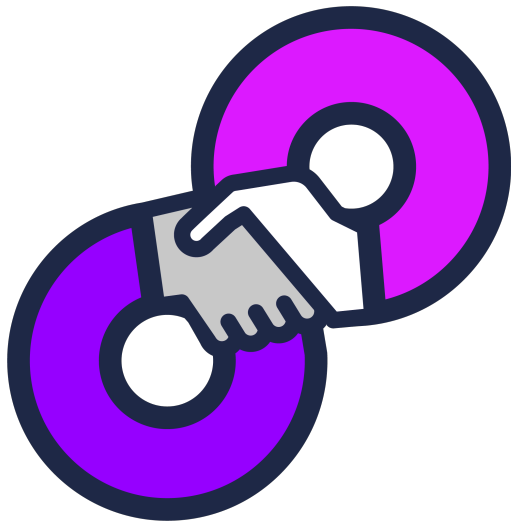


MY SYSAUX TABLESPACE IS FULL

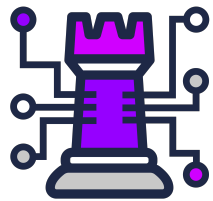
Please help me

2 TRIVADIS & ACCENTURE: #1 FOR DATA & AI

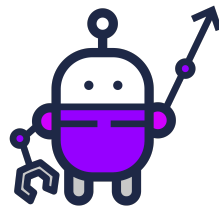


- Together we are 1500 specialists at 34 locations in Switzerland, Germany and Austria with a focus on **Data & Applied Intelligence**.
- Together we support you in the **intelligent end-to-end use of your data**.
- We cover the entire spectrum: from the **development and operation of data platforms and solutions**, to the refinement of data as well as **consulting and training**.
- We achieve this through the unique combination of Trivadis' **technological expertise** and Accenture's **strategic know-how** in the field of data.

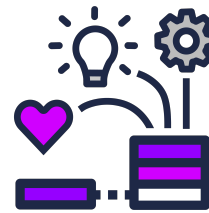
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**MODERNE DATEN-
PLATTFORMEN**



**MODERNE CLOUD-
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4 VISIT OUR BOOTH IN GATHER.TOWN - STAGE 1

- Find us on stage 1 to the right of the escalator
- Play our game «ALPAKA»
- Meet our experts at the booth
- Attend the interview about the joint future of Trivadis and Accenture on Thursday, 18.11.2021, 11:50h (DOAG Studio)

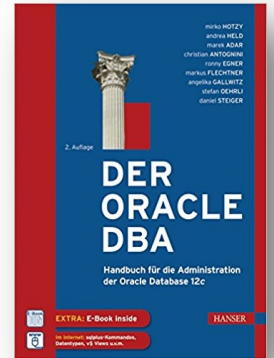


HI!



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- Focus
 - Oracle High Availability
 - Database Upgrade + Migration
- Teacher: RAC, New Features, Multitenant, PostgreSQL
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- Blog: markusdba.net|.de
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6 AGENDA

- Introduction
- Which components occupy space in SYSAUX?
- How to cleanup the SYSAUX Tablespace?
- How to keep the SYSAUX tablespace small?
- Conclusion & more information

INTRODUCTION

8 INTRODUCTION

- Until Oracle Database 9i there was the SYSTEM tablespace only
 - All database components stored their data their
- With Oracle Database 10g Oracle introduced the SYSAUX tablespace
 - Data of many database components was moved to SYSAUX
- Oracle says "if SYSAUX is not available, the database will not fail" (but only components which store data in SYSAUX)

9 SPACE ISSUES WITH SYSAUX

- Since Oracle 10g more and more components store their data in SYSAUX
- It keeps growing
- There is even a dedicated problem type for service requests:

Database Storage (Compression, Corruption, Partitioning, LOBS, Tablespaces, Files)	▶	Data Corruption (Not for ASM disk head
Information Integration (AQ, CDC, Streams, Advanced Replication, Distributed Transactions, Message Gateway)	▶	Database Storage: Compression
Internal Errors and Core Dump (ORA-600, ORA-700, ORA-7445, ORA-4030, ORA-4031, ORA-3137)	▶	Database Storage: LOBS/Securefiles, Co
Oracle Net Services Connectivity Issues	▶	Archiving
Oracle Sharding	▶	Database Storage: Partitioning
Other Database Admin (Config, Params, Memory, Dictionary, Scheduler, Processes, Startup/Shutdown, Undo/Rollback, Resource Mgr)	▶	Database Storage: Segment and Tables
PDB: Relocate, Cloning, Plug/Unplug	▶	Database Storage: Transportable Tables
Recovery Manager [RMAN], DataGuard, FRA, GDS, OSB, Backup & Recovery, other issues	▶	Information Lifecycle Management
		SYSAUX tablespace growth issues

10 SIZE GUIDELINES/ESTIMATIONS FOR THE SYSAUX TABLESPACE

Parameter/Recommendation	Small	Medium	Large
Number of CPUs	2	8	32
Number of concurrently active sessions	10	20	100
Number of user objects, tables and indexes	500	5.000	50.000
Estimated SYSAUX size at steady state with default configuration	500 MB	2 GB	5 GB

- Source: Oracle Database 19c – Database Administrators Guide (Chapter 13)

WHICH COMPONENTS OCCUPY SPACE IN SYSAUX?

12 THE ENTRYPOINT: V\$SYSAUX_OCCUPANTS

- Oracle provides a V\$ view which provides almost all the information we need:

```
SQL> desc v$sysaux_occupants
```

Name	Null?	Type
OCCUPANT_NAME		VARCHAR2 (64)
OCCUPANT_DESC		VARCHAR2 (64)
SCHEMA_NAME		VARCHAR2 (64)
MOVE_PROCEDURE		VARCHAR2 (64)
MOVE_PROCEDURE_DESC		VARCHAR2 (64)
SPACE_USAGE_KBYTES		NUMBER
CON_ID		NUMBER

- Important:** Analysis, cleanup and configuration must be done in each container (CDB\$ROOT and PDBs) separately

13 ISSUES WITH V\$SYSAUX_OCCUPANTS (1)

- In a Container Database when in CDB\$ROOT, V\$SYSAUX_OCCUPANTS shows the current container only (i.e. CDB\$ROOT)
 - No global view possible
 - SR open
- Other issues (public bugs from MOS):
 - Bug 16767759 AUDSYS schema is not present in V\$SYSAUX_OCCUPANTS
 - Open since 12.1.0.1, fixed in 12.2
 - Bug 10404641 V\$sysaux_occupants.space_usage_kbytes may not be accurate
 - Open since 10.2.0.4, fixed in 18.1

14 ISSUES WITH V\$SYSAUX_OCCUPANTS (2)

- It seems that V\$SYSAUX_OCCUPANTS is not 100% accurate:

```
SQL> select distinct owner from
  2   dba_segments where
  3   tablespace_name='SYSAUX'
  4   order by owner;
```

OWNER

AUDSYS

CTXSYS

DBSNMP

GSMADMIN_INTERNAL

MDSYS

SYS

SYSTEM

WMSYS

XDB

Global Database
Services

```
SQL> select distinct schema_name
  2   from v$sysaux_occupants
  3   where SPACE_USAGE_KBYTES>0
  4   order by schema_name;
```

SCHEMA_NAME

AUDSYS

CTXSYS

DBSNMP

MDSYS

SYS

SYSTEM

WMSYS

XDB

15 EXAMPLE OUTPUT: V\$SYSAUX_OCCUPANTS

```
SQL> select OCCUPANT_NAME, OCCUPANT_DESC, SPACE_USAGE_KBYTES USED_KB
 2  from V$SYSAUX_OCCUPANTS where SPACE_USAGE_KBYTES>0
 3  order by SPACE_USAGE_KBYTES desc
 4  fetch first 10 rows only;
```

OCCUPANT_NAME	OCCUPANT_DESC	USED_KB
SM/AWR	Server Manageability - Automatic Workload Repository	137024
SDO	Oracle Spatial	132096
XDB	XDB	104448
AO	Analytical Workspace Object Table	49536
AUDSYS	AUDSYS schema objects	47680
SM/OPTSTAT	Server Manageability - Optimizer Statistics History	39680
SM/OTHER	Server Manageability - Other Components	33088
SM/ADVISOR	Server Manageability - Advisor Framework	13440
LOGMNR	LogMiner	11264
WM	Workspace Manager	7488

16 TOP OCCUPANTS – THE USUAL SUSPECTS

- SM/OPTSTAT - old optimizer statistics
 - SM/ADVISOR – the various advisors
 - SM/AWR – AWR data
 - SM/OTHER - DB Feature Usage, Alert History etc.
 - SQL_MANAGEMENT_BASE – SQL baselines
-
- AUDSYS – audit data

17 OCCUPANTS WHICH TYPICALLY DO NOT OCCUPY SPACE

```
SQL> select occupant_name,occupant_desc from v$sysaux_occupants
2   where space_usage_kbytes=0;
```

OCCUPANT_NAME	OCCUPANT_DESC
AUDIT_TABLES	DB audit tables
XSAMD	OLAP Catalog
XSOQHIST	OLAP API History Tables
STATSPACK	Statspack Repository
ORDIM	Oracle Multimedia ORDSYS Components
ORDIM/ORDDATA	Oracle Multimedia ORDDATA Components
ORDIM/ORDPLUGINS	Oracle Multimedia ORDPLUGINS Components
ORDIM/SI_INFORMTN_SCHEMA	Oracle Multimedia SI_INFORMTN_SCHEMA Components
EM	Enterprise Manager Repository
ULTRASEARCH	Oracle Ultra Search
ULTRASEARCH_DEMO_USER	Oracle Ultra Search Demo User
EXPRESSION_FILTER	Expression Filter System
TSM	Oracle Transparent Session Migration User

18 OCCUPANTS WHICH ARE DESUPPORTED (AND CAN BE IGNORED)

- Oracle Streams
 - Desupported since Oracle Database 19c
- Enterprise Manager Repository
 - Used by OEM Database Control (until Oracle Database 11g Release 2)
 - Can be removed in Oracle Database 12c and higher:
Script `$ORACLE_HOME/rdbms/admin/emremove.sql`

19 DETAILED ANALYSIS OF AWR DATA IN SYSAUX

- The script `$ORACLE_HOME/rdbms/admin/awrinfo.sql` provides more information about the AWR components in SYSAUX
 - And about the other occupants, too (e.g. largest segments)

```
[...]  
*****  
(3a) Space usage by AWR components (per database)  
*****  
  
COMPONENT          MB    % AWR  KB_PER_SNAP MB_PER_DAY MB_PER_WEEK TABLE% : INDEX%  
-----  
FIXED              89.7   69.4    5,402      21.1      147.7     47% : 53%  
EVENTS             10.4    8.1     629        2.5       17.2     39% : 61%  
SPACE              9.3    7.2     561        2.2       15.3     50% : 50%  
SQLPLAN            7.8    6.0     467        1.8       12.8     66% : 34%  
SQL                4.8    3.7     286        1.1        7.8     50% : 50%  
ASH                2.4    1.9     147        0.6        4.0     69% : 31%  
RAC                1.6    1.3      98         0.4        2.7     50% : 50%  
SQLBIND            1.2    0.9      72         0.3        2.0     47% : 53%  
SQLTEXT            1.2    0.9      72         0.3        2.0     68% : 32%  
[...]
```

HOW TO CLEANUP THE SYSAUX TABLESPACE?

21 HOW TO REDUCE THE SIZE OF THE SYSAUX TABLESPACE

- Option 1:
 - Reorganize tables and indexes in SYSAUX
- Option 2:
 - Move the component out of the SYSAUX Tablespace
- Option 3 (AWR-related data)
 - Cleanup data used by the occupant
 - Define appropriate retention parameters

- And
 - ... don't forget to resize the datafiles afterwards
 - ... with AUTOEXTENSIBLE datafiles you may not detect a fastly growing SYSAUX tablespace

22 REORGANIZE TABLES AND INDEXES IN SYSAUX

- As we know it:

```
ALTER TABLE .. MOVE TABLESPACE SYSAUX ONLINE;  
ALTER INDEX .. REBUILD TABLESPACE SYSAUX ONLINE;
```

- Don't forget to rebuild indexes after moving a table
- \$ORACLE_HOME/rdbms/admin/awrinfo.sql will show the largest segments
- Do not reorganize XDB objects!
- More information:
 - How to Reduce SYSAUX Tablespace Occupancy Due to Fragmented TABLEs and INDEXes (Doc ID 1563921.1)
 - Reducing SYSAUX Fragmentation of TABLEs and INDEXes Caused by Statistics Related Activities (Doc ID 1271178.1)

23 MOVE DATA OUT OF THE SYSAUX TABLESPACE

- Oracle provides procedures for moving the data into another tablespace

```
SQL> select occupant_name,move_procedure from v$sysaux_occupants
  2  where move_procedure is not null;
OCCUPANT_NAME          MOVE_PROCEDURE
-----
LOGMNR                 SYS.DBMS_LOGMNR D.SET_TABLESPACE
LOGSTDBY               SYS.DBMS_LOGSTDBY.SET_TABLESPACE
AUDSYS                 DBMS_AUDIT_MGMT.SET_AUDIT_TRAIL_LOCATION
AUDIT_TABLES           DBMS_AUDIT_MGMT.SET_AUDIT_TRAIL_LOCATION
XDB                    XDB.DBMS_XDB_ADMIN.MOVEXDB_TABLESPACE
XSAMD                  DBMS_AMD.Move_OLAP_Catalog
AO                     DBMS_AW.MOVE_AWMETA
XSOQHIST               DBMS_XSOQ.OlapMoveProc
SDO                    MDSYS.MOVE_SDO
WM                     DBMS_WM.move_proc
ORDIM                  ordsys.ord_admin.move_ordim_tblspc
ORDIM/ORDDATA          ordsys.ord_admin.move_ordim_tblspc
ORDIM/ORDPLUGINS       ordsys.ord_admin.move_ordim_tblspc
ORDIM/SI_INFORMTN_SCHEMA ordsys.ord_admin.move_ordim_tblspc
EM                     emd_maintenance.move_em_tblspc
TEXT                   DRI_MOVE_CTXSYS
ULTRASEARCH            MOVE_WK
ULTRASEARCH_DEMO_USER MOVE_WK
```

24 MOVE PROCEDURE – EXAMPLE: AUDIT-DATA (1)

- Procedure `DBMS_AUDIT_MGMT.SET_AUDIT_TRAIL_LOCATION`

```
PROCEDURE SET_AUDIT_TRAIL_LOCATION
```

Argument Name	Type	In/Out	Default?

AUDIT_TRAIL_TYPE	BINARY_INTEGER	IN	
AUDIT_TRAIL_LOCATION_VALUE	VARCHAR2	IN	

- Values for AUDIT_TRAIL_TYPE
 - AUDIT_TRAIL_AUD_STD (Tables AUD\$ and FGA_LOG\$)
 - AUDIT_TRAIL_FGA_STD (FGA_LOG\$)
 - AUDIT_TRAIL_DB_STD (AUD\$)
 - AUDIT_TRAIL_UNIFIED (unified audit data)

25 MOVE PROCEDURE – EXAMPLE: AUDIT-DATA (2)

- Move data

```
SQL> exec DBMS_AUDIT_MGMT.SET_AUDIT_TRAIL_LOCATION
      2      (AUDIT_TRAIL_TYPE=>'AUDIT_TRAIL_DB_STD' ,
              AUDIT_TRAIL_LOCATION_VALUE=>'AUDIT_DATA' );
```

← new tablespace

- Can be time-consuming
- Preferably during non-peak hours
- For type AUDIT_TRAIL_UNIFIED new partitions of the audit table will be created in the new tablespace. Existing data will not be moved.

26 REDUCE DATA IN SYSAUX – SM/OPTSTAT

- Remove old statistics
- Example: remove data older than 14 days (Default retention period is 31 days)

```
exec DBMS_STATS.PURGE_STATS(SYSDATE-15);
```

27 REDUCE DATA IN SYSAUX – SM/ADVISOR (1)

- "Deleting data from this component can be more complicated." (Quote from MOS-Note 329984.1)
- Use OEM to delete old results
- You can DISABLE an RE-ENABLE an advisor
 - You will loose all the old data
(but that's on purpose in this case)

28 REDUCE DATA IN SYSAUX – SM/ADVISOR (2) – STATISTICS ADVISOR

- By default, old data will be purged automatically after 30 days
- Change this setting (EXECUTION_DAYS_TO_EXPIRE):

```
SQL> EXEC DBMS_ADVISOR.SET_TASK_PARAMETER  
      (task_name=> 'AUTO_STATS_ADVISOR_TASK',  
       parameter=> 'EXECUTION_DAYS_TO_EXPIRE', value => 10);
```

- Manual purging:

```
SQL> exec prvt_advisor.delete_expired_tasks;
```

- Move table WRI\$_ADV_OBJECTS and rebuild indexes
- Note: According to MOS-Note 2660128.1 data in PDBs will not be purged automatically
 - → Use manual purging

29 REDUCE DATA IN SYSAUX – SM/AWR (1)

Notice: I was wrong in the presentation when I said, that the default retention period is 31 days. According to the docs it's 8 day. I apologize for the error. Thanks to Hans-Martin for pointing out this error to me.

- Reduce the retention period → Older data will be deleted
- Current retention period (example: 31 days):

```
SQL> SELECT retention FROM dba_hist_wr_control;
```

```
RETENTION
```

```
-----  
+00031 00:00:00.0
```

- Change retention period (example: 8 days)

```
SQL> exec DBMS_WORKLOAD_REPOSITORY.MODIFY_SNAPSHOT_SETTINGS  
(retention=>8*1440);
```

30 REDUCE DATA IN SYSAUX – SM/AWR (2)

- Remove a range of AWR snapshots

```
DBMS_WORKLOAD_REPOSITORY.DROP_SNAPSHOT_RANGE (  
low_snap_id IN NUMBER,  
high_snap_id IN NUMBER  
dbid IN NUMBER DEFAULT NULL);
```

31 REDUCE DATA IN SYSAUX – SM/SQL_MANAGEMENT_BASE (1)

- Options
 - Reduce retention period
 - Reduce available space in SYSAUX
 - Remove unused SQL Plan baselines
 - Restrict the plans which will be gathered

32 REDUCE DATA IN SYSAUX – SM/SQL_MANAGEMENT_BASE (2)

- Reduce retention period & reduce available space in SYSAUX
- Current configuration

```
SQL> SELECT PARAMETER_NAME, PARAMETER_VALUE from DBA_SQL_MANAGEMENT_CONFIG;  
PARAMETER_NAME PARAMETER_VALUE  
-----  
[...]  
PLAN_RETENTION_WEEKS 53  
SPACE_BUDGET_PERCENT 10
```

- Change configuration

```
SQL> Exec DBMS_SPM.CONFIGURE ('PLAN_RETENTION_WEEKS', 26);  
SQL> Exec DBMS_SPM.Configure ('SPACE_BUDGET_PERCENT', 5);
```


33 REDUCE DATA IN SYSAUX – SM/SQL_MANAGEMENT_BASE (3)

- Remove unused SQL Plan baselines
- Step 1: Find out the sql_handle

```
SQL> SELECT SQL_HANDLE, SQL_TEXT, PLAN_NAME, ORIGIN, ENABLED, ACCEPTED
2 FROM DBA_SQL_PLAN_BASELINES
3 WHERE SQL_TEXT LIKE '<your_sql_text>';
```

- Step 2: Remove SQL Plan baseline for this handle

```
DECLARE
  v_dropped_plans number;
BEGIN
  v_dropped_plans := DBMS_SPM.DROP_SQL_PLAN_BASELINE (
    sql_handle => '<handle_from_step_1>'
  );
  DBMS_OUTPUT.PUT_LINE('dropped ' || v_dropped_plans || ' plans');
END;
/
```

- More information: SQL Tuning Guide, Chapter 28.6

34 REDUCE DATA IN SYSAUX – SM/SQL_MANAGEMENT_BASE (4)

- Through 12.1 a SQL plan baselines is created for every SQL statement that is executed repeatedly
- Since 12.2 several include/exclude filter types for automatic capture are available
 - SQL text
 - Parsing schema name
 - Module (DBMS_APPLICATION_INFO)
 - Action (DBMS_APPLICATION_INFO)
- For example: include only SQL statements whose text start with “SELECT”

```
dbms_spm.configure (parameter_name=>'AUTO_CAPTURE_SQL_TEXT',  
                    parameter_value=>'SELECT%',  
                    allow => TRUE) ;
```

35 REDUCE DATA IN SYSAUX – SM/OTHER (5)

- Unfortunately, there's no special advice if there are space issues with SM/OTHER
- Create an SR and follow the steps described in the MOS Note "SRDC - How to Collect Standard Information for an Issue where Excessive SYSAUX Space is Used by the Automatic Workload Repository (AWR) (Doc ID 1934108.1)"

36 CHECK THE STATISTICS LEVEL

- Level "ALL" may lead to a huge amount of data in SYSAUX
- Recommendation:
 - Keep the default value "TYPICAL"

```
SQL> show parameter STATISTICS_LEVEL
```

NAME	TYPE	VALUE
statistics_level	string	TYPICAL

HOW TO KEEP THE SYSAUX TABLESPACE SMALL?

38 A STITCH IN TIME SAVES NINE



Vorbeugen ist besser als heilen

- Soon after creating a database:
 - Use dedicated tablespaces
 - Move Audit-Data out of the SYSAUX tablespace
 - Use a dedicated tablespace for Statspack data (schema PERFSTAT)
 - Don't use AUTOEXTENSIBLE for SYSAUX (or set it to a reasonable value)
 - But don't forget to monitor your tablespaces 😊
 - Keep Statistics Level "Typical"
 - Define appropriate retention periods for AWR related data
 - Disable unnecessary advisors

39 DEFINE RETENTION POLICIES (1)

```
REM SM/OPTSTAT
REM retention period in days (Default: 31 days)
exec dbms_stats.alter_stats_history_retention(7);

REM SM/ADVISOR
REM retention period Statistics Advisor (default: 30 days)
EXEC DBMS_SQLTUNE.SET_TUNING_TASK_PARAMETER (
  task_name => 'AUTO_STATS_ADVISOR_TASK',
  parameter => 'EXECUTION_DAYS_TO_EXPIRE',
  value => 14);
```

40 DEFINE RETENTION POLICIES (2)

```
REM SM/AWR
```

```
REM retention period defined in minutes (1 day = 1440 minutes)
```

```
exec DBMS_WORKLOAD_REPOSITORY.MODIFY_SNAPSHOT_SETTINGS(retention=>8*1440);
```

```
REM SQL_MANAGEMENT_BASE
```

```
REM retention period defined in weeks
```

```
Exec DBMS_SPM.CONFIGURE('PLAN_RETENTION_WEEKS',26);
```

```
REM or percentage of space in SYSAUX
```

```
Exec DBMS_SPM.Configure('SPACE_BUDGET_PERCENT',5);
```


41 DISABLE UN-NEEDED ADVISORS (EXAMPLES)

```
REM disable the Statistic Advisor  
exec dbms_stats.set_global_prefs('AUTO_STATS_ADVISOR_TASK', 'FALSE');
```

```
REM disable the Tuning Advisor  
DBMS_AUTO_TASK_ADMIN.DISABLE(  
client_name => 'sql tuning advisor',  
operation => NULL, window_name => NULL);
```

```
REM disable the Space Advisor  
DBMS_AUTO_TASK_ADMIN.DISABLE(  
client_name => 'sql space advisor',  
operation => NULL, window_name => NULL);
```

CONCLUSION & MORE INFORMATION

43 CONCLUSION

- More and more components are using the SYSAUX tablespace
- SYSAUX needs your attention
 - To detect massive growth
- Use dedicated tablespaces where applicable
- Set retention policies soon after database creation

44 MORE INFORMATION – MOS-NOTES (1)

- Troubleshooting Issues with SYSAUX Space Usage (Doc ID 1399365.1)
- General Guidelines for SYSAUX Space Issues (Doc ID 552880.1)
- How to Reduce SYSAUX Tablespace Occupancy Due to Fragmented TABLEs and INDEXes (Doc ID 1563921.1)
- Tips if Your SYSAUX Tablespace Grows Rapidly or Too Large (Doc ID 1292724.1)
- Usage and Storage Management of SYSAUX tablespace occupants SM/AWR, SM/ADVISOR, SM/OPTSTAT and SM/OTHER (Doc ID 329984.1)

- SRDC - How to Collect Standard Information for an Issue where Excessive SYSAUX Space is Used by the Automatic Workload Repository (AWR) (Doc ID 1934108.1)
- SYSAUX Tablespace Filled With WRI\$_EMX_FILES | What is WRI\$_EMX_FILES (Doc ID 2639664.1)
- SYSAUX Tablespace Grows Quite Fast Due to Apply Spilling (Doc ID 556183.1)
- SYSAUX Tablespace Growing Due to SYS.SCHEDULER\$_JOB_OUTPUT LOB Column (Doc ID 2095104.1)

45 MORE INFORMATION – MOS-NOTES (2)

- Bug 8553944 - SYSAUX tablespace grows (Doc ID 8553944.8)
- How To Recreate the SYSAUX Tablespace (Doc ID 468116.1)
- SYSAUX Tablespace Space Issue Because Of dbms_comparison (Doc ID 2089484.1)
- Exports Fail Because SYSAUX Tablespace Needs Recovery (Doc ID 1497195.1)
- Bug 14373728 - Old Statistics not Purged from SYSAUX Tablespace (Doc ID 14373728.8)
- HEATMAP Segment Size Is Large In SYSAUX Even When Heatmap=Off (Doc ID 2024036.1)
- SYSAUX New Mandatory Tablespace in Oracle 10g and higher (Doc ID 243246.1)
- ZDLRA: SM/ADVISOR using more space in SYSAUX (Doc ID 2730556.1)
- How to Relocate the SYSAUX Tablespace (Doc ID 301186.1)
- SYSAUX Tablespace Is Getting Filled Frequently with COMPARISON_ROW_DIF\$ (Doc ID 2087865.1)
- Abnormal High Space Usage in Sysaux Tablespace - Unable to Purge (Doc ID 1360000.1)
- Large Growth of SYSAUX Tablespace with Table WRH\$_SQL_PLAN Taking Lot of Space (Doc ID 2475149.1)

46 MORE INFORMATION: BLOG POSTS

- Hermann & Lenz: Neues vom SYSAUX-Tablespace...:
<https://blog.hl-services.de/2021/03/26/neues-vom-sysaux-tablespace/>
- ToadWorld: SYSAUX and purging big objects (segments) manually:
<https://blog.toadworld.com/2017/11/15/sysaux-and-purging-big-objects-segments-manually>
- Andrea Held: Der Oracle Sysaux-Tablespace: Reorganisation und Verkleinerung:
<https://www.informatik-aktuell.de/betrieb/datenbanken/der-oracle-sysaux-tablespace-reorganisation-und-verkleinerung.html>
- Oracle Help: Tablespace SYSAUX ist voll oder wächst ununterbrochen:
<https://oracletipps.wordpress.com/2015/10/21/tablespace-sysaux-full-or-growing/>
- Cleaning Oracle SYSAUX Tablespace Usage:
<https://www.techpaste.com/2017/03/cleaning-oracle-sysaux-tablespace-usage/>
- Mein SYSAUX-Tablespace wächst und wächst, was soll (kann) ich tun ...:
<https://www.markusdba.de/2021/04/06/mein-sysaux-tablespace-waechst-und-waechst-was-soll-kann-ich-tun/>

QUESTIONS & ANSWERS



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