

Oracle 18 XE

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- Oracle Spezialist seit 1992
 - 1992: Presales bei Oracle in Düsseldorf
 - 1999: Projektleiter bei Herrmann & Lenz Services GmbH
 - 2005: Technischer Direktor ADM Presales bei Quest Software GmbH
 - 2011: Geschäftsführer CarajanDB GmbH
- 2011 → Ernennung zum Oracle ACE
- Autor der Bücher:
 - Oracle9i für den DBA, Oracle10g für den DBA, Oracle 11g Release 2 für den DBA
- DOAG Themenverantwortlicher Datenbankadministration, Standard Edition
- Hobbies:
 - Drachen steigen lassen (Kiting) draußen wie drinnen (Indoorkiting)
 - Motorradfahren (nur draußen)



Funktionen und Optionen

- 2 Cores
- Eine Installation pro Umgebung (z.B. VM)
- 12 GB Userdata
- 2 GB RAM
- 3 PDBs
- Datenmigration über Data Pump
 - Ausnahme: nach Oracle EE über PDB Unplug / Plug
 - Migration nach Oracle SE2 ist nicht supported!

- Oracle® Database Express Edition Licensing Information User Manual 18c E89902-01 October 2018

Feature	Enthalten (Ja / Nein)
Oracle Multitenant - # of PDBs	Ja (maximum 3 PDBs)
PDB Snapshot Carousel	Nein
Refreshable PDB	Ja
Refreshable PDB Switchover	Nein
Oracle Sharding	Nein
Oracle RAC	Nein
Oracle Data Guard	Nein
Online Index Rebuild	Ja
Online Table Reorganization	Ja
Online Datafile Move	Nein

Features und Optionen (2)

Feature	Enthalten (Ja / Nein)
Block Level Media Recovery	Nein
Automatic Block Repair	Nein
Flashback Table	Ja
Flashback Database	Ja
Flashback Transaction / Transaction Query	Nein
Optimization for Flashback Data Archive	Ja
Cross Platform Backup and Recovery	Ja
Recovering Tables and Table Partitions from RMAN Backups	Nein
Gateways	Nein
Tuning / Diagnostic / Data Masking Pack	Nein
Real Appliation Testing	Nein
Database Resource Manager	Nein

Features und Optionen (3)

Feature	Enthalten (Ja / Nein)
SQL Plan Management	Nein
SQL Tuning Sets	Nein
Oracle Connection Manager	Nein
Client Side / Query / PL/SQL Function Result Cache	Ja
Adaptive Execution Plans	Ja
In-Memory Column Store	Ja
In-Memory Aggregation	Ja
Attribute Clustering	Ja
Automatic Workload Management	Nein
Column-Level Encryption	Ja
Tablespace Encryption	Ja (aber nicht Online)
Advanced Security	Ja

Features und Optionen (4)

Feature	Enthalten (Ja / Nein)
Database Vault	Ja
Label Security	Ja
Enterprise User Security	Nein
Centrally Managed Users	Ja
Fine Grained Auditing	Ja
Real Application Security	Ja
Data Redaction	Ja
Virtual Private Database	Ja
Spatial und Graph	Ja
Partitioning	Ja
On-Line Analytical Processing (OLAP)	Nein
Oracle Advanced Analytics	Ja

Features und Optionen (5)

Feature	Enthalten (Ja / Nein)
Advanced Compression	Ja
Advanced Index Compression	Ja
Prefix Compression	Ja
Hybrid Columnar Compression	Nein
Heat Map	Nein
Automatic Data Optimization	Nein
Deferred Segment Creation	Ja
Bitmapped Index / Join Index	Ja
Parallel Query /DML	Nein
Transportable Tablespaces (incl. Cross-Platform)	Ja
Ull Transportable Export / Import	Ja
Summary Management (Materialized Views)	Ja

Multitenant Lizenzierung

- SE2: Standard Edition Two
- EE: Enterprise Edition
- EE-ES: EE on Engineered Systems
- DBCS: Database Cloud Service
- EE-HP: DBCS EE High Performance
- EE-EP: DBCS EE Extreme Performance
- ExaCS: Exadata Cloud Service

Table 1-2 Consolidation

Feature / Option / Pack	SE2	EE	EE-ES	DBCS SE	DBCS EE	DBCS EE-HP	DBCS EE-EP	ExaCS	Notes
Oracle Multitenant - # of PDBs	1	252	4096	1	1	4096	4096	4096	The number value in each column indicates the maximum number of pluggable databases (PDBs) that can be created for each offering. - For all offerings, if you are not licensed for Oracle Multitenant, then the container database architecture is available in single-tenant mode, that is, with one user-created PDB, one user-created application root, and one user-created proxy PDB. - EE: Extra cost option; if you are licensed for Oracle Multitenant, then you can create up to 252 PDBs. - EE-ES: Extra cost option; if you are licensed for Oracle Multitenant, then you can create up to 4096 PDBs. - DBCS EE-HP, DBCS EE-EP, and ExaCS: Included option; you can create up to 4096 PDBs.
CDB Fleet Management	N	N	Y	N	Y	Y	Y	Y	
PDB Snapshot Carousel	N	N	Y	N	Y	Y	Y	Y	
Refreshable PDB switchover	N	N	Y	Y	Y	Y	Y	Y	

Quelle: Database Licensing Information User Manual 18c E87202-07 October 2018

- APEX und SQL-Developer werden nicht mit ausgeliefert



Installation

- <https://www.oracle.com/technetwork/database/database-technologies/express-edition/downloads/index.html>



Oracle Database XE Downloads

Oracle Database Express Edition (XE) Release 18.4.0.0.0 (18c) was released on October 19, 2018.

You must accept the [OTN License Agreement for Oracle Database 18c XE](#) to download this software.

☒ **Accept** License Agreement | ☐ **Decline** License Agreement

- > Oracle Database 18c Express Edition for Linux x64 [Download](#)
(2,574,155,124 bytes)
[Sha256sum:
308c044444342b9a3a8d332c68b12c540edf933dc8162d8eda3225e662433f1b]
- > Oracle Database Preinstall RPM for RHEL and CentOS:
 - [Release 7](#)
 - [Release 6](#)

- Oracle Linux 6

```
[root@cohen ~]# /sbin/chkconfig oracle-xe-18c on  
[root@cohen ~]# /sbin/service oracle-xe-18c start
```

- Oracle Linux 7

```
[root@cohen ~]# systemctl daemon-reload  
[root@cohen ~]# systemctl enable oracle-xe-18c
```

```
SQL> show pdba
```

CON_ID	CON_NAME	OPEN MODE	RESTRICTED
2	PDB\$SEED	READ ONLY	NO
3	XEPDB1	READ WRITE	NO

- Demo PDB löschen

```
SQL> DROP PLUGGABLE DATABASE xepdb1 INCLUDING DATAFILES;
```

Aus aktuellem Anlass

- OJVM in der Datenbank
- Oracle Security Alert for CVE-2018-3110

CVE#	Component	Package and/or Privilege Required	Protocol	Remote Exploit without Auth.?	CVSS VERSION 3.0 RISK (see Risk Matrix Definitions)									Supported Versions Affected	Notes
					Base Score	Attack Vector	Attack Complex	Privs Req'd	User Interact	Scope	Confidentiality	Integrity	Availability		
CVE-2018-3110	Java VM	Create Session	Oracle Net	No	9.9	Network	Low	Low	None	Changed	High	High	High	11.2.0.4, 12.1.0.2, 12.2.0.1, 18	

- OJVM in der Datenbank
- Oracle Security Alert for CVE-2018-3259

CVE#	Component	Package and/or Privilege Required	Protocol	Remote Exploit without Auth.?	CVSS VERSION 3.0 RISK (see Risk Matrix Definitions)									Supported Versions Affected	Notes
					Base Score	Attack Vector	Attack Complex	Privs Req'd	User Interact	Scope	Confidentiality	Integrity	Availability		
CVE-2018-3259	Java VM	None	Multiple	Yes	9.8	Network	Low	None	None	Unchanged	High	High	High	11.2.0.4, 12.1.0.2, 12.2.0.1, 18c	
CVE-2018-3299	Oracle Text	None	Multiple	Yes	8.2	Network	Low	None	Required	Changed	None	Low	High	11.2.0.4, 12.1.0.2, 12.2.0.1	
CVE-2018-7489	Rapid Home Provisioning	RHP User	HTTP	No	2.3	Adjacent Network	High	Low	Required	Unchanged	None	None	Low	18c	

Für Oracle XE gibt es keine
Patches!

- Löschen kritischer Komponenten:
 - Oracle Java Virtual Machine
 - Multimedia (Abhängigkeit)
 - XMLDB

```
cd $ORACLE_HOME/rdbms/admin
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -b catnojav -d $ORACLE_HOME/rdbms/admin catnojav.sql
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -b rmxml -d $ORACLE_HOME/xdk/admin rmxml.sql
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -b rmjvm -d $ORACLE_HOME/javavm/install rmjvm.sql
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -b rmctx -d $ORACLE_HOME/ctx/admin catnoctx.sql
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -b imrem -d $ORACLE_HOME/ord/im/admin imremdo.sql
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -e -b utlrp -d '','' utlrp.sql
```

Quellen:

<https://mikedietrichde.com/2017/08/07/javavm-xml-clean-oracle-database-11-2-12-2>

<https://mikedietrichde.com/2017/08/01/oracle-multimedia-ordim-clean-oracle-database-11-2-12-2>

```
SELECT con_id, comp_name, version, status, schema
FROM cdb_registry
ORDER BY con_id, comp_name;
```

CON_ID	COMP_NAME	VERSION	STATUS	SCHEMA
1	JServer JAVA Virtual Machine	18.0.0.0.0	REMOVED	SYS
1	OLAP Analytic Workspace	18.0.0.0.0	VALID	SYS
1	Oracle Database Catalog Views	18.0.0.0.0	VALID	SYS
1	Oracle Database Java Packages	18.0.0.0.0	REMOVED	SYS
1	Oracle Database Packages and Types	18.0.0.0.0	VALID	SYS
1	Oracle Database Vault	18.0.0.0.0	VALID	DVSY
1	Oracle Label Security	18.0.0.0.0	VALID	LBACSYS
1	Oracle OLAP API	18.0.0.0.0	VALID	OLAPSYS
1	Oracle Real Application Clusters	18.0.0.0.0	OPTION OFF	SYS
1	Oracle Text	18.0.0.0.0	REMOVED	CTXSYS
1	Oracle Workspace Manager	18.0.0.0.0	VALID	WMSYS
1	Oracle XDK	18.0.0.0.0	REMOVED	SYS
1	Oracle XML Database	18.0.0.0.0	VALID	XDB
1	Spatial	18.0.0.0.0	VALID	MDSYS

- Löschen Oracle Registry-Einträge

```
cat > $HOME/xe/reg.sql <<EOF
delete from registry$ where status='99' and cid in ('XML','JAVAVM','CATJAVA','MULTIMEDIA','CONTEXT');
commit;
EOF
```

```
$ORACLE_HOME/perl/bin/perl $ORACLE_HOME/rdbms/admin/catcon.pl -b reg -d $HOME/xe reg.sql
```

CON_ID	COMP_NAME	VERSION	STATUS	SCHEMA
1	OLAP Analytic Workspace	18.0.0.0.0	VALID	SYS
1	Oracle Database Catalog Views	18.0.0.0.0	VALID	SYS
1	Oracle Database Packages and Types	18.0.0.0.0	VALID	SYS
1	Oracle Database Vault	18.0.0.0.0	VALID	DVSY
1	Oracle Label Security	18.0.0.0.0	VALID	LBACSYS
1	Oracle OLAP API	18.0.0.0.0	VALID	OLAPSYS
1	Oracle Real Application Clusters	18.0.0.0.0	OPTION OFF	SYS
1	Oracle Text	18.0.0.0.0	VALID	CTXSYS
1	Oracle Workspace Manager	18.0.0.0.0	VALID	WMSYS
1	Oracle XML Database	18.0.0.0.0	VALID	XDB
1	Spatial	18.0.0.0.0	VALID	MDSYS

```
oracle@cohen[XE]% cat ctx_leftovers.sql
DROP PROCEDURE sys.validate_context;
DROP PACKAGE xdb.dbms_xdbt;
DROP PROCEDURE xdb.xdb_datastore_proc;
DROP PUBLIC SYNONYM dbms_xdbt;

$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -b rmctx -d $ORACLE_HOME/ctx/admin catnoctx.sql
$ORACLE_HOME/perl/bin/perl catcon.pl -n 1 -e -b ctx_leftovers -d $HOME/xe ctx_leftovers.sql
```

- Datenbank:

```
oracle@cohen[XE]% sudo su -  
# /etc/init.d/oracle-xe-18c delete
```

- Software

```
oracle@cohen[XE]% sudo su -  
# yum remove oracle-database-xe-18c
```


ORA-12954: The request exceeds the maximum allowed database size of 12 GB.

```
SELECT s.con_id, s.owner, sum(s.bytes)/1024/1024 MByte
FROM cdb_segments s, cdb_users u
WHERE s.owner = u.username
      AND s.con_id = u.con_id
      AND u.oracle_maintained != 'Y'
GROUP BY s.con_id,s.owner
ORDER BY 1,2;
```

CON_ID	OWNER	MBYTE
3	BASIS	.9375
3	DEMO	6994.8125
4	BASIS	.9375
4	DEMO	4898.8125

→ 11895.5 MB

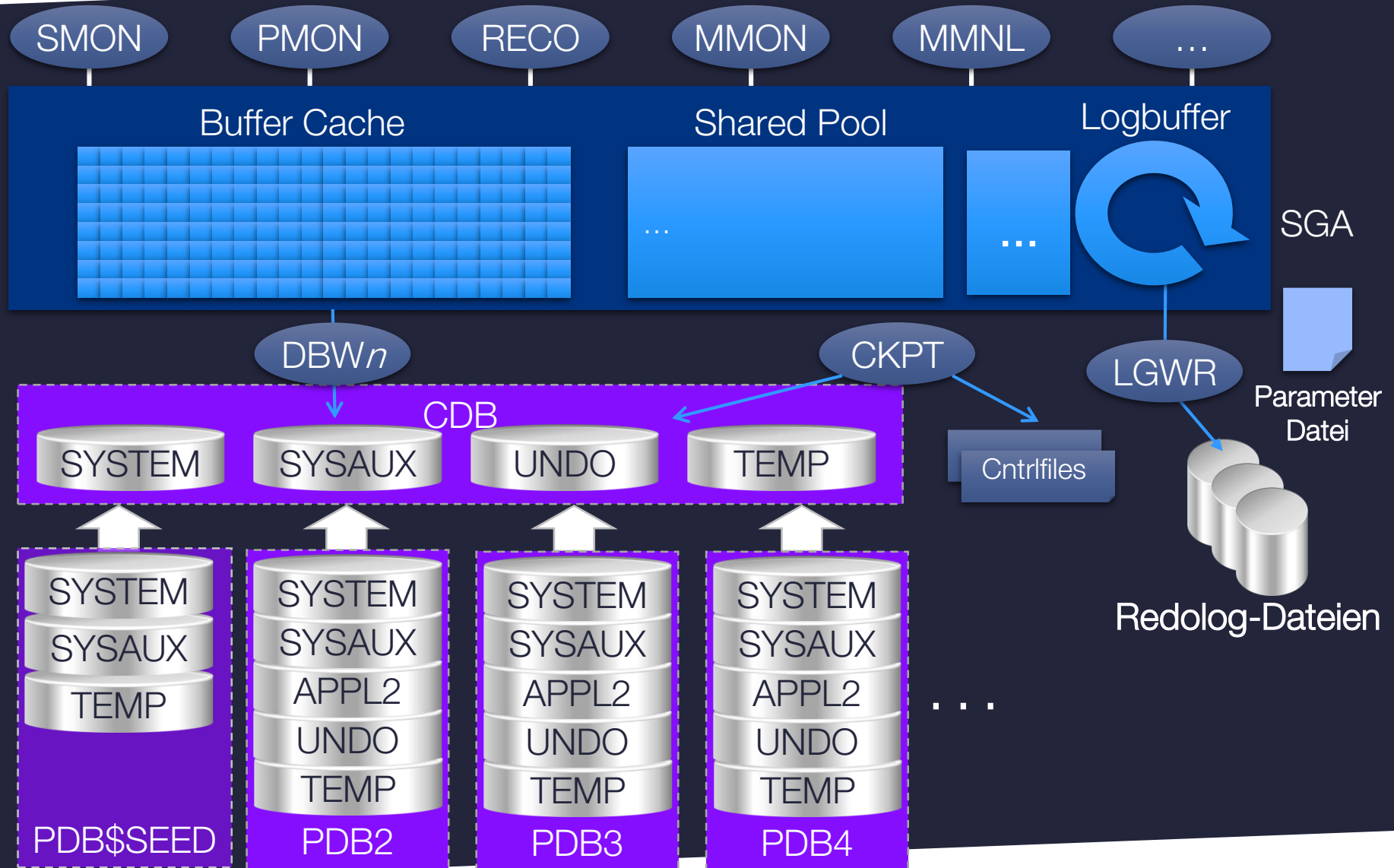


Multitenant Database

- Multitenant Architektur
 - Alternative Architektur ab Version 12.1.1 für alle Editionen
 - Default bei Oracle 18 XE
- Multitenant Option
 - Kostenpflichtig für die Enterprise Edition
 - Bis zu 253 PDBs pro CDB (Exadata ab 12.2 4096 PDBs)
 - Bis zu 3 PDBs in Oracle 18 XE

The non-CDB architecture was deprecated in Oracle Database 12c. It can be desupported and unavailable in a release after Oracle Database 12c Release 2. Oracle recommends use of the CDB architecture.

Multitenant Database 18



PDB hinzufügen

```
SQL> CREATE PLUGGABLE DATABASE demo  
      ADMIN USER pdb_admin IDENTIFIED BY manager  
      DEFAULT TABLESPACE USERS;
```

```
SQL> ALTER PLUGGABLE DATABASE demo OPEN;
```

```
SQL> ALTER PLUGGABLE DATABASE demo SAVE STATE;
```

```
SQL> CREATE PLUGGABLE DATABASE leonard FROM demo;
```

Pluggable database created.

```
SQL> ALTER PLUGGABLE DATABASE leonard OPEN;
```

```
ALTER PLUGGABLE DATABASE leonard OPEN
```

```
*
```

ERROR at line 1:

ORA-12954: The request exceeds the maximum allowed database size of 12 GB.

```
SQL> DROP PLUGGABLE DATABASE leonard INCLUDING DATAFILES;
```

Pluggable database dropped.

Unplug Pluggable Database

```
SQL> ALTER PLUGGABLE DATABASE demo CLOSE IMMEDIATE;
```

Pluggable database altered.

```
SQL> ALTER PLUGGABLE DATABASE demo UNPLUG INTO '/home/oracle/xe/demobig.xml';
```

Pluggable database altered.

```
SQL> DROP PLUGGABLE DATABASE demo;
```

Pluggable database dropped.

Memory

- `MEMORY = sga + pga`

```
SQL> show parameter sga_target
```

NAME	TYPE	VALUE
sga_target	big integer	1536M

```
SQL> show parameter pga
```

NAME	TYPE	VALUE
pga_aggregate_limit	big integer	2G
pga_aggregate_target	big integer	512M

```
SQL> ALTER SYSTEM SET sga_target=3000M SCOPE=spfile;
```

```
System altered.
```

```
SQL> shutdown immediate
```

```
Database closed.
```

```
Database dismounted.
```

```
ORACLE instance shut down.
```

```
SQL> startup
```

```
ORA-56752: Oracle Database Express Edition (XE) memory parameter invalid or not  
specified
```

```
ORA-01078: failure in processing system parameters
```

```
SQL> create pfile='/tmp/initx.ora' FROM spfile;
```

```
File created.
```

```
SQL> !vi /tmp/initx.ora
```

```
SQL> startup nomount pfile='/tmp/initx.ora';  
ORACLE instance started.
```

```
...
```

```
SQL> create spfile from pfile='/tmp/initx.ora';
```

```
File created.
```

```
SQL> shutdown immediate  
ORA-01507: database not mounted
```

```
ORACLE instance shut down.
```

```
SQL> startup
```

```
SQL> ALTER SYSTEM SET pga_aggregate_target=100M;
```

```
System altered.
```

```
SQL> ALTER SYSTEM SET sga_target=1900M SCOPE=spfile;
```

```
System altered.
```

```
SQL> shutdown immediate
```

```
Database closed.
```

```
Database dismounted.
```

```
ORACLE instance shut down.
```

```
SQL> startup
```

```
ORACLE instance started.
```

```
Total System Global Area 1996485680 bytes
```

```
Fixed Size                  8897584 bytes
```

```
Variable Size              520093696 bytes
```

```
Database Buffers          1459617792 bytes
```

```
Redo Buffers               7876608 bytes
```

```
Database mounted.
```

```
Database opened.
```

Sonstiges

- Oracle 12.2. mit Release Update 180717 (Juli 2018)
- Bug 26430323 : ORA-07445[KKQGBPCHECKVALIDITYDP] WHEN SELECTING FROM DUAL
- “As you are running your 12.2.0.1 version on Windows platform, one off patches are not available for Windows. On Windows bug fixes are released in quarterly patch bundles. The bug will be fixed in Windows although cannot give you a timeframe when this will happen.”

- 23.11. DOAG Schulungstag „Oracle XE, die kostenlose Oracle Datenbank“

DOAG



DOAG 2019 Datenbank

3. und 4. Juni 2019 in Düsseldorf

datenbank.doag.org

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 - Datenbank Cloning (Delphix, Actifio, CloneDB)
- Fernwartung
- Schulung und Workshops (Oracle, Toad)



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