  - db_size i db_size_gtt tablica
  - db_size_seq sekvenca
  - db_size_pkg package
  - 10 tipova
- Kao dodatak za ovaj HROUG je nastalo i Apex sučelje.
- Otvoreno za daljnje *customiziranje*

db_size tablica

- Struktura i podaci

Column Name	I.	Pk	Null?	Data Type	Default	Histogram	Num Distinct	Encryption Alg	Salt	Seq/Trigger
PERIOD	1	1	N	VARCHAR2 (8 Char)		Frequency	11		☐	☐
OWNER	2	2	N	VARCHAR2 (30 Char)		Frequency	196		☐	☐
SEGMENT_NAME	3	3	N	VARCHAR2 (81 Char)		Height ...	65710		☐	☐
SEGMENT_TYPE	4	4	N	VARCHAR2 (30 Char)		Frequency	11		☐	☐
TABLESPACE_NAME	5	5	N	VARCHAR2 (32 Char)		Frequency	27		☐	☐
PART_NAME	6	6	N	VARCHAR2 (81 Char)		Frequency	166		☐	☐
NR_BYTES	7		N	INTEGER		Height ...	2422		☐	☐
NR_BLOCKS	8		N	INTEGER		None	0		☐	☐
NR_EXTENTS	9		N	INTEGER		None	0		☐	☐
NR_RECORDS	10		N	INTEGER		Height ...	5739		☐	☐
PARENT_ID	11		Y	INTEGER		None	0		☐	☐
ID	12		Y	INTEGER		None	712053		☐	☐

PERIOD	OWNER	SEGMENT_NAME	SEGMENT_TYPE	TABLESPACE_NAME	PART_NAME	NR_BYTES	NR_BLOCKS	NR_EXTENTS	NR_RECORDS	PARENT_ID	ID
20070701	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	6160384	752	47	40198		33914
20070901	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	737017856	89968	5623	4423769		86651
20071101	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	1888485376	230528	14408	11465123		1591...
20080101	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	2892103680	353040	22065	17497831		2225...
20080301	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	3786539008	462224	28889	22784917		2678...
20080501	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	4410703872	538416	33651	26560744		3424...
20080701	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	4840226816	590848	36928	29058270		4237...
20080802	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	5977800704	729712	45607	36367446		4786...
20080901	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	6241517568	761904	47619	37906563		5413...
20081001	GL	GL_IMPORT_REFERENCES	TABLE	APPS_TS_TX_DATA	NP	6824132608	833024	52064	41283263		6108...

Kreiranje snapshot-a

- Prikupljanje podataka je preduvjet za rad – 1 puta mjesečno/dvomjesečno dovoljno. Primjer za 1 mjesec:

```
DECLARE
  X NUMBER;
BEGIN
  SYS.DBMS_JOB.SUBMIT (
    job        => X
   ,what       => 'db_size_pkg.create_snapshot;'
   ,next_date => to_date('01.09.2008 00:01:00','dd/mm/yyyy
hh24:mi:ss')
   ,interval   => 'TRUNC(LAST_DAY(SYSDATE)) + 1+1/1440'
   ,no_parse   => FALSE
  );
  COMMIT;
END;
```

Metode Db Size Stat

- Pozivi metoda iz db_size_pkg packaga daju rezultate. Procedure su za sqlplus rad:

```
PROCEDURE TOP_N_TABLES_BY_SIZE_NOW
PROCEDURE TOP_N_TABLES_BY_SIZE_EVER
PROCEDURE TOP_N_TABLES_BY_RECORDS_NOW
PROCEDURE TOP_N_TABLES_BY_RECORDS_EVER
PROCEDURE TOP_N_SIZE_PERC_HIST_TBLSPC
PROCEDURE TOP_N_SIZE_PERC_HIST
PROCEDURE TOP_N_SIZE_PERC
PROCEDURE TOP_N_SIZE_GROW_HIST_TBLSPC
PROCEDURE TOP_N_SIZE_GROW_HIST
PROCEDURE TOP_N_SIZE_GROW
PROCEDURE TOP_N_REC_PERC_HIST
PROCEDURE TOP_N_REC_PERC
PROCEDURE TOP_N_REC_GROW_HIST
PROCEDURE TOP_N_REC_GROW
PROCEDURE PERIODS
PROCEDURE NEW_OBJECTS
PROCEDURE GROW_HIST_ONE_TBLSPC
PROCEDURE GROW_HIST_ONE_SEGMENT
PROCEDURE GET_SEGMENT_TYPE_SIZE
FUNCTION GET_LAST_PERIOD
PROCEDURE GET_DB_SIZE
PROCEDURE DROPPED_OBJECTS
PROCEDURE CREATE_SNAPSHOT
PROCEDURE BOTH_OBJECTS
```

Metode Db Size Stat

- Pozivi metoda iz db_size_pkg packaga daju rezultate. Funkcije su za sučelja za Apex:

```
FUNCTION TOP_N_TABLES_BY_SIZE_NOW_PR RETURNS DB_SIZE_TOP_N_SET_T
FUNCTION TOP_N_TABLES_BY_SIZE_EVER_PR RETURNS DB_SIZE_TOP_N_SET_T
FUNCTION TOP_N_TABLES_BY_RECORDS_NOW_PR RETURNS DB_SIZE_TOP_N_SET_T
FUNCTION TOP_N_TABLES_BY_RECORDS_EV_PR RETURNS DB_SIZE_TOP_N_SET_T
FUNCTION TOP_N_SIZE_PERC_PR RETURNS DB_SIZE_SIZE_GROW_SET_T
FUNCTION TOP_N_SIZE_PERC_HIST_TBLSPC_PR RETURNS DB_SIZE_HIST_TBLSPC_SET_T
FUNCTION TOP_N_SIZE_PERC_HIST_PR RETURNS DB_SIZE_HIST_SET_T
FUNCTION TOP_N_SIZE_GROW_PR RETURNS DB_SIZE_SIZE_GROW_SET_T
FUNCTION TOP_N_SIZE_GROW_HIST_TBLSPC_PR RETURNS DB_SIZE_HIST_TBLSPC_SET_T
FUNCTION TOP_N_SIZE_GROW_HIST_PR RETURNS DB_SIZE_HIST_SET_T
FUNCTION TOP_N_REC_PERC_PR RETURNS DB_SIZE_REC_GROW_SET_T
FUNCTION TOP_N_REC_PERC_HIST_PR RETURNS DB_SIZE_HIST_SET_T
FUNCTION TOP_N_REC_GROW_PR RETURNS DB_SIZE_REC_GROW_SET_T
FUNCTION TOP_N_REC_GROW_HIST_PR RETURNS DB_SIZE_HIST_SET_T
FUNCTION GROW_HIST_ONE_TBLSPC_PR RETURNS DB_SIZE_HIST_TBLSPC_SET_T
FUNCTION GROW_HIST_ONE_SEGMENT_PR RETURNS DB_SIZE_HIST_SET_T
FUNCTION GROW_HIST_ONE_OWNER_PR RETURNS DB_SIZE_HIST_TBLSPC_SET_T
FUNCTION GET_SEGMENT_TYPE_SIZE_PR RETURNS DB_SIZE_HIST_TBLSPC_SET_T
```

Case #1

Došavši u severity 1 (db loss of service) bio sam očajan.

Top 5 objects by NUMBER of records grow. Monitored periods 20070901-20070701

OWNER	SEGMENT_NAME	SEGMENT_TYPE	NR_RECORDS	REC_GROW	%
XXHY	XXHY_CC_PAY_PLAN_AMOUNTS_ALL	TABLE	41.613.708	8.010.912	23,84
APPLSYS	WF_ITEM_ATTRIBUTE_VALUES	TABLE	7.709.606	7.591.294	6.416,33
APPS	XXHY_CC_PAYMENT_PLAN_DISCO_MV	TABLE	39.684.371	6.288.759	18,83
GL	GL_JE_LINES	TABLE	11.314.140	4.550.960	67,29

Top 5 objects by SIZE grow. Monitored periods 20070901-20070701

OWNER	SEGMENT_NAME	SEGMENT_TYPE	SIZE [MB]	grow [MB]	%
AR	AR_TAX_EXTR_SUB_COM_EXT	TABLE	3.804,75	3.804,63	3.043.700,00
AR	AR_TAX_EXTRACT_SUB_ITF	TABLE	3.202,13	3.202,00	2.561.600,00
XXHY	XXHY_HLK_POSTING_CARD_XML	TABLE	2.435,13	2.434,88	973.950,00
GL	GL_JE_LINES	TABLE	2.510,63	1.330,00	112,65

Case #1

- Ovdje je bilo riječi o iznenadnom rastu nekih tablica koje nisu bile velike ali je njihova promjena bila velika!
- Nakon enabliranja nekih disabliranih purge concurenata, baza je bila „up and running” u 1 satu!

- Bitno je naglasiti da niti ljudi u Oracle support-u nisu bogovi i ne mogu odmah pronaći glavni uzrok problema samo tako.

Case #2

- Slijedeći slučaj došao je 7 mjeseci kasnije, kada je rast baze povećan sa 85GB to 250 GB, uz prosječni rast 30-40 GB za mjesecu (svaki mjesec veće). Evo situacije od tada:

Top 5 objects by NUMBER of records grow. Monitored periods 20080101-20070701

OWNER	SEGMENT_NAME	SEGMENT_TYPE	NR_RECORDS	REC_GROW	%
XXHY	XXHY_CC_PAY_PLAN_AMOUNTS_ALL	TABLE	59.309.318	25.706.522	76,50
GL	GL_JE_LINES	TABLE	28.111.423	21.348.243	315,65
APPS	XXHY_CC_PAYMENT_PLAN_DISCO_MV	TABLE	53.388.260	19.992.648	59,87
GL	GL_IMPORT_REFERENCES	TABLE	17.497.831	17.457.633	43.429,11
AR	AR_DISTRIBUTIONS_ALL	TABLE	16.409.478	11.893.345	263,35

Top 5 objects by SIZE grow. Monitored periods 20080101-20070701

OWNER	SEGMENT_NAME	SEGMENT_TYPE	SIZE [MB]	grow [MB]	%
GL	GL_JE_LINES	TABLE	6.995,25	5.814,63	492,50
APPS	XXHY_CC_PAYMENT_PLAN_DISCO_MV	TABLE	11.014,00	3.904,00	54,91
GL	GL_IMPORT_REFERENCES	TABLE	2.758,13	2.752,25	46.846,81
AR	AR_RECEIVABLE_APPLICATIONS_ALL	TABLE	3.129,75	2.406,38	332,66
XXHY	XXHY_CC_PAY_PLAN_AMOUNTS_ALL	TABLE	4.750,63	2.105,63	79,61

Case #2

- Dok je detaljna analiza povijesti **GL.GL_JE_LINES** dala slijedeće:

GL.GL_JE_LINES(TABLE)

Period	SIZE MB	TREND MB	TREND %	CUMUL %	RECORDS	TREND REC	TREND %	CUMUL %
20070701	1.180,63	1.180,63	0,00	0,00	6.763.180	6.763.180	0,00	0,00
20070901	2.510,63	1.330,00	112,65	112,65	11.314.140	4.550.960	67,29	67,29
20071101	5.174,38	2.663,75	106,10	338,27	21.853.222	10.539.082	93,15	223,12
20080101	6.995,25	1.820,87	35,19	492,50	28.111.423	6.258.201	28,64	315,65
20080301	8.678,25	1.683,00	24,06	635,05	33.910.408	5.798.985	20,63	401,40
20080501	10.009,75	1.331,50	15,34	747,83	38.756.116	4.845.708	14,29	473,05
20080701	10.841,00	831,25	8,30	818,24	41.629.108	2.872.992	7,41	515,53
20080802	13.160,13	2.319,13	21,39	1.014,67	49.606.017	7.976.909	19,16	633,47
20080901	13.677,50	517,37	3,93	1.058,49	51.380.285	1.774.268	3,58	659,71
20081001	14.812,63	1.135,13	8,30	1.154,64	55.277.203	3.896.918	7,58	717,33

- Kasnije se je utvrdilo da je to bio bug u programu, koji je eto ovako otkriven!

DB Size Stat metode

- Podijeljen u nekoliko skupina:
  - zajedničke procedure
  - tablespace bazirane procedure
  - "top_n" segment procedure
  - segment hist procedure
  - "top_n_tables" ever/now procedure
  - new/dropped objects procedure
  - Apex bazirane funkcije (imaju sufiks "_pr ")

Osnovne metode

- get_db_size prikazuje veličinu baze

```
exec tools.db_Size_pkg.get_db_size;
```

PERIOD	SIZE MB	TREND MB	RECORDS	TREND REC	REC/1 MB	TR REC/1 MB
20070701	75.241,40	0,00	294.112.834	0	3.908,92	0,00
20070901	103.479,54	28.238,14	346.960.155	52.847.321	3.352,93	1.871,49
20071101	155.291,84	51.812,30	420.892.538	73.932.383	2.710,33	1.426,93
20080101	139.994,64	-15.297,20	438.604.712	17.712.174	3.133,01	-1.157,87
20080301	157.204,73	17.210,09	498.120.194	59.515.482	3.168,61	3.458,17
20080501	168.775,44	11.570,71	562.508.069	64.387.875	3.332,88	5.564,73
20080701	181.966,78	13.191,34	592.960.740	30.452.671	3.258,62	2.308,53
20080802	209.103,21	27.136,43	669.988.712	77.027.972	3.204,11	2.838,54
20080901	216.380,82	7.277,61	683.941.298	13.952.586	3.160,82	1.917,19
20081001	229.736,59	13.355,77	729.811.222	45.869.924	3.176,73	3.434,47
20091201	327.454,06	97.717,48	984.700.615	254.889.393	3.007,14	2.608,43

```
exec db_size_pkg.get_db_size;
    same as
       exec db_size_pkg.get_db_size(null,'N');
exec db_size_pkg.get_db_size(null,'T');
exec db_size_pkg.get_db_size(null,'H');
exec db_size_pkg.get_db_size('20080501');
   same as
     exec db_size_pkg.get_db_size('20080501','T');
   same as
     exec db_size_pkg.get_db_size('20080501','N');
exec db_size_pkg.get_db_size('20080501','H');
```

Osnovne metode

- new_objects, dropped_objects, **both_objects** prikazuje nove, obrisane te oboje segmente.
- null parameter označava zadnja dva perioda

```
exec db_size_pkg.both_objects;
exec db_size_pkg.both_objects('20080501','20080301');
exec db_size_pkg.both_objects(null,null,'TABLE PARTITON');
exec db_size_pkg.both_objects('20091201','20070701','LOBSEGMENT');
```

U command prompt izvedi primjer:

```
exec db_size_pkg.both_objects('20080501','20080301');
```

Osnovne metode

- top_n procedure koje prikazuju najzanimljivije podatke na temelju veličine, broja slogova i to za segmente, tablespace, ownere.
- Primjer za segmente:

```
exec db_size_pkg.top_n_size_grow ('20080501','20080301',10);

Top 10 objects by SIZE grow. Monitored periods 20080501-20080301

OWNER    SEGMENT_NAME                    SEGMENT_TYPESIZE [MB]    grow [MB]  %
-------------------------------------------------------------------------------
GL       GL_JE_LINES                     TABLE       10.009,75     1.331,50  15,34
XXHY     XXHY_GL_CC_DRILL_DOWN_V_TT      TABLE       14.300,00     1.300,00  10,00
APPS     XXHY_CC_PAYMENT_PLAN_DISCO_MV   TABLE       13.507,56     1.285,56  10,52
XXHY     XXHY_CC_PAY_PLAN_AMOUNTS_ALL    TABLE        6.310,50       903,88  16,72
AR       RA_CUSTOMER_TRX_LINES_ALL       TABLE        3.204,13       602,63  23,16
AR       RA_CUST_TRX_LINE_GL_DIST_ALL    TABLE        2.854,25       599,63  26,60
GL       GL_IMPORT_REFERENCES            TABLE        4.206,38       595,25  16,48
XXHY     XXHY_CC_PAY_PLAN_AMOUNTS_U1     INDEX        2.766,38       360,25  14,97
APPLSYS  DR$FND_LOBS_CTX$I               TABLE          473,25       323,50 216,03
AR       RA_CUSTOMER_TRX_ALL             TABLE        1.437,50       298,38  26,19
```

Osnovne metode

- Primjer za segmente po broju slogova:

```
exec db_size_pkg.top_n_rec_grow ('20080501','20080301',10);

Top 10 objects by NUMBER of records row. Monitored periods 20080501-20080301

OWNER    SEGMENT_NAME                    SEGMENT_TYPE NR_RECORDS     REC_GROW      %
-------------------------------------------------------------------------------------
XXHY     XXHY_CC_PAY_PLAN_AMOUNTS_ALL    TABLE        78.422.940     10.990.267     16,30
APPS     XXHY_CC_PAYMENT_PLAN_DISCO_MV   TABLE        66.472.066      6.750.522     11,30
XXHY     XXHY_GL_CC_DRILL_DOWN_V_TT      TABLE        38.711.757      4.870.904     14,39
GL       GL_JE_LINES                     TABLE        38.756.116      4.845.708     14,29
AR       RA_CUST_TRX_LINE_GL_DIST_ALL    TABLE        19.620.633      4.184.139     27,11
GL       GL_IMPORT_REFERENCES            TABLE        26.560.744      3.775.827     16,57
SYS      WRI$_OPTSTAT_HISTHEAD_HISTORY   TABLE         3.601.021      3.587.396 26.329,51
APPLSYS  DR$FND_LOBS_CTX$I               TABLE         3.819.293      2.758.699    260,11
AR       RA_CUSTOMER_TRX_LINES_ALL       TABLE        10.691.695      2.131.972     24,91
AR       AR_DISTRIBUTIONS_ALL            TABLE        20.299.280      1.287.305      6,77
```

Osnovne metode

- Povijest za taj segment:

```
SQL> exec db_size_pkg.grow_hist_one_segment ('XXHY','XXHY_CC_PAY_PLAN_AMOUNTS_ALL');

XXHY.XXHY_CC_PAY_PLAN_AMOUNTS_ALL(TABLE)
```

Period	SIZE MB	TREND MB	TREND %	CUMUL %	RECORDS	TREND REC	TREND %	CUMUL %
20070701	2.645,00	2.645,00	0,00	0,00	33.602.796	33.602.796	0,00	0,00
20070901	3.312,50	667,50	25,24	25,24	41.613.708	8.010.912	23,84	23,84
20071101	3.952,50	640,00	19,32	49,43	49.492.188	7.878.480	18,93	47,29
20080101	4.750,63	798,13	20,19	79,61	59.309.318	9.817.130	19,84	76,50
20080301	5.406,63	656,00	13,81	104,41	67.432.673	8.123.355	13,70	100,68
20080501	6.310,50	903,88	16,72	138,58	78.422.940	10.990.267	16,30	133,38
20080701	6.970,00	659,50	10,45	163,52	86.626.127	8.203.187	10,46	157,79
20080802	7.581,75	611,75	8,78	186,64	94.157.324	7.531.197	8,69	180,21
20080901	8.220,25	638,50	8,42	210,78	102.012.368	7.855.044	8,34	203,58
20081001	8.584,25	364,00	4,43	224,55	106.309.045	4.296.677	4,21	216,37
20091201	13.383,75	4.799,50	55,91	406,00	164.043.352	57.734.307	54,31	388,18

Osnovne metode

- Primjer za top_n_size_perc (korisna kada tražimo nepoznate segmente koji rastu):

```
exec db_size_pkg.top_n_size_perc ('20080501','20080301',10);

Top 10 objects by PERCENTAGE grow. Monitored periods 20080501-20080301
Only objects WITH size > 10MB are included!
```

OWNER	SEGMENT_NAME	SEGMENT_TYPE	SIZE [MB]	grow [MB]	%
APPLSYS	DRFND_LOBS_CTXX	INDEX	175,38	131,88	303,16
APPLSYS	DRFND_LOBS_CTXI	TABLE	473,25	323,50	216,03
GL	GL_INTERFACE_N2	INDEX	122,75	75,13	157,74
GL	GL_INTERFACE_N1	INDEX	60,50	36,75	154,74
GL	GL_INTERFACE_N4	INDEX	64,75	37,13	134,39
GL	GL_INTERFACE	TABLE	395,63	224,00	130,52
JTF	SYS_LOB0000200028C00018$$	LOBSEGMENT	22,63	10,63	88,54
APPLSYS	WF_NOTIFICATION_OUT_N1	INDEX	19,63	8,88	82,56
APPLSYS	WF_NOTIFICATION_OUT	TABLE	407,63	181,38	80,17
XXHY	XXHY_RM_CALCULATIONS_A_N3	INDEX	56,13	24,50	77,47

```
**********************************************
```

Osnovne metode

- Primjer za top_n_rec_perc
- (korisna kada tražimo nepoznate segmente koji rastu):

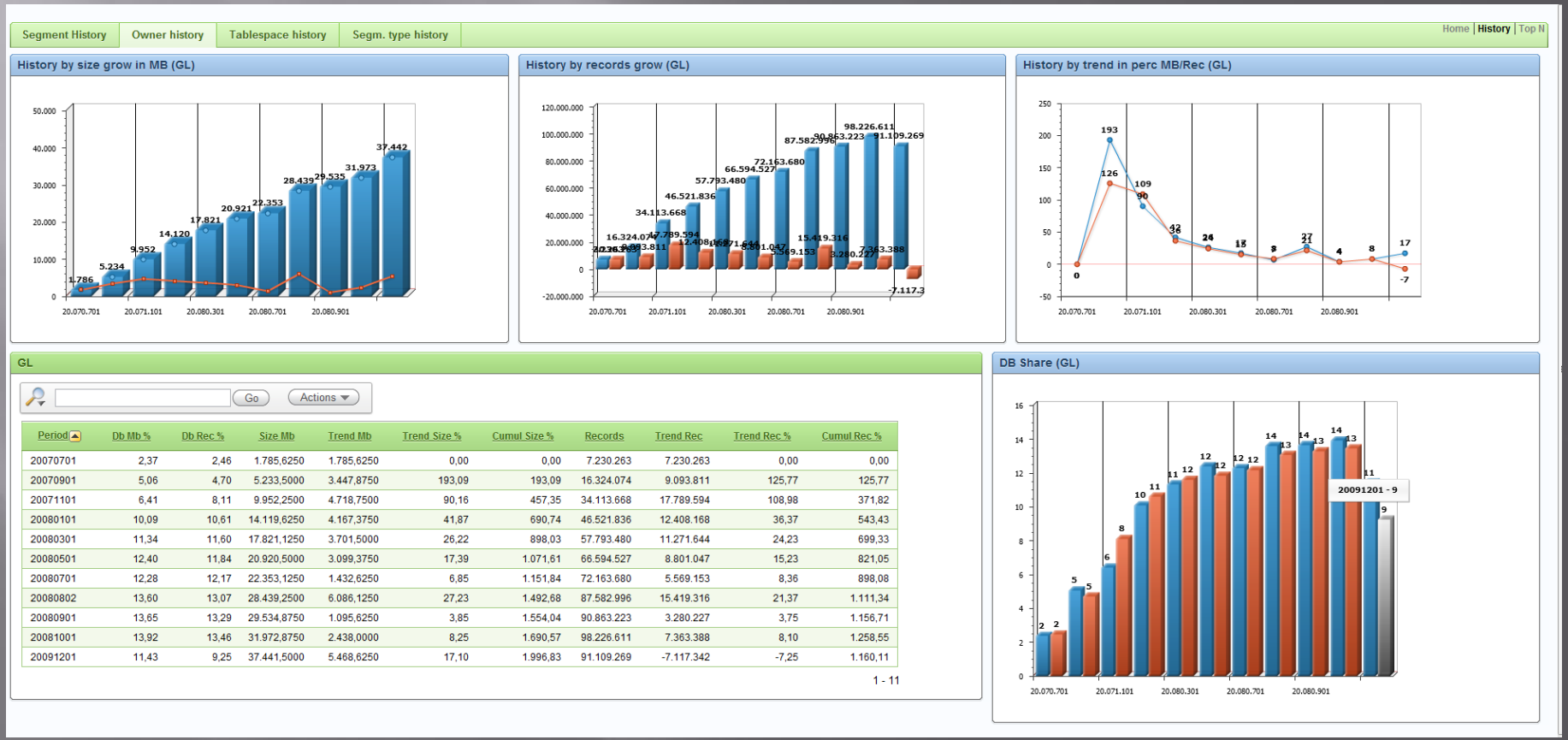
```
exec db_size_pkg.top_n_rec_perc ('20080501','20080301',10);

Top 10 objects by PERCENTAGE records grow. Monitored periods 20080501-20080301
Only tables WITH nr_records > 10.000 records are included!
```

OWNER	SEGMENT_NAME	SEGMENT_TYPE	NR_RECORDS	REC_GROW	%
SYS	WRI$_OPTSTAT_HISTHEAD_HISTORY	TABLE	3.601.021	3.587.396	26.329,51
SYS	WRI$_OPTSTAT_HISTGRM_HISTORY	TABLE	893.265	849.158	1.925,22
SYS	WRH$_ACTIVE_SESSION_HISTORY	TABLE PARTITION	235.092	212.023	919,08
SYS	WRH$_LATCH_MISSES_SUMMARY	TABLE PARTITION	76.343	59.534	354,18
APPLSYS	DRFND_LOBS_CTXI	TABLE	3.819.293	2.758.699	260,11
APPLSYS	FND_STATS_HIST	TABLE	266.821	181.515	212,78
XXHY	XXHY_RP_UNPAID_INVOICE_LMT_ALL	TABLE	68.333	45.169	195,00
SYS	SQLA$SQLTEXT	TABLE	58.105	35.498	157,02
CN	CN_SRP_PER_QUOTA_RC_ALL	TABLE	20.448	9.303	83,47
CN	CN_SRP_PERIOD_QUOTAS_EXT_ALL	TABLE	27.328	12.428	83,41

```
**********************************************
```

Apex sučelje

- Radi jednostavnosti izrađeno Apex sučelje koje ima čak i više informacija od sqlplus sučelja



Period	Db Mb %	Db Rec %	Size Mb	Trend Mb	Trend Size %	Cumul Size %	Records	Trend Rec	Trend Rec %	Cumul Rec %
20070701	2,37	2,46	1.785,6250	1.785,6250	0,00	0,00	7.230.263	7.230.263	0,00	0,00
20070901	5,06	4,70	5.233,5000	3.447,8750	193,09	193,09	16.324.074	9.093.811	125,77	125,77
20071101	6,41	8,11	9.952,2500	4.718,7500	90,16	457,35	34.113.668	17.789.594	108,98	371,82
20080101	10,09	10,61	14.119,6250	4.167,3750	41,87	690,74	46.521.836	12.408.168	36,37	543,43
20080301	11,34	11,60	17.821,1250	3.701,5000	26,22	898,03	57.793.480	11.271.644	24,23	699,33
20080501	12,40	11,84	20.920,5000	3.099,3750	17,39	1.071,61	66.594.527	8.801.047	15,23	821,05
20080701	12,28	12,17	22.353,1250	1.432,6250	6,85	1.151,84	72.163.680	5.569.153	8,36	898,08
20080802	13,60	13,07	28.439,2500	6.086,1250	27,23	1.492,68	87.582.996	15.419.316	21,37	1.111,34
20080901	13,65	13,29	29.534,8750	1.095,6250	3,85	1.554,04	90.863.223	3.280.227	3,75	1.156,71
20081001	13,92	13,46	31.972,8750	2.438,0000	8,25	1.690,57	98.226.611	7.363.388	8,10	1.258,55
20091201	11,43	9,25	37.441,5000	5.468,6250	17,10	1.996,83	91.109.269	-7.117.342	-7,25	1.160,11

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Što se još može napraviti?

- Izvoditi sve upite s rank funkcijom umjesto "rownum" u "top_n" metodama
- Dodati podršku za table set strukture (tablica i pripadni indeksi)
- Dodati predviđanje rasta segmenta, owner, tablespace, baze

Credits

- Oracle dokumentacija (10g):
  - http://download.oracle.com/docs/cd/B19306_01/server.102/b14231/onlineredo.htm
- Detaljan opis:
  - http://damir-vadas.blogspot.com/2010/02/monitor-database-size.html
- Google
- Naše višegodišnje iskustvo u Oracle-u

Q and A