ORACLE

ORACLE Database Management System

(c) Copyright Oracle Corporation, 1984.

Help! My database is still on 8i!

Press Any Key To Continue..._

Daniel Overby Hansen

Senior Principal Product Manager

---

in dohdatabase

🐦 @dohdatabase

B https://dohdatabase.com

Poll

Which versions of
Oracle Database are you using?

Oracle 8*i* Database
Oracle 9*i* Database $\Longrightarrow$ *i*nternet

Oracle Database 10*g*
Oracle Database 11*g* $\Longrightarrow$ *g*rid

Oracle Database 12*c*
Oracle Database 18*c*
Oracle Database 19*c* $\Longrightarrow$ *c*loud
Oracle Database 23*c*

```
[oracle@hol admin]$ pwd
/u01/app/oracle/product/19/rdbms/admin

[oracle@hol admin]$ grep -i "amendels" catalog.sql
Rem      amendels    11/19/92 - fix 139681, 140003: modify *_constraints
Rem      amendels    10/08/92 - 132726: fix *_constraints to show DELETE CASCADE
Rem      amendels    12/23/91 - simplify *_clusters as clu$.hashkeys cannot be n
Rem      amendels    12/23/91 - fix *_clusters views for hashing
Rem      amendels    11/26/91 - modify user/dba_clusters for hash cluster
Rem      amendels    08/29/91 - fix dict_columns: 'ALL$' -> 'ALL%'
Rem      amendels    07/02/91 - remove change to *_constraints.constraint_type
Rem      amendels    06/10/91 - move obsolete sql2 views to catalog6.sql;

[oracle@hol admin]$ grep -i "jloaiza" utlestat.sql
Rem      jloaiza     01/07/92 - rework for version 7
Rem      jloaiza     03/16/89 - improve names and formats
Rem      jloaiza     03/09/89 - make kqrst columns intelligible
Rem      jloaiza     02/23/89 - changed table names, added dates
```

The Problem

Does it seem like a big and complex task?

ℹ **... it doesn't get easier with time!**

The future brings more problems!

- More powerful computing
  breaks old encryption algorithms
- SCN overflow issues

On UNIX and Linux, 32-bit timestamps will overflow on 19 January 2038

- Also known as *Epochalypse*
- Like Y2K but for UNIX and Linux

64-bit timestamps will overflow on Sunday, 4 December 292277026596

- Nearly 22 times the current estimated age of the universe

1985 Oracle v5

First version for OS/2

Motorola DynaTAC

Image credits:
Redrum0486, Wikipedia

Out of support in ????

1988 Oracle v6

1985 - Oracle v5

Row level locking
Oracle Parallel Server

Out of support in ????

Motorola MicroTAC

Image credits:
Ross Padluck, Wikipedia

1996 Oracle 7.3

Cost based optimizer
PL/SQL
Parallel SQL execution
TAF
Windows NT

Out of support in 2002

1985 - Oracle v5
1988 - Oracle v6

Motorola StarTAC

Image credits:
80sCompaqPC, Wikipedia

1998 Oracle *8i* Database

RMAN
Linux

1985 – Oracle v5
1988 – Oracle v6
1996 – Oracle 7.3

Out of support in 2006

Nokia 5110

Image credits:
Soltys0, Wikipedia

2001 Oracle *9i* Database

RAC
XML DB

Out of support in 2010

1985 - Oracle v5
1988 - Oracle v6
1996 - Oracle 7.3
1998 - Oracle 8i

Sony Ericsson T68

Image credits:
Dzoker, Wikipedia
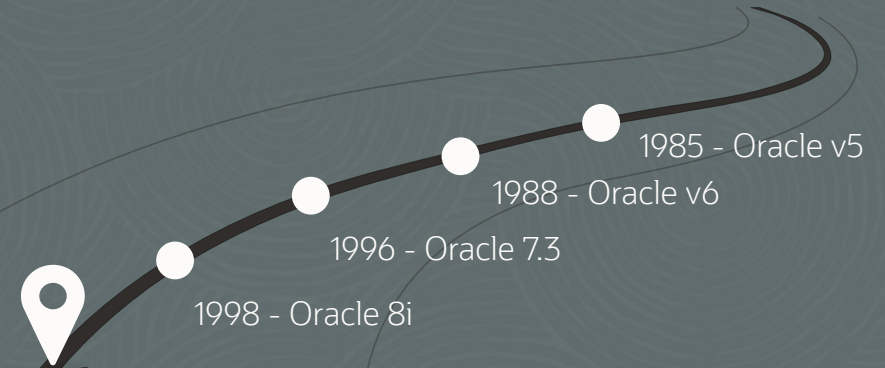
2003 Oracle Database 10*g*

Data Pump
Grid Infrastructure
ASM
Flashback Database

1985 – Oracle v5
1988 – Oracle v6
1996 – Oracle 7.3
1998 – Oracle 8*i*
2001 – Oracle 9*i*

Out of support in 2013

Nokia 6600

Image credits:
Slowacki, Wikipedia
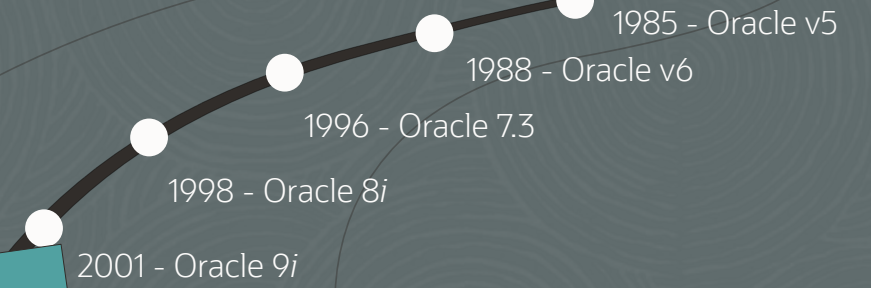
2007 Oracle Database 11*g*

Exadata
Active Data Guard
SecureFile LOBs

1985 – Oracle v5
1988 – Oracle v6
1996 – Oracle 7.3
1998 – Oracle 8*i*
2001 – Oracle 9*i*
– Oracle 10*g*

Out of support in 2020

Apple iPhone

Image credits:
Rafael Fernandez, Wikipedia

2013 **Oracle Database 12*c***

Multitenant
In-memory
Database Cloud Service

1985 - Oracle v5
1988 - Oracle v6
1996 - Oracle 7.3
1998 - Oracle 8*i*
2001 - Oracle 9*i*
- Oracle 10*g*
2007 - Oracle 11*g*

Out of support in 2022

Blackberry Q10

Image credits:
Kārlis Dambrāns, Wikipedia

2017 Oracle Database 12*c* Release 2

Sharding
ZDLRA

1985 – Oracle v5

1988 – Oracle v6

1996 – Oracle 7.3

1998 – Oracle 8*i*

2001 – Oracle 9*i*

– Oracle 10*g*

Out of support in 2022

2007 – Oracle 11*g*

2013 – Oracle 12*c*
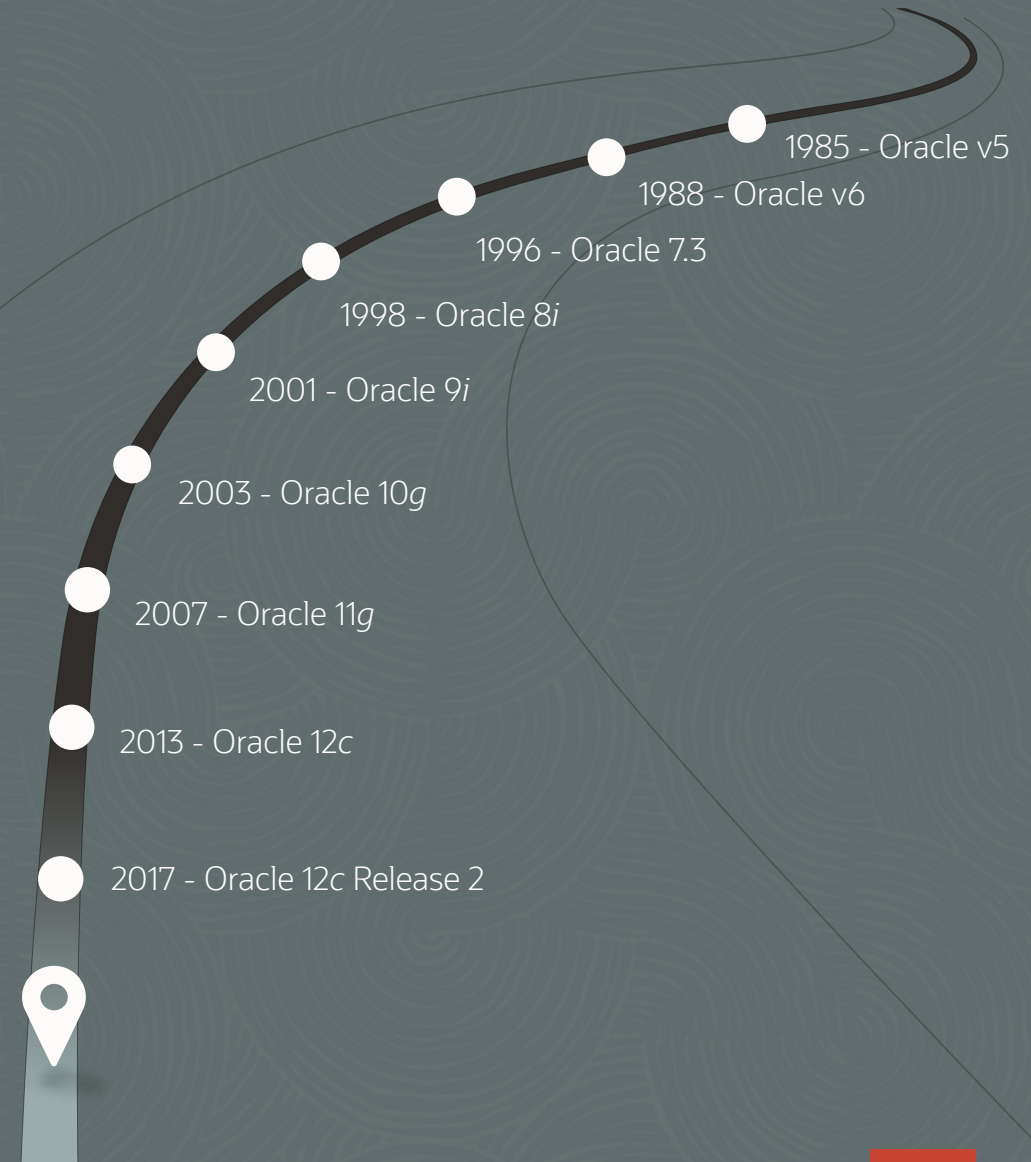
Google Pixel 2

Image credits:
JorgenQ, Wikipedia

2019 Oracle Database 19*c*

Blockchain
Automatic Indexing
ADG DML redirect

Huawai Mate X

Image credits:
30000lightyears, Wikipedia

1985 - Oracle v5
1988 - Oracle v6
1996 - Oracle 7.3
1998 - Oracle 8*i*
2001 - Oracle 9*i*
2003 - Oracle 10*g*
2007 - Oracle 11*g*
2013 - Oracle 12*c*
2017 - Oracle 12*c* Release 2

The Risk

A word about the risk
you are taking

Security

It's not just the database!

An old database needs:

- An old operating system
- An old server
- An old storage system
- An old network infrastructure
- Old clients

Your environment is exposed to:

- Unknown amount of security issues

Platforms Supported By Oracle 8i

| PLATFORM	DESUPPORT
HP Tru64 UNIX 5.1b	2010
HP-UX PA-RISC 11.23 (32-bit)	2010
HP-UX PA-RISC 11.23 (64-bit)	2010
IBM AIX on POWER Systems 5.2 (32-bit)	2009
IBM AIX on POWER Systems 5.2 (64-bit)	2009
Linux x86 RHEL 2.1	2009
Microsoft Windows 2000 (32-bit)	2010
Oracle Solaris on SPARC 9 (32-bit)	2014
Oracle Solaris on SPARC 9 (64-bit)	2014

System Requirements for Windows NT/2000

Top-Level Component System Requirements

Oracle8*i* Enterprise Edition or Oracle8*i*

Requirement	Typical
Operating System	Windows NT 4.0
Windows NT 4.0 Service Pack	3.0 (with year 2000 fixes), 5.0, or above
Minimal Processor	Pentium 166 or Pentium 200
Recommended Processor	Pentium 233 or Pentium 266[1]
RAM	96 MB (256 MB recommended)
Hard disk	961 MB (plus an additional 22 MB on the system drive)

Horror Story
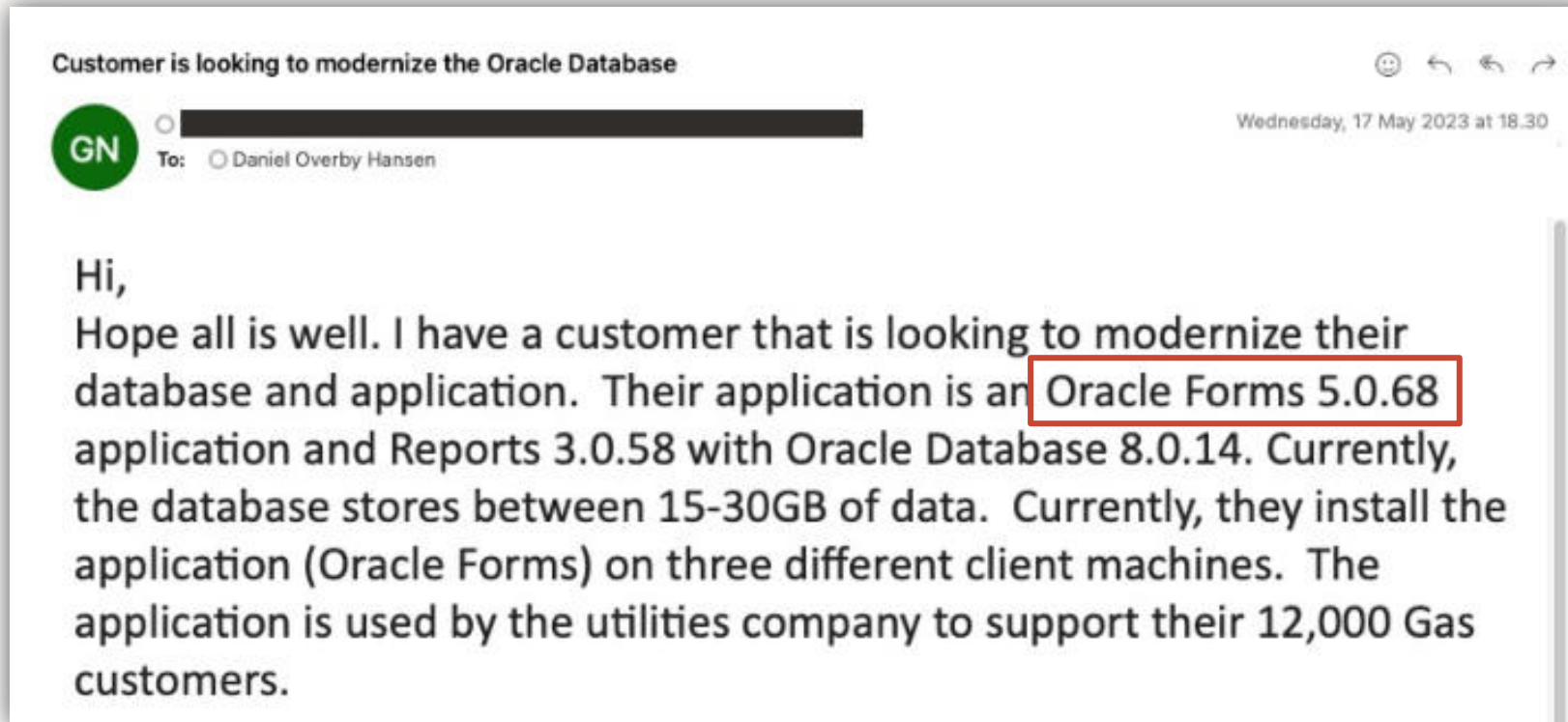
Customer had clients with Forms 5 running on Windows NT

Horror Story
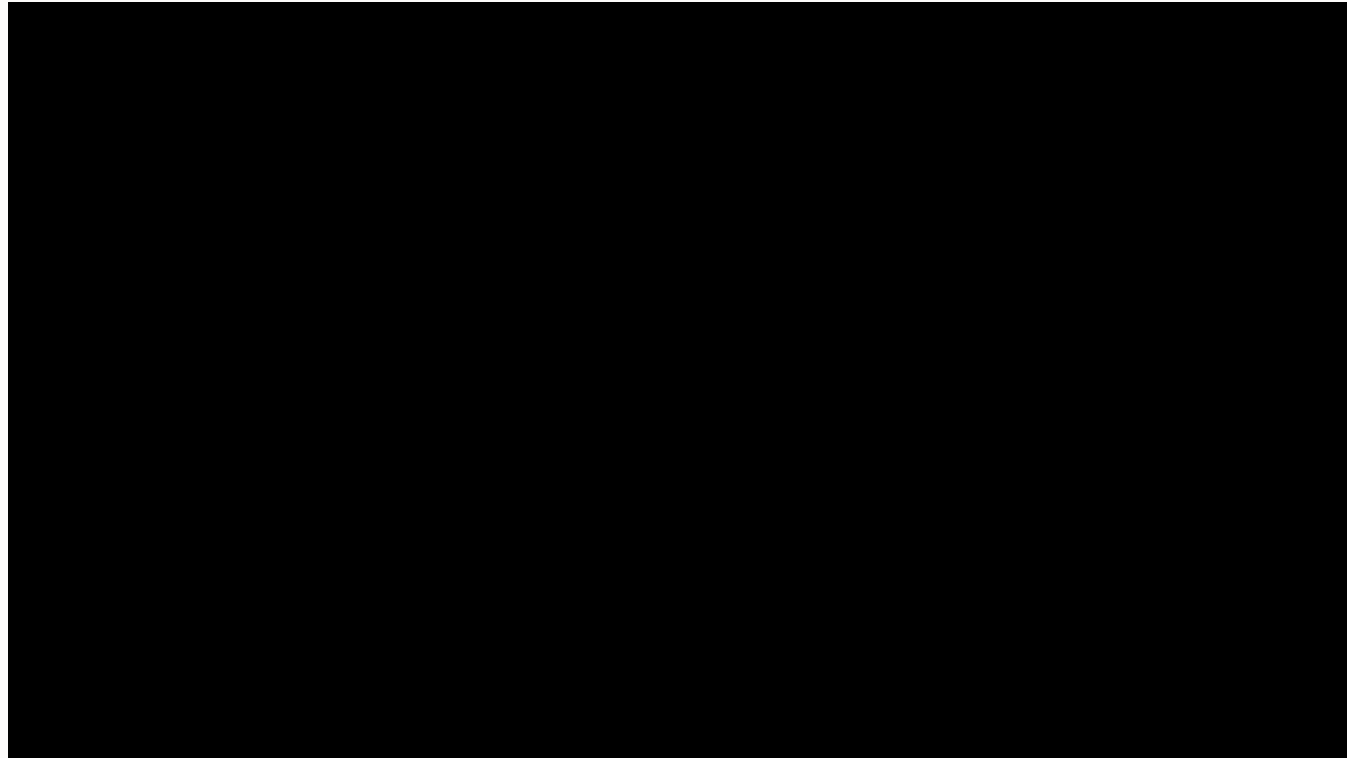
Watch on YouTube

Equifax is a 100-year-old company and they are fighting for their survival

—

Larry Ellison
Oracle OpenWorld 2017

Security

Oracle 8i went <u>out of support</u> in 2006

<u>Virtual patching</u> is nonsense

Your database is exposed to:

- Unknown amount of security issues

Security

Oracle 8i supports the following Data Integrity algorithms for SQL*Net:

- MD5
- SHA-1

Both have been considered insecure for a long time

Your database is exposed to:

- Data modification attacks
- Replay attacks

Security

Oracle 8i supports the following [Data Encryption algorithms](#) for SQL*Net:

- DES
- 3DES
- RC4

All have been considered insecure for a long time

Your database is exposed to:

- Encrypted network traffic is easily decrypted

Security

Oracle 8i has no support for encryption of data-at-rest

TDE Tablespace Encryption introduced in Oracle Database 10g Release 2

Your database is exposed to:

- Data stored in clear-text

Security

Oracle 8i hashes user passwords using DES

A webservice offers to crack any DES hash in ~26 hours

Your database is exposed to:

- Cracking user passwords

Knowledge

People don't live forever

People don't work for your company forever

No university teaches Oracle 8i anymore

Your database is exposed to:

- Irreplaceable loss of knowledge

Horror Story

19 days ago

Hi Team, We are working on this with the customer , we have the export dump , migrated to OCI VM DB, created this 19c VM DB as suggested, but when import is done using traditional import method, I am seeing the following in the import log , import client uses US7ASCII whereas the source DB and Target DB uses CL8MSWIN1251, export client also uses this - CL8MSWIN1251, Is there a way to change the import client on VM DB to CL8MSWIN1251? The reason I am asking is with this US7ASCII, I believe the Bulgarian characters are not getting stored in 7 bit format, which means some of the characters are showing as "??" , I would really appreciate any help I can get on this .

Horror Story

Hi Team, We are working on this with the customer, we have the export dump, migrated to OCI VM DB, created this 19c VM DB as suggested, but when import is done using traditional import method, I am seeing the following in the import log, import client uses US7ASCII whereas the source DB and Target DB uses CL8MSWIN1251, export client also uses this - CL8MSWIN1251, Is there a way to change the import client on VM DB to CL8MSWIN1251? The reason I am asking is with this US7ASCII, I believe the Bulgarian characters are not getting stored in 7 bit format, which means some of the characters are showing as "??", I would really appreciate any help I can get on this.

Database uses CL8MSWIN1251

Bulgarian characters
appear as ?? after migration

Horror Story

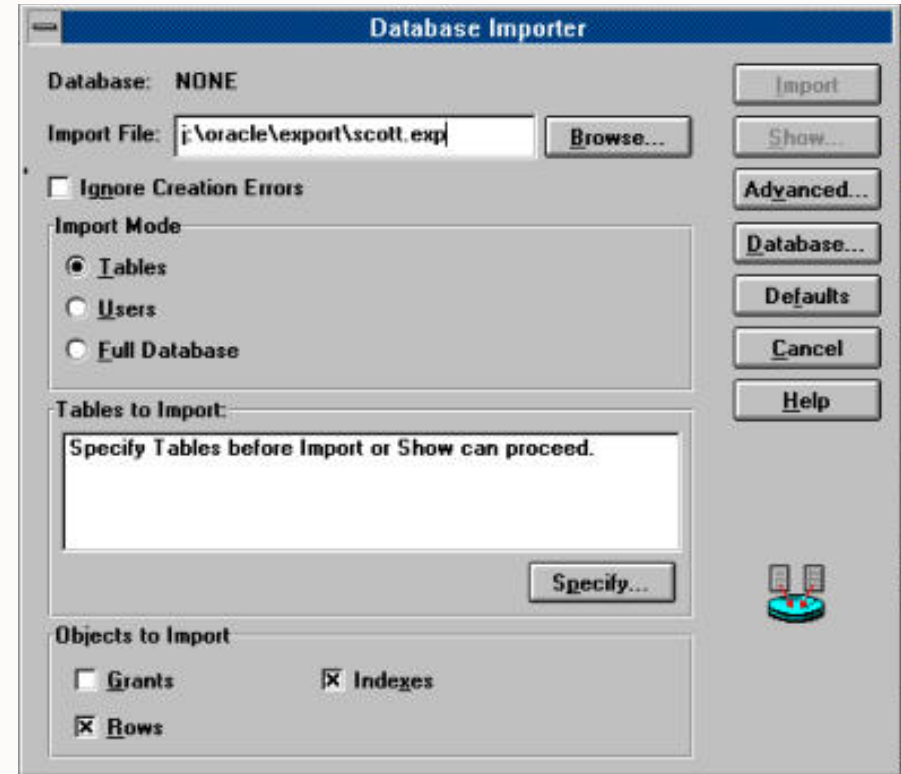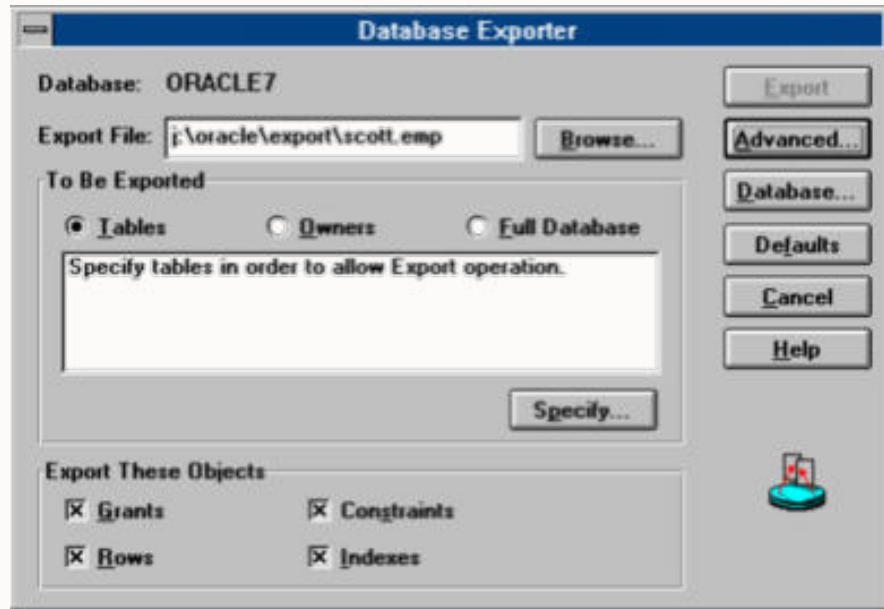Incorrect use of **exp**

Loss of all non-7-bit ASCII characters

Source: Wikipedia

Original Export and Import

Copyright © 2023, Oracle and/or its affiliates

Demo

Do we know our way around Oracle 8i?

Virtual Box image credits: Frits Hoogland

If you can afford to close your database, Oracle recommends taking closed, consistent backups of your whole database. If you cannot shut down your database, then your only option is to make an open backup.

—

Recovery Manager User's Guide and Reference
Oracle8i

```
SQL> alter tablespace ... begin backup;

SQL> select * from v$backup;

.....

SQL> alter tablespace ... end backup;
```

The Bad Solution

What you shouldn't do

"If we upgrade our old database to Oracle Database 19c,

can you make it behave as if it was still on the old version?"

Backward Compatibility

There is no magic parameter!

- `COMPATIBLE` governs the use of new functionality

- `OPTIMIZER_FEATURES_ENABLE` governs the use of new optimizer functionality, but the new code is still used

- But ... I bet there is a secret underscore parameter!

Backward Compatibility

```
[oracle@centos39-oracle817 export]$ sqlplus internal

SQL*Plus: Release 8.1.7.0.0 - Production on Sat Aug 19 17:53:07 2023

(c) Copyright 2000 Oracle Corporation.  All rights reserved.


Connected to:
Oracle8i Enterprise Edition Release 8.1.7.0.1 - Production
With the Partitioning option
JServer Release 8.1.7.0.1 - Production

SQL> select count(*) from v$parameter;

  COUNT(*)
----------
       203

SQL> select count(*) from dba_objects where owner in ('SYS','SYSTEM'
  COUNT(*)
----------
      2001

SQL>
```

```
[oracle@staging ~]$ sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Mon Aug 21 10:35:23 2023
Version 19.19.0.0.0

Copyright (c) 1982, 2022, Oracle.  All rights reserved.


Connected to:
Oracle Database 19c EE High Perf Release 19.0.0.0.0 - Production
Version 19.19.0.0.0

SQL> select count(*) from v$parameter;

  COUNT(*)
----------
       465

SQL> select count(*) from dba_objects where owner in ('SYS','SYSTEM');
  COUNT(*)
----------
     54390

SQL>
```

```
$ sqlplus appuser@db19c

SQL*Plus: Release 8.1.7.0.0 - Production on Sat Aug 19 16:04:48 2023

(c) Copyright 2000 Oracle Corporation.  All rights reserved.

ERROR:
ORA-28040 No matching authentication procotol error
ORA-03134: Connections to this server version are no longer supported
```
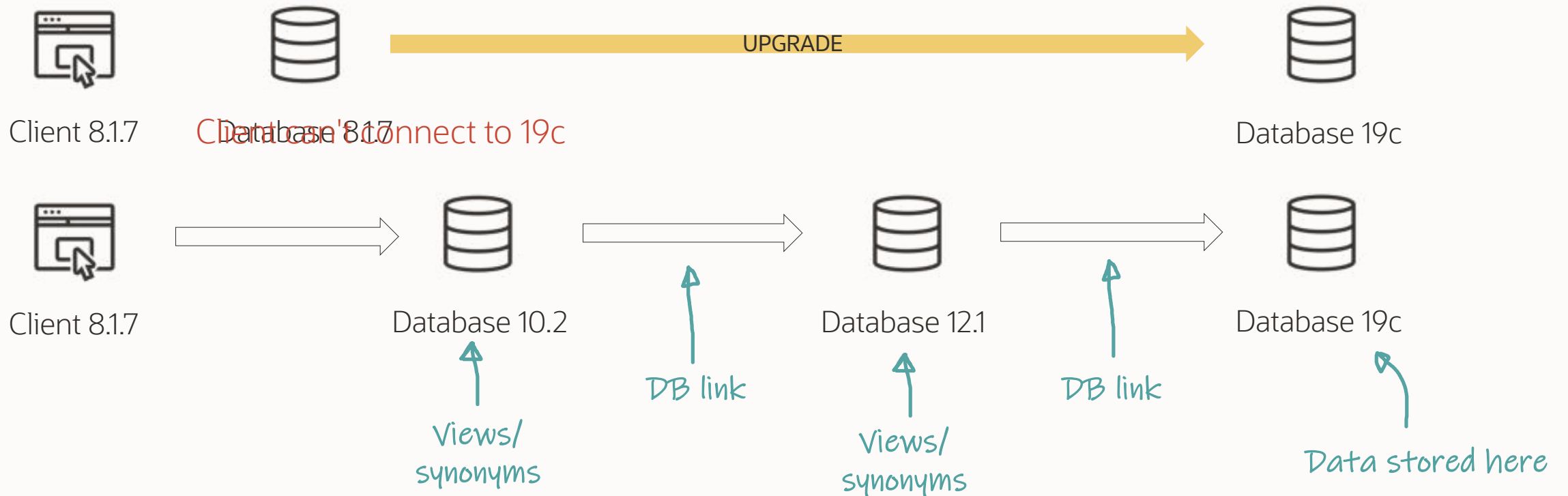
Old clients can't connect to modern databases

- Client / Server Interoperability Support Matrix for Different Oracle Versions (Doc ID 207303.1)

Client / Server Interoperability Support Matrix

Client Version	Server Version																	
	23c	21c	19c	18c	12.2.0	12.1.0	11.2.0	11.1.0	10.2.0	10.1.0	9.2.0	9.0.1	8.1.7	8.1.6	8.1.5	8.0.6	8.0.5	7.3.4
23c[11]	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
21c	Yes	Yes	Yes	Was	Was	Yes[12]	No	No	No	No	No	No	No	No	No	No	No	No
19c	Yes	Yes	Yes	Was	Was	Yes[12]	Yes[9]	No	No	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]
18c	No	Was	Was	Was	Was	Was	Was	No	No	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]
12.2.0	No	Was	Was	Was	Was	Was	Was	No	No	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]
12.1.0	No	Yes[12]	Yes[12]	Was	Was	Yes[12]	Yes[12]	Was	Was[7]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]
11.2.0	No	No	Yes[9]	Was	Was	Yes[12]	Yes[9]	Was	Was[7]	No	Was[5]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]
11.1.0	No	No	No	No	No	Was	Was	Was	Was[7]	Was[6]	Was[5]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]	No[3]
10.2.0	No	No[10]	No[10]	No[10]	No[10]	Was[7]	Was[7]	Was[7]	Was	Was	Was[5]	No	Was	No[3]	No[3]	No[3]	No[3]	No[3]
10.1.0[4]	No	No	No	No	No	No	Was[6]	Was[6]	Was	Was	Was	Was	Was[2]	No[3]	No[3]	No[3]	No[3]	No[3]
9.2.0	No	No	No	No	No	No[8]	Was[5]	Was[5]	Was[5]	Was	Was	Was	Was	No	No	Was	No	No[1]
9.0.1	No	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	No	Was	No	Was
8.1.7	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	Was	Was	Was	Was	Was
8.1.6	No	No	No	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	Was	Was
8.1.5	No	No	No	No	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	Was
8.0.6	No	No	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	Was	Was	Was
8.0.5	No	No	No	No	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	Was
7.3.4	No	No	No	No	No	No	No	No	No	No	Was	Was	Was	Was	Was	Was	Was	Was

Proxy Database

Client 8.1.7   Database 8.0   Client can connect to 19c   Database 19c

Client 8.1.7   Database 10.2   Database 12.1   Database 19c

Views/ synonyms   DB link   Views/ synonyms   DB link   Data stored here

UPGRADE

Instead of one old database,
you now have two plus a lot of complexity

Horror Story

Upgrade to 19c

Database 7   Database 8.1.7   Database 11.2

OpenVMS

SQL*Loader

(unsupported)

Horror Story

Tweaking sqlnet.ora

Database 7   Database 8.1.7   Database 19c
               Database 9.0

New client

Horror Story

Database 7   Database 8.1.7
Database 9.0   Database 11.2   Database 19c

Still unsupported
SQL*Loader
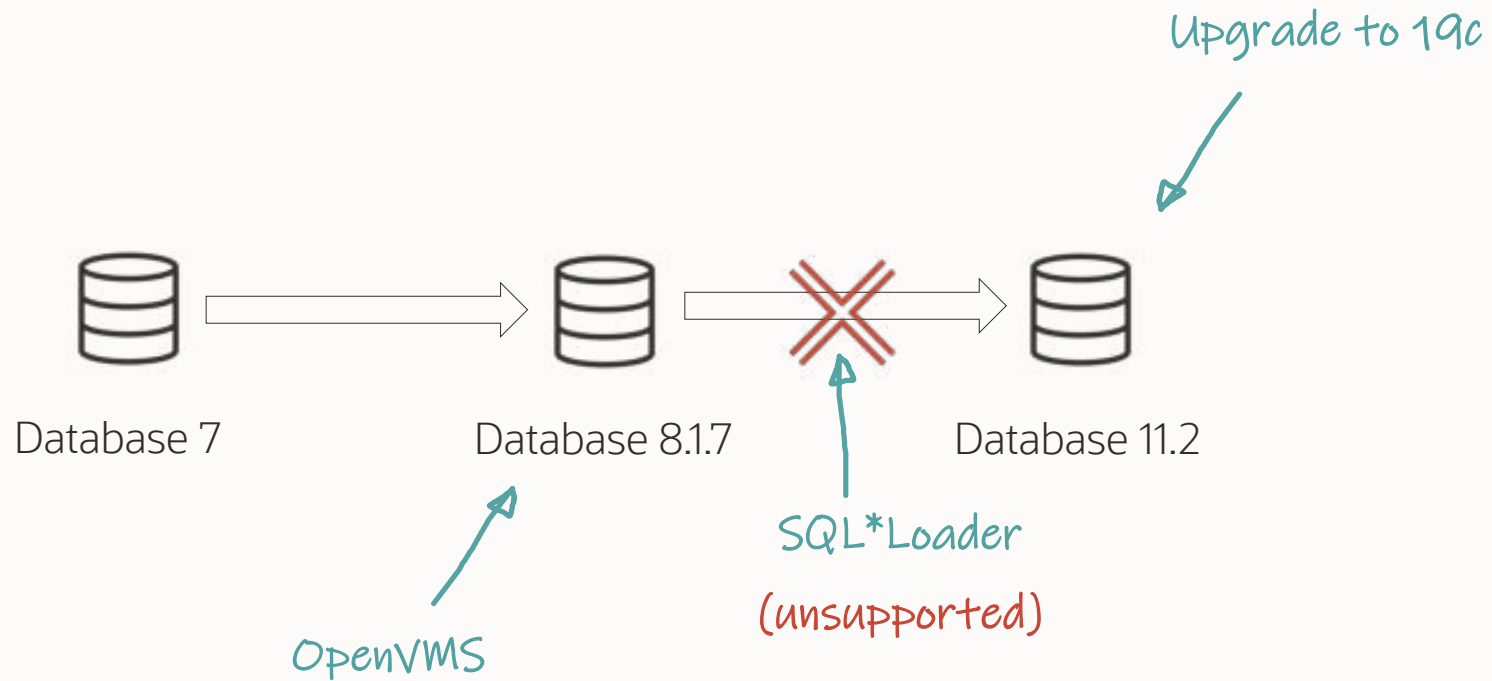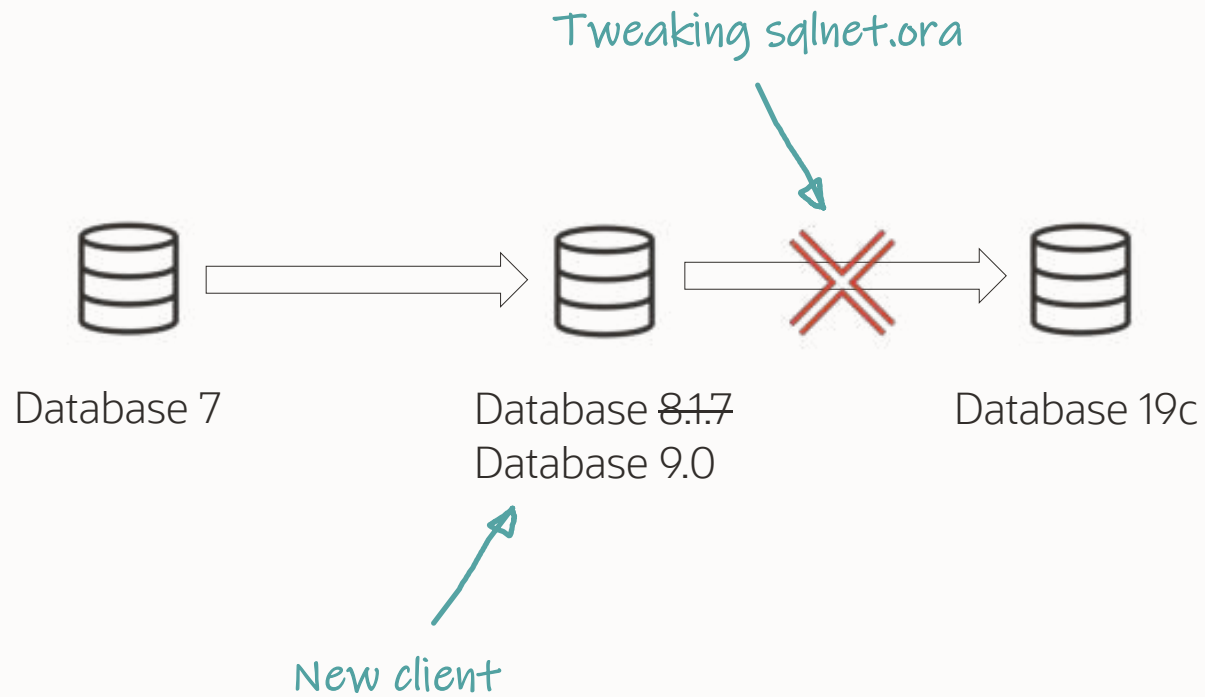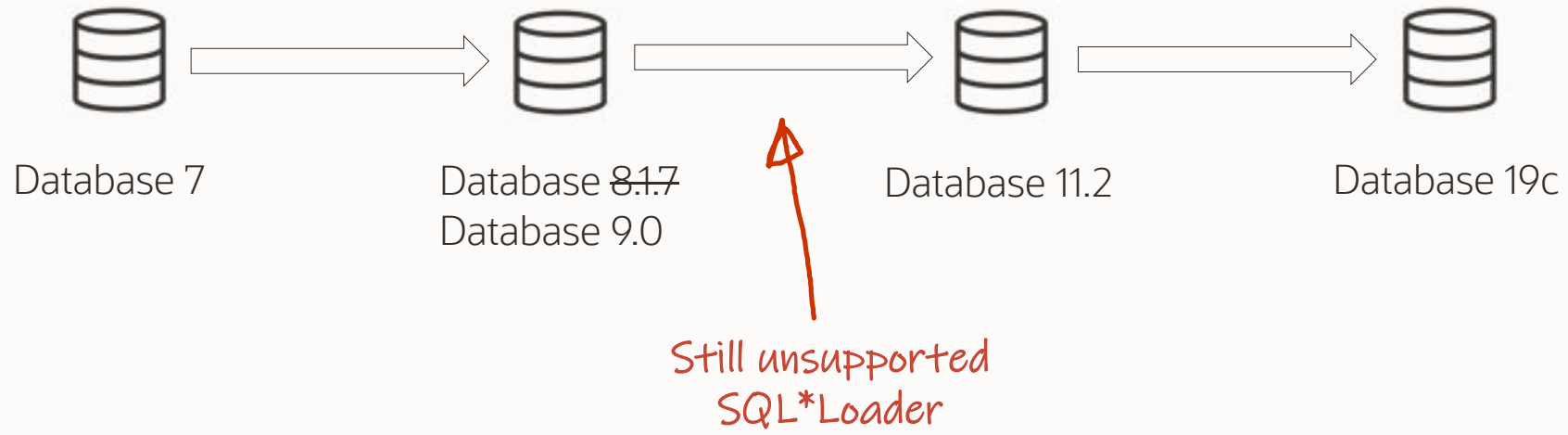
The Good Solution

What you should do

Autonomous Database is an excellent fit for your modernized database

- You will never end up with a legacy system again

Importing old database

Our preferred method

You can import a database from 1985 directly into a modern-day database

- You can use original export (`exp`) from Oracle v5
- Oracle Database 23c still supports original import (`imp`)

Data Pump introduced in Oracle Database 10g Release 2

- Original dump files not compatible with Data Pump

imp does not meet the security requirements of Autonomous Database

- Use a staging system that supports Data Pump

Demo

Migrating from Oracle Database 8*i* to Autonomous Database

- Using Base DB System as a staging area
- Converting to Unicode character set

Watch on YouTube

Virtual Box image credits: Frits Hoogland

You can transport tablespaces from Oracle 8i directly into Oracle Database 23c

- Cross-platform since 10g

Multi-hop upgrades

Alternative to export/import

Upgrading to a version where direct upgrade is not possible using several consecutive upgrades

Multi-hop Upgrades

- Upgrade as far as possible in each upgrade

- Pay attention to platform certification
  - My Oracle Support certification tab contains up-to-date information

- Pay attention to architecture changes (32-bit to 64-bit)

Horror Story

Oracle7 Server Upgrade Inquiry

MG ○ ████████████████████████

To: ○ Daniel Overby Hansen

Monday, 28 November 2022 at 21.25

Hi,

My name is █████████, and I am in ██████████████ working as an Account Manager helping small to midsize Database customers.

A customer of mine is currently licensed for Oracle7 Server V7.2, and we are looking to learn about the level of support they are entitled to while on this legacy license version (i.e., can they still update to versions 12c, 19c, 23c etc.?)

I am not sure if you are the right point of contact for this. Any documentation or guidance would be very much appreciated.

Example

Oracle 7.2
Windows NT (32-bit)

1 ⇒ **2** ⇒ **3** ⇒ **4** ⇒ **5**

Patch to 7.3

Upgrade to 9.2
Linux 4 (32-bit)

Upgrade to 11.2.0.4

Upgrade to 19c
Linux 8 (64-bit)

Upgrade to 23c
Convert to PDB

Typically, it is faster and easier
to export and import an old database

But what about my app?

- Modernizing your application
- Modernizing Oracle Forms / Reports

Autonomous Database and Oracle APEX is a perfect fit

- Build enterprise apps **20x** faster with **100x** less code
- **apex.oracle.com**

Modernizing Oracle Forms

- Oracle APEX is the clear platform of choice for easily transitioning Oracle Forms applications to modern web apps.

- The same stored procedures and PL/SQL packages work natively in APEX, making it a breeze to develop.

  - apex.oracle.com/go/forms2apex
  - apex.oracle.com/go/forms2apex-blog
  - apex.oracle.com/go/reasons-forms
  - apex.oracle.com/go/forms-faq

Looking Back

An old PFile

```
# _system_trig_enabled = false
compatible = 8.1.7.2.0
db_name = "ADSR2"
db_domain = WORLD
instance_name = ADSR2
service_names = ADSR2

pre_page_sga = true
session_cached_cursors = 40
license_max_users = 80
remote_os_authent = false


db_files = 65
recovery_parallelism = 64
# log_small_entry_max_size = 0
parallel_adaptive_multi_user = true


db_block_size = 8192
db_writer_processes = 2
db_block_checking = true
db_files = 65
db_block_buffers = 40000
db_block_lru_latches = 12
buffer_pool_keep = (buffers:5000, lru_latches:2)
# buffer_pool_recycle = (buffers: 10000, lru_latches:2)
shared_pool_size = 268435456 #= 256M
shared_pool_reserved_size = 25165824 #= 24M
log_buffer = 1048576 # = 1M
large_pool_size = 32M
# java_pool_size = 20971520
```

```
control_files = (/datadg/disk16/control01.ctl, /datadg/disk26/cotro
rollback_segments = (RBS01,RBS02,RBS03,RBS04,RBS05,RBS06,RBS07,RBS0

background_dump_dest = /opt/oracle/OraHome1/admin/ADSR2/bdump
core_dump_dest = /opt/oracle/OraHome1/admin/ADSR2/cdump
user_dump_dest = /opt/oracle/OraHome1/admin/ADSR2/udump
utl_file_dir = /opt/oracle/OraHome1/admin/ADSR2/logmnr
oracle_trace_collection_name = ""


log_checkpoints_to_alert = true
log_archive_start = true
log_archive_dest = /datadg/disk51
log_archive_duplex_dest = /datadg/disk52
log_archive_format = Arch_%S.arc
log_archive_min_succeed_dest = 1
log_checkpoint_interval = 9999999
log_checkpoint_timeout = 0
fast_start_parallel_rollback = high
# fast_start_io_target = 8000


sort_area_size = 1048576
sort_area_retained_size = 66560
sort_multiblock_read_count = 128
# sort_direct_writes = true


optimizer_mode = CHOOSE
# hash_area_size = 1048576
# hash_multiblock_io_count = 1024
# hash_join_enabled = true
audit_trail = db
```

```
# _system_trig_enabled = false                 control_files = (/datadg/disk16/control01.ctl, /datadg/disk26/cotr
compatible = 8.1.7.2.0                          rollback_segments = (RBS01,RBS02,RBS03,RBS04,RBS05,RBS06,RBS07,RBS
db_name = "ADSR2"
db_domain = WORLD                               background_dump_dest = /op
instance_name = ADSR2                           core_dump_dest = /opt/orac
service_names = ADSR2                            user_dump_dest = /opt/orac
                                                utl_file_dir = /opt/oracle/
pre_page_sga = true                             oracle_trace_collection_n
session_cached_cursors = 40
license_max_users = 80                          log_checkpoints_to_alert =
remote_os_authent = false                       log_archive_start = true
                                                log_archive_dest = /datadg/
db_files = 65                                   log_archive_duplex_dest =
recovery_parallelism = 64                       log_archive_format = Arch_
# log_small_entry_max_size = 0                   log_archive_min_succeed_de
parallel_adaptive_multi_user = true             log_checkpoint_interval =
                                                log_checkpoint_timeout = 0
db_block_size = 8192                             fast_start_parallel_rollba
db_writer_processes = 2
db_block_checking = true
db_files = 65                                   sort_area_size = 1048576
db_block_buffers = 40000                        sort_area_retained_size =
db_block_lru_latches = 12                       sort_multiblock_read_coun
buffer_pool_keep = (buffers:5000, lru_latches:2)
# buffer_pool_recycle = (buffers: 10000, lru_latches:2)
shared_pool_size = 268435456 #= 256M            optimizer_mode = CHOOSE
shared_pool_reserved_size = 25165824 #= 24M
log_buffer = 1048576 # = 1M
large_pool_size = 32M
# java_pool_size = 20971520                      audit_trail = db
```

```
# create_stored_outlines = true
# use_stored_outlines = true

db_file_multiblock_read_count = 8

open_cursors = 1000
max_enabled_roles = 30

processes = 400
parallel_max_servers = 8

timed_statistics = true
max_dump_file_size = 10240

remote_login_passwordfile = exclusive # shared
os_authent_prefix = ""

# Global Naming — enforce that a dblink has same name as the db it
global_names = false # true

job_queue_processes = 15
job_queue_interval = 10
open_links = 4
distributed_transactions = 80
query_rewrite_enabled = true
```

Looking Back

Some of the platforms
from our bug-tracking system

Blast from the Past | Platforms

Microsoft Windows Phone

Oracle JRockit Virtual Edition x86

SunOS

Monta Vista x86

Acme Packet 1100

iTron

Embedded Linux on cnMIPS

Embedded Linux SH4

HP NonStop Itanium (OSS)

QNX Unix

Acme Packet 6100

Linux MIPS 64-bit

Fujitsu BS2000/OSD (SQ series)

Mediatek MTZ

HP NonStop (Guardian) on x86

Fujitsu BS2000

HP Tru64 UNIX

Tekelec

Qualcomm Brew MP

Netra Server X5-2 for Communications

HP NonStop S-series (Guardian)

HP OpenVMS Itanium

Monta Vista x86-64

OpenSolaris

SCO Unix

Net-Net 9200

Symbian EPOC

Linux ARM 32-bit VFP HardFP ABI

SGI Irix

ia64

Linux SPARC

Oracle Solaris on SPARC (32-bit)

HP NonStop Itanium (Guardian)

RIM BlackBerry

Netra X3-2 for Acme Packet

Oracle Solaris on SPARC (64-bit)

IBM S/390 Based Linux (31-bit)

Acme Packet 3900

SPARC

Fujitsu MSP-EX

Trusted Solaris

Net-Net 4250

HP OpenVMS VAX

HP-UX PA-RISC (32-bit)

Acme Packet 6300

Microsoft Windows CE

IBM z/OS on System z

StorageTek Hardware

Oracle Solaris on x86 (32-bit)

Fujitsu BS2000/OSD (SX series)

Linux ARM 64-bit

Novell NetWare

Linux on IBM Z

Data General

Pyramid

Talari

Palm Computing

HP NonStop (OSS) on x86

Unisys OS 2200

HP OpenVMS Alpha

Acme Packet 3820

FreeBSDx86

Oracle Solaris Express

VxWorks

Microsoft Windows (32-bit)

Sequent

Windows NT

nCube

Oracle desupported the non-CDB architecture

Upgrade Now!

Don't let a non-CDB

become your next legacy system

Links

Oracle8i Server Documentation

Oracle8i Utilities

Oracle8i Migration

Character Set Migration, Database Globalization Support Guide 19c

Compatibility Matrix for Export And Import Between Different Oracle Versions [Video] (Doc ID 132904.1)

NLS considerations in Import/Export - Frequently Asked Questions (Doc ID 227332.1)

Thank You