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Best Practices for Upgrading to Oracle Database 11g Release 2

Agenda

- Best Practices
- FAQ
- Summary

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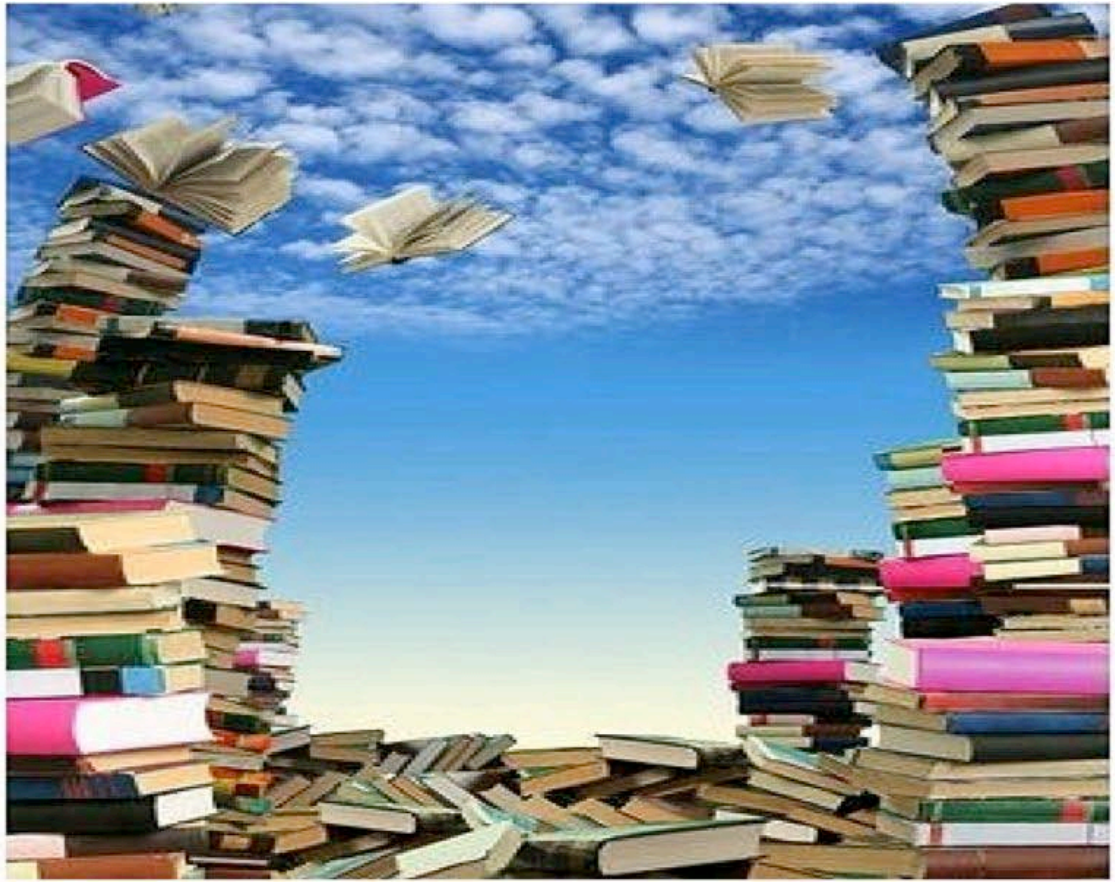
- Best Practices
- FAQ
- Summary

Best Practice #1

- Read the FRIENDLY manuals!



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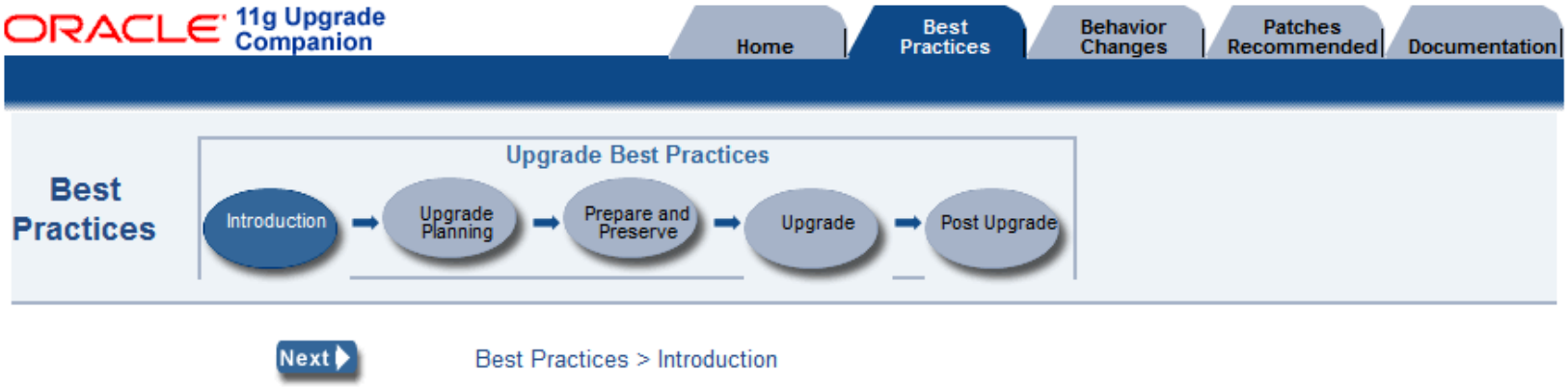
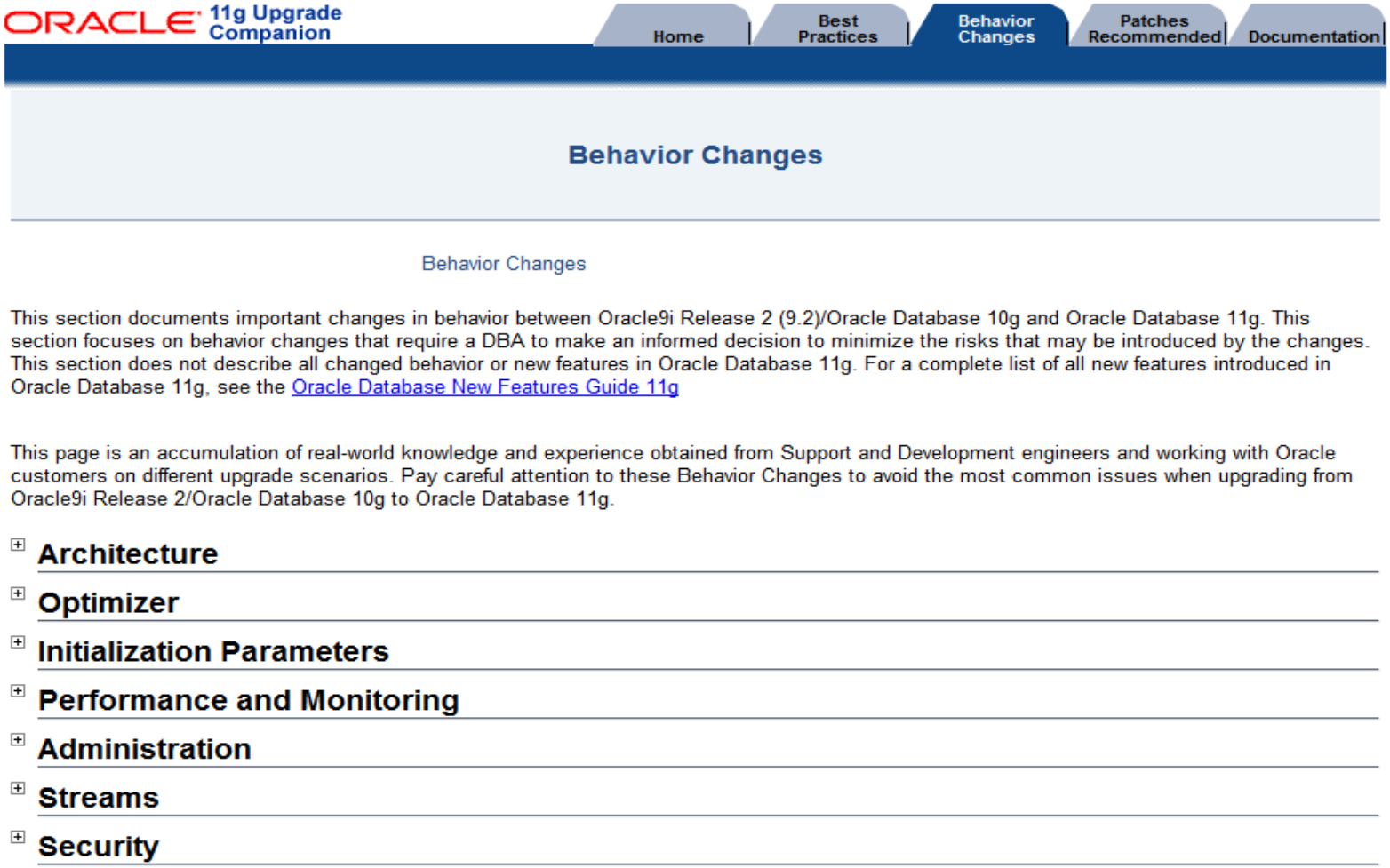
Documentation

- Note:785351.1 Upgrade Companion 11g Release 2



Documentation

- Note:785351.1 Upgrade Companion 11g Release 2



Documentation

- Upgrade Guides
  - **Oracle® Database**
    Upgrade Guide
    11*g* Release 2 (11.2)
    E10819-02

    `http://download.oracle.com/docs/cd/E11882_01/server.112/e10819/toc.htm`

  - Note:837570.1
    Complete Checklist for Manual Upgrades to 11*g* Release 2
  - Note: 421191.1
    Complete checklist for manual upgrades from X to Y

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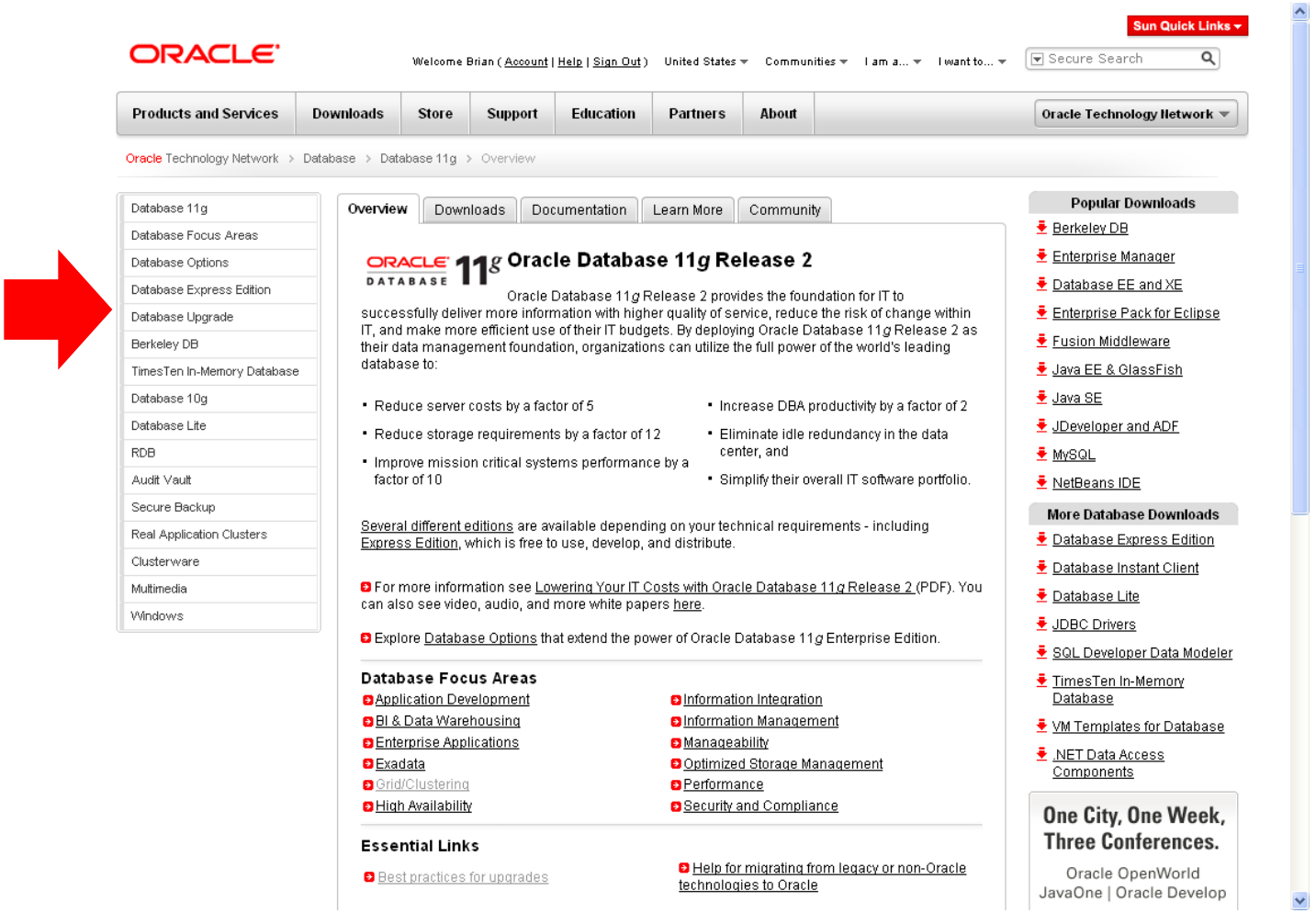
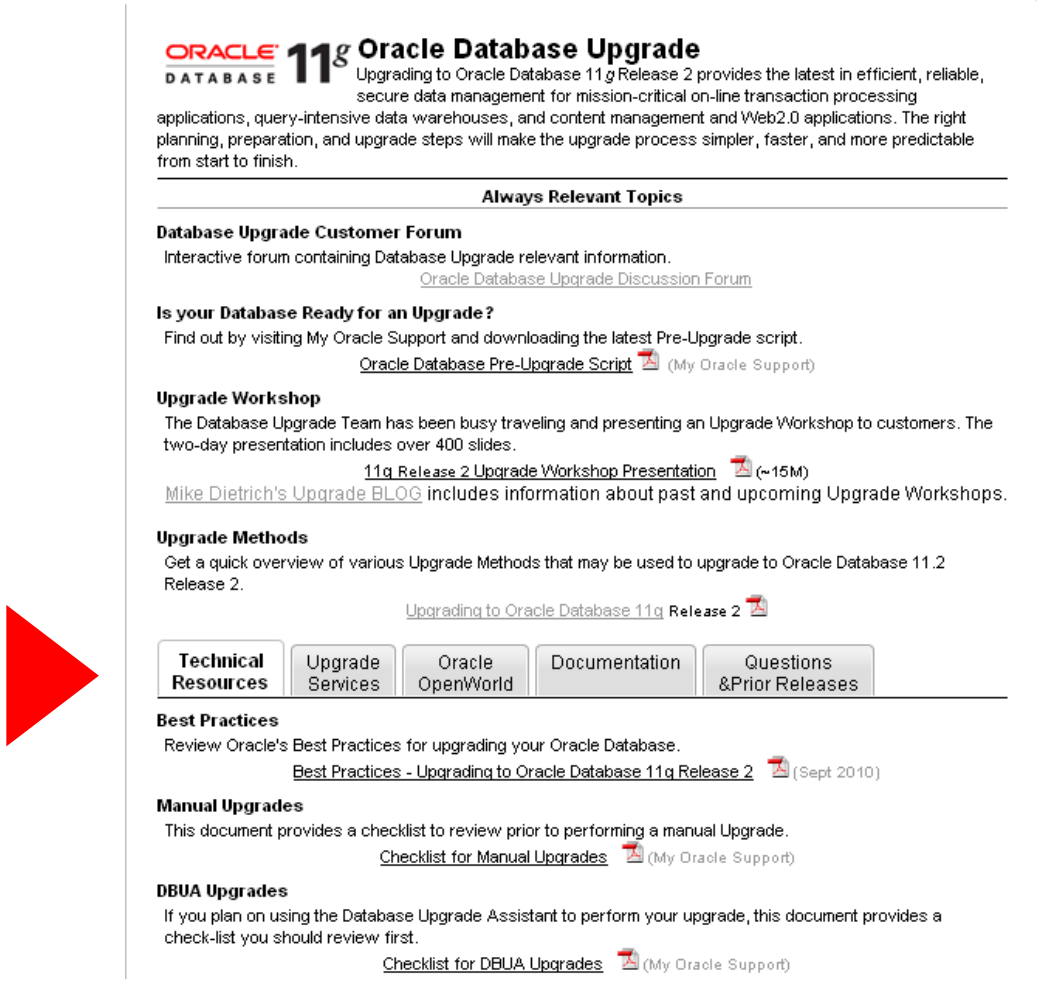
OTN Upgrade Page

- http://www.oracle.com/technetwork/database/enterprise-edition/overview/index.html



OTN Upgrade Page

- http://www.oracle.com/technetwork/database/upgrade/index.html



ORACLE DATABASE 11g **Oracle Database Upgrade**

Upgrading to Oracle Database 11*g* Release 2 provides the latest in efficient, reliable, secure data management for mission-critical on-line transaction processing applications, query-intensive data warehouses, and content management and Web2.0 applications. The right planning, preparation, and upgrade steps will make the upgrade process simpler, faster, and more predictable from start to finish.

Always Relevant Topics

Database Upgrade Customer Forum

Interactive forum containing Database Upgrade relevant information.

Oracle Database Upgrade Discussion Forum

Is your Database Ready for an Upgrade?

Find out by visiting My Oracle Support and downloading the latest Pre-Upgrade script.

Oracle Database Pre-Upgrade Script (My Oracle Support)

Upgrade Workshop

The Database Upgrade Team has been busy traveling and presenting an Upgrade Workshop to customers. The two-day presentation includes over 400 slides.

11g Release 2 Upgrade Workshop Presentation (~15M)

Mike Dietrich's Upgrade BLOG includes information about past and upcoming Upgrade Workshops.

Upgrade Methods

Get a quick overview of various Upgrade Methods that may be used to upgrade to Oracle Database 11.2 Release 2.

Upgrading to Oracle Database 11g Release 2

Technical Resources | Upgrade Services | Oracle OpenWorld | Documentation | Questions &Prior Releases

Best Practices

Review Oracle's Best Practices for upgrading your Oracle Database.

Best Practices - Upgrading to Oracle Database 11g Release 2 (Sept 2010)

Manual Upgrades

This document provides a checklist to review prior to performing a manual Upgrade.

Checklist for Manual Upgrades (My Oracle Support)

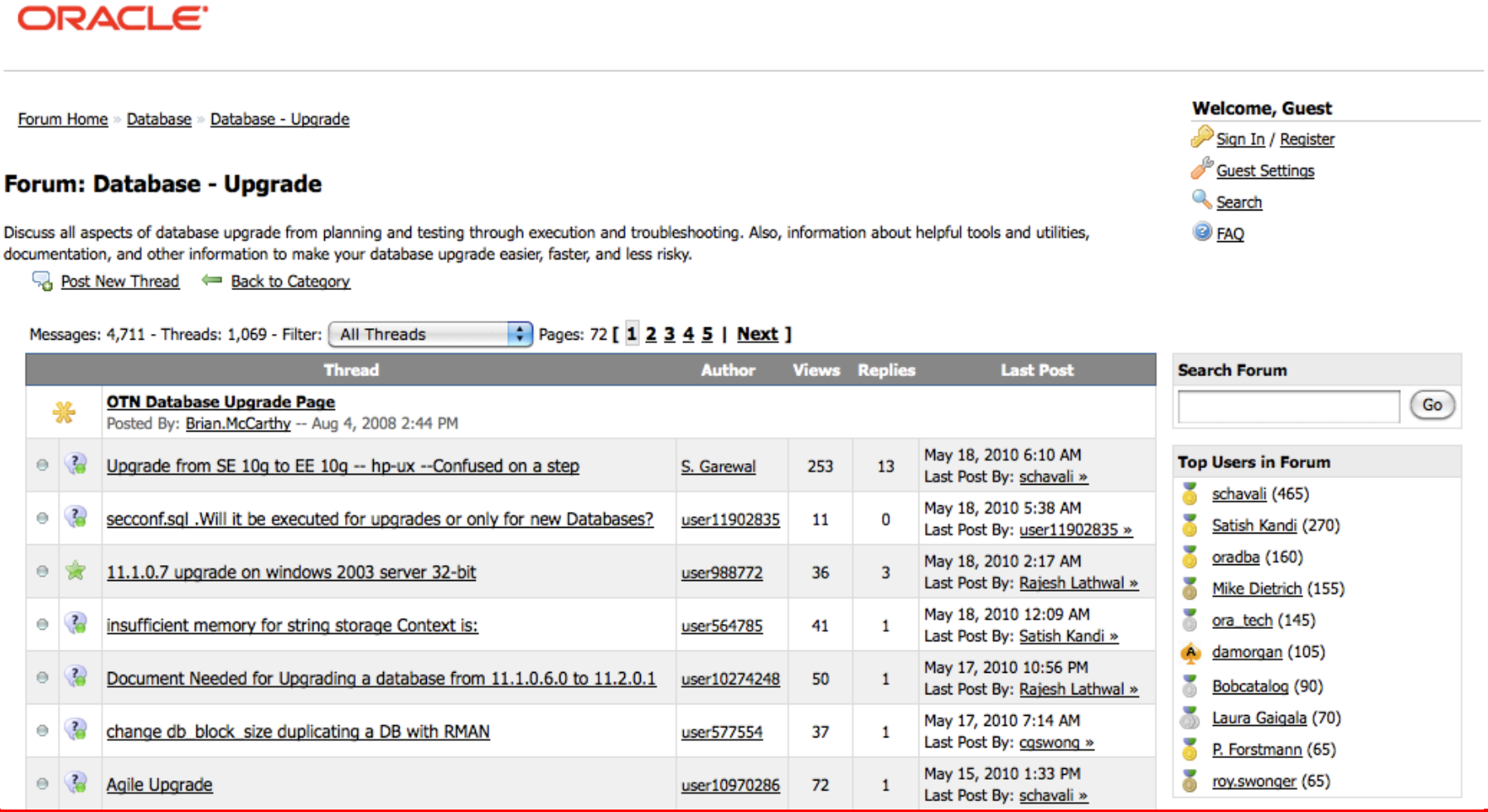
DBUA Upgrades

If you plan on using the Database Upgrade Assistant to perform your upgrade, this document provides a check-list you should review first.

Checklist for DBUA Upgrades (My Oracle Support)

OTN Upgrade Forum

- http://forums.oracle.com/forums/forum.jspa?forumID=583&start=0



Forum Home » Database » Database - Upgrade

Forum: Database - Upgrade

Discuss all aspects of database upgrade from planning and testing through execution and troubleshooting. Also, information about helpful tools and utilities, documentation, and other information to make your database upgrade easier, faster, and less risky.

Post New Thread Back to Category

Messages: 4,711 - Threads: 1,069 - Filter: All Threads Pages: 72 [1 2 3 4 5 | Next]

Thread	Author	Views	Replies	Last Post
OTN Database Upgrade Page Posted By: Brian.McCarthy -- Aug 4, 2008 2:44 PM				
Upgrade from SE 10g to EE 10g -- hp-ux --Confused on a step	S. Garewal	253	13	May 18, 2010 6:10 AM Last Post By: schavali »
secconf.sql .Will it be executed for upgrades or only for new Databases?	user11902835	11	0	May 18, 2010 5:38 AM Last Post By: user11902835 »
11.1.0.7 upgrade on windows 2003 server 32-bit	user988772	36	3	May 18, 2010 2:17 AM Last Post By: Rajesh Lathwal »
insufficient memory for string storage Context is:	user564785	41	1	May 18, 2010 12:09 AM Last Post By: Satish Kandi »
Document Needed for Upgrading a database from 11.1.0.6.0 to 11.2.0.1	user10274248	50	1	May 17, 2010 10:56 PM Last Post By: Rajesh Lathwal »
change db_block_size duplicating a DB with RMAN	user577554	37	1	May 17, 2010 7:14 AM Last Post By: cgswong »
Agile Upgrade	user10970086	72	1	May 15, 2010 1:33 PM Last Post By: schavali »

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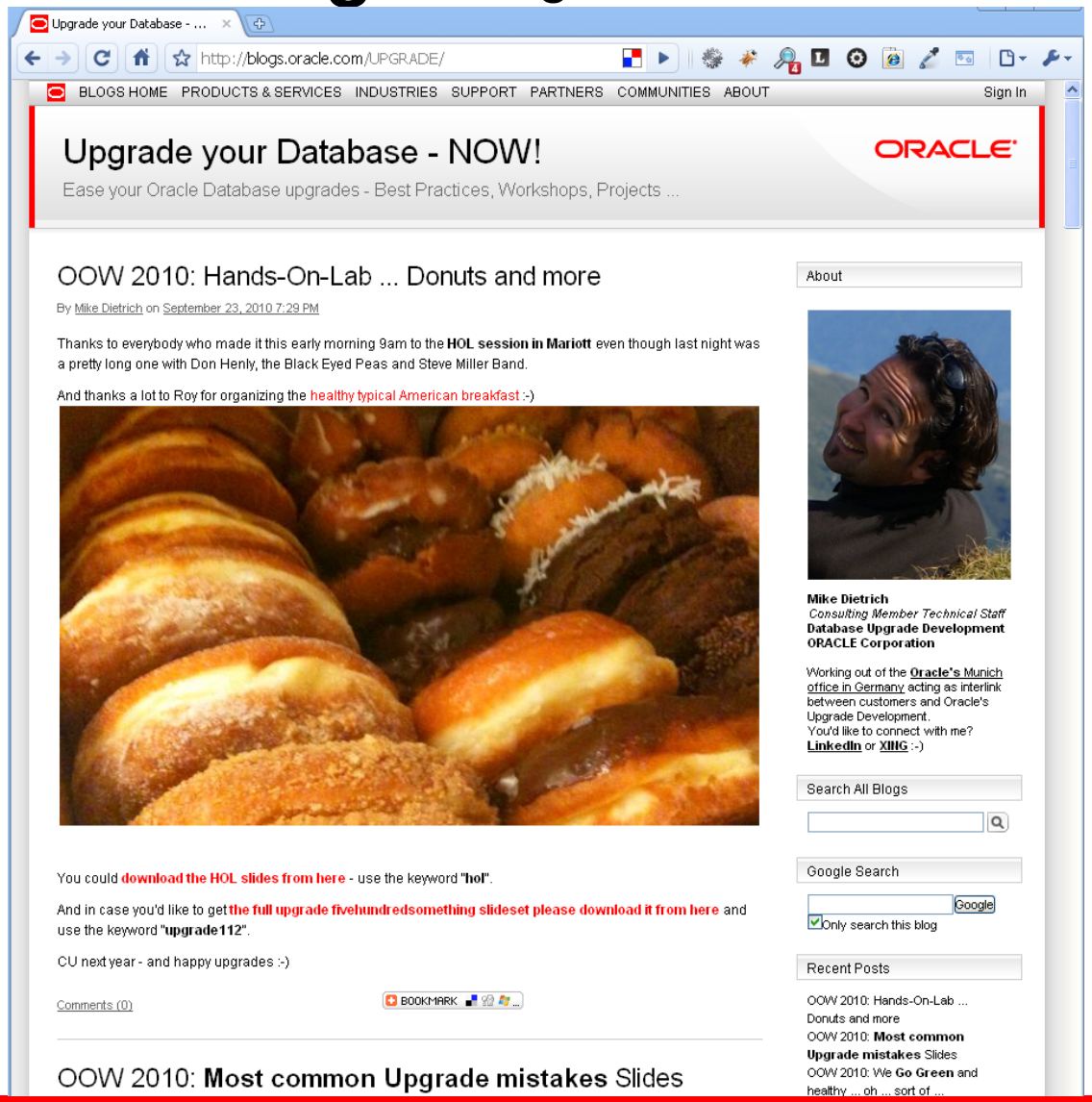
schavali (465)
Satish Kandi (270)
oradba (160)
Mike Dietrich (155)
ora_tech (145)
damorgan (105)
Bobcatalog (90)
Laura Gaigala (70)
P. Forstmann (65)
roy.swonger (65)

Upgrade Blog: blogs.oracle.com/UPGRADE



Best Practice #2

- Patch your new $ORACLE_HOME before you upgrade

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Recommended Patches

Oracle Recommended Patches -- Oracle Database (Doc ID 756671.1)

Modified 14-APR-2010 *Type* ANNOUNCEMENT

Oracle Recommended Patches -- Oracle Database

- Target Configurations
- Patch Availability
- Current Recommended Patches
  - 11.2.0.1 Current Recommended Patches
  - 11.1.0.7 Current Recommended Patches
  - 11.1.0.6 Current Recommended Patches
  - 10.2.0.4 Current Recommended Patches
  - 10.2.0.3 Current Recommended Patches
- Conflict Resolution
- On Request
- Known Issues
- References

Beginning with release 10.2.0.3, Oracle releases Recommended Patches for Oracle Database. For an introduction to Recommended Patches, see Note:756388.1.

Patch Set Update (PSU) Installation

- Install PSUs as well
  - Note:854428.1: Introduction to Database Patch Set Updates
  - Database PSUs include:
    - Fixes for critical issues that may affect a large number of customers and that are already proven in the field
    - Critical Patch Update (CPU) fixes
  - Database PSUs do not include:
    - Changes that require re-certification
    - Fixes that require configuration changes
  - Typically 50-100 new bug fixes - cumulative
  - Guaranteed to be RAC rolling installable
  - Will be released 4x per year such as CPUs on the same schedule
    - Platforms:
      Solaris SPARC64, Linux x86 and x86-64, HP-UX PA-RISC, HP Itanium, IBM AIX

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Important Alerts?

- Note 161818.1

Oracle Server Releases Status Summary

Release (Click to see Details)	Current Patch Set	Next Patch Set	Premier Support Ends	Extended Support Ends	Notes
11.2.0.X	11.2.0.1	11.2.0.2	-	-	Base release is 11.2.0.1
11.1.0.X	11.1.0.7	None	Aug-2012	Aug-2015	Base release is 11.1.0.6
10.2.0.X	10.2.0.4	10.2.0.5	Jul-2010	Jul-2013 First year of Extended Support to be free of charge.	
10.1.0.X	10.1.0.5	None	Jan-2009	Jan-2012	10.1.0.5 is the terminal 10.1 Patch Set. 10.1 is now in Extended Support - see <<Note:761713.1>>
9.2.0.X	9.2.0.8	None	Jul-2007	Jul-2010 First year Extended Support was free for 9.2	9.2.0.8 is terminal 9.2 Patch Set. The Free Extended Support period ended on 31-Jul-2008. See <<Note:392222.1>>

Key to coloring of above table:

Premier Support
Extended Support

Upgrade Information / Alerts

- Note:880782.1 Support Status and Alerts for Oracle 11g Release 2 (11.1.0.X)

Patch Sets

This section gives a summary of the patch sets available for Oracle 11g Release 2.
Note that the BASE release of Oracle 11g Release 2 is 11.2.0.1 .

Release	Comments
11.2.0.1	Oracle 11g Release 2 Base Release.
	Availability and Known issues for 11.2.0.1 **Note:880707.1**

Upgrade Information / Alerts

- Note 880707.1 Known Issues specific to the 11.2.0.1 Base Release

11.2 Alerts / Issues

This section lists alerts and important issues relevant to 11.2 .

General Alerts / Issues

Note:1066229.1*	OERI[25027]/OERI[4097]/OERI[4000] in plugged datafile after CREATE CONTROLFILE in 11g
Note 1078406.1*	Corrupt blocks in 11.2 in table with unique key. OERI[kdBlkCheckError] by block check

Latest Critical Patch Update

For information about Critical Patch Updates see the Oracle Technology Network page here:
Critical Patch Updates and Security Alerts

Document	Summary
Note:467881.1	Critical Patch Update Advisory (Apr 2010)
Note:1060989.1	Critical Patch Update for Database Products (Apr 2010)

Current Recommended Patches

For information about Recommended Patches for the RDBMS see Note:756671.1 .

Patch Set Updates

Document	Description	Rolling RAC	Patch Download
Note:9352237.8	11.2.0.1.1 Patch Set Update	Yes	Patch:9352237

Upgrade Information / Alerts

- Note 880707.1 Known Issues specific to the 11.2.0.1 Base Release

Notable fixes included in 11.2

This section lists fixes / enhancements in 11.2 which may cause a notable change in behaviour.

Issues introduced in 11.2

This section lists bugs **introduced** in 11.2 (if any). As this is a base release only notable regressions in behaviour are listed.

Note 1078406.1*	Corrupt blocks in 11.2 in table with unique key. OERI[kdBlkCheckError] by block check
9382101	Unnecessary trigger traces "Dumping Sorted Master Trigger List"
9217629	Dump / wrong results with fix for bug 6467270 and encryption
9052506	Null-Aware Anti Join (NAAJ) is not used on DML

11.2.0.1 Availability

The following 11.2.0.1 Base Releases are currently available:

HPUX Itanium 64bit

11.2.0.1 » Available

IBM AIX 5L Based Systems (64 bit)

Recommended OS patches

- Note169706.1 OS Installation and Configuration

Oracle Database on Unix AIX,HP-UX,Linux,Mac OS X,Solaris,Tru64 Unix Operating Systems Installation and C

Jump to:
AIX
HP-UX (PA-RISC and Itanium)
Linux x86
Linux x86-64
Linux Itanium
Linux on Power
Linux on zSeries
Mac OS X (PowerPC and x86-64)
Solaris (SPARC and x86-64)
Tru64
Pre-Installation Scripts
OPatch
Related Documents
OS Specific Commands
Change History
Note 43208.1 Certified Compilers
Note 223718.1 Oracle Server Availability and Certification MATRIX
@Linux Project Group - Browse The Contents of Linux Brands ISOs

PURPOSE

This bulletin is produced to provide a central source for all the primary installation settings for the various mainstream unix platforms, e.g. IBM AIX, HP-UX, Sun Solaris, T

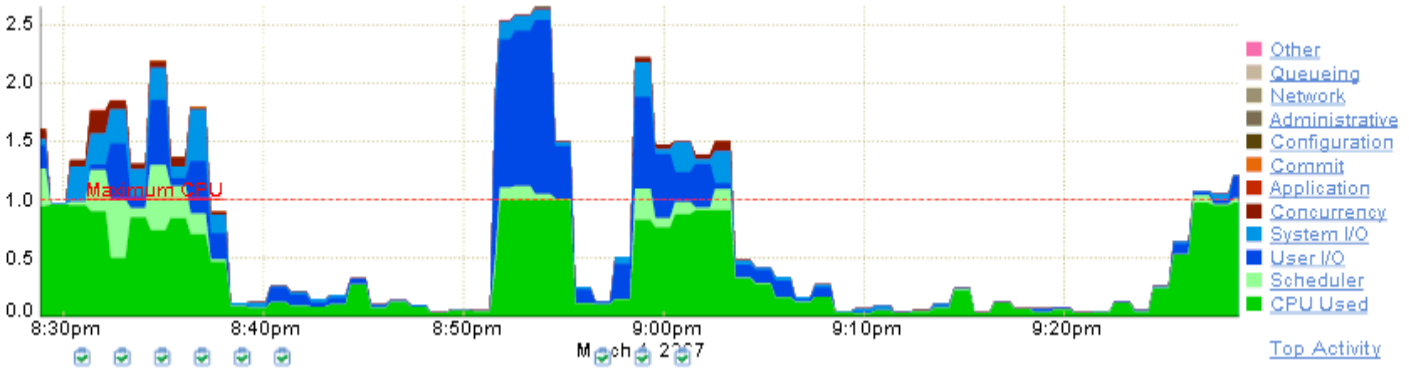
Careful comparison of the Installation Guide and the applicable release note for an OS/Oracle version has been done to ensure that this bulletin provides the most comple

Keeping the OS kernel current helps stabilize the system. Production systems should never run an out dated OS kernel version. As a best practice, Oracle recommends

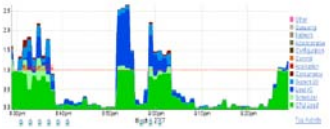
NOTE: Pre-compilers requirements are no longer addressed in this note, for a single source note
that addresses Pre-compiler/Compiler requirements, please refer to:
Note 43208.1 Certified Compilers

Best Practice #3

- Preserve performance statistics



Performance Statistics



- Preserve performance statistics
  - Get accurate performance statistics
    - Comparison: before ↔ after
    - Time specific queries and batches
  - Test upgrade of the database
    - Functional tests
    - Performance tests with real life loads!!!
      - Real Application Testing
        - SQL Performance Analyzer
        - Database Replay

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Performance Statistics

- Collecting sufficient performance data prior to the upgrade is of vital importance
  - Sufficient means: Starting at least 4 weeks before the upgrade
  - Gather accurate performance statistics
  - In Oracle 8*i*/9*i*:
    - Use STATSPACK
      - Export the PERFSTAT user right before the upgrade
      - Note:466350.1 STATSPACK before/after upgrade
  - In Oracle 10*g*/11*g*:
    - Use AWR
      - Snapshots every 30-60 minutes – retention: >30 days
      - Export the AWR with `DBMS_SWRF_INTERNAL.AWR_EXTRACT`
      - Use ADR DIFF reports to compare before & after upgrade performance: `DBMS_WORKLOAD_REPOSITORY.AWR_DIFF_REPORT_HTML`

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Best Practice #4

- Pre-upgrade Sanity operations

Invalid Objects

- Always check for INVALID objects:

```
SQL> SELECT UNIQUE object_name, object_type, owner
     FROM dba_objects WHERE status='INVALID';
```

- There should be no invalid objects in SYS and SYSTEM user schema
  - Recompile invalid objects with **utlrp.sql**
  - Compare invalid objects from before and after the upgrade
    - Beginning with 11.1.0.7 the comparison has been automated
    - Find invalid objects in `registry$sys_inv_objs` and `registry$nonsys_inv_objs`
    - Compare before-after: **utluiobj.sql**
    - The view `dba_invalid_objs` contains a list of invalid objects after the upgrade

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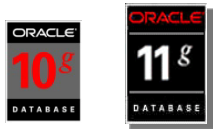
Recycle bin



- If upgrading from 10*g* or 11*g*, purge the recycle bin before the upgrade.

```
SQL> purge DBA_RECYCLEBIN;
```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Best Practice #5

- Always run the pre-upgrade script:
  - Upgrade to Oracle Database 11.2 : **`utlu112i.sql`**

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Pre-Upgrade Check

- Run `utlu112i.sql` in your current environment

```
Oracle Database 11.2 Pre-Upgrade Information Tool    09-21-2009 22:33:20

**********************************************************************
Database:
**********************************************************************
--> name:          ORCL
--> version:       10.2.0.3.0
--> compatible:    10.2.0.3.0
--> blocksize:     8192
--> platform:      Linux IA (32-bit)
--> timezone file: V4

[..]

**********************************************************************
Update Parameters: [Update Oracle Database 11.2 init.ora or spfile]
**********************************************************************
WARNING: --> "java_pool_size" needs to be increased to at least 64 MB

[..]

**********************************************************************
Miscellaneous Warnings
**********************************************************************
WARNING: --> Database is using a timezone file older than version 11.
.... After the release migration, it is recommended that DBMS_DST package
.... be used to upgrade the 10.2.0.3.0 database timezone version
.... to the latest version which comes with the new release.
```

Pre-Upgrade Check

- Get the latest version of utlu1*nm*i.sql
  - Download it
  - Note:884522.1

Coming From Version	Upgrade Target Version
9.2.0 (9.2.0.8 and beyond), 10.1.0, 10.2.0, 11.1.0	11gR2 - utlu112i.sql
9.2.0 (9.2.0.4 and beyond), 10.1.0,10.2.0	11gR1- utlu111i.sql
8.1.7, 9.0.1, 9.2.0 (9.2.0.4 and beyond), 10.1.0	10gR2 - utlu102i.sql

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Best Practice #6

- Remove "old" parameters, underscores and events from your init.ora/spfile
  - Examples:

```
init.ora:
<...>
_always_semi_join=off
_unnest_subquery=false
<...>
optimizer_features_enable=9.0.1
<...>
event = "10061 trace name context forever, level 10"
<...>
```

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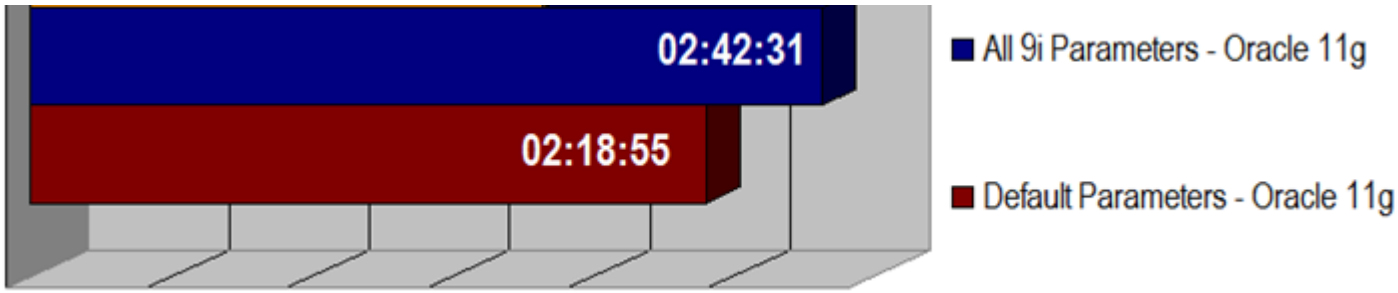
Remove Old Parameters

- Example: customer workload



- Conclusion:
  - It is recommended to remove relics from previous releases and start with the 11g defaults

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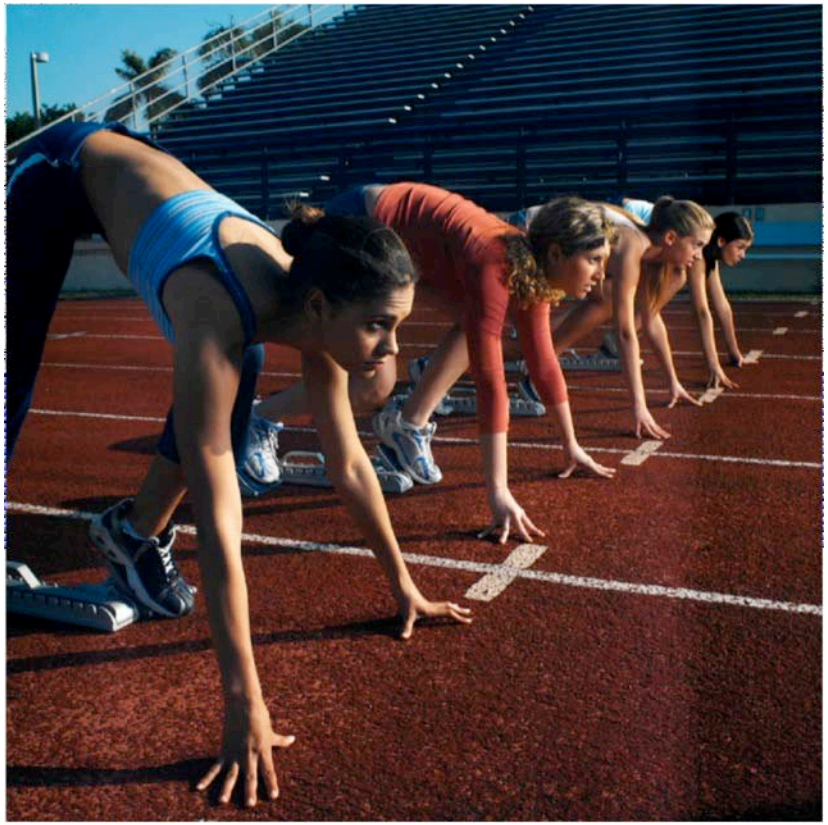
Best Practice #7

- Leave COMPATIBLE at the original value for a week before changing to 11.2.



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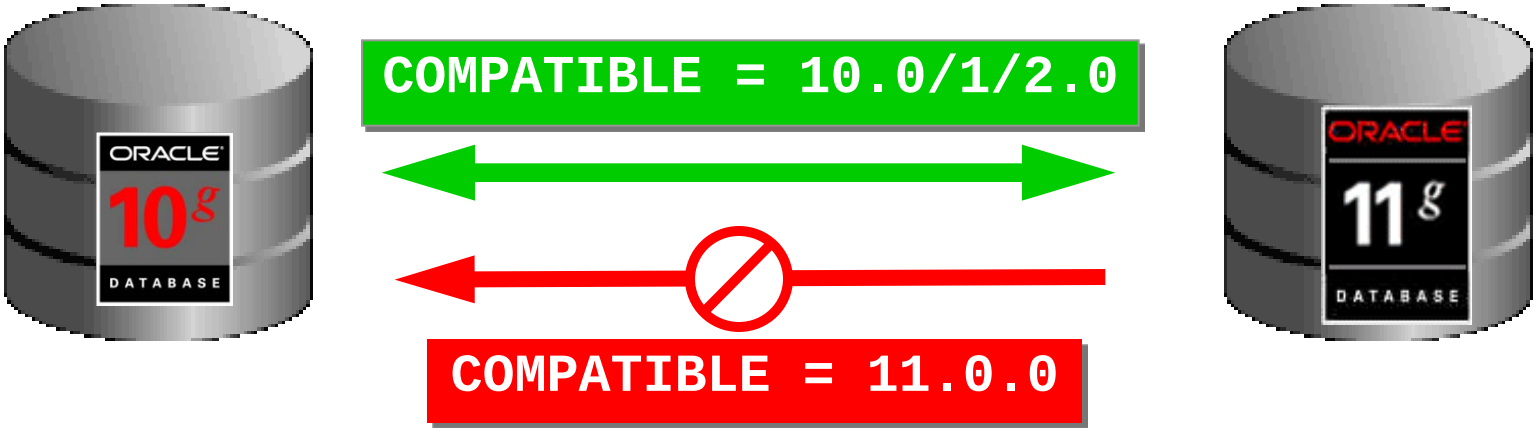
Parameter COMPATIBLE

- COMPATIBLE has to be at least 10.1.0 for an 11*g* database
- No way back once ≥11.1.0 has been enabled
  - Supported release downgrade to 10.1.0.5, ≥10.2.0.2, ≥11.1.0.6
  - No **`ALTER DATABASE RESET COMPATIBILITY`** command anymore



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Parameter COMPATIBLE

- DBUA raises `COMPATIBLE` only for 9*i* databases
- To enable new features after the upgrade:
  - 11.1:

```
SQL> alter system
set compatible='11.1.0' scope=spfile;
```

  - 11.*2*:

```
SQL> alter system
set compatible='11.2.0' scope=spfile;
```

  - Afterwards: restart the database
    - New features will be enabled
    - Datafile headers will be adjusted
    - Redologfiles will be adjusted during first access

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Best Practice #8

- Test your fallback strategy!

Fallback Strategy

- In any case: Take a backup!!!
- Then decide:
  - If anything unforeseen happens and you'll have to step back, will you be allowed to lose data?
    (i.e. changes done to the data in the system after the upgrade):
    YES or NO?
    - If YES: restore a backup, flashback (since 10*g*)
    - If NO: export/import, downgrade

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Fallback Strategy: catdwgrd.sql

- Downgrade with `catdwgrd.sql`
  - Note:443890.1
    - Downgrade to the release you've upgraded from
      - 10.1.0.5
      - 10.2.0.2/3/4
      - 11.1.0.6/7
    - Only possible **if COMPATIBLE hasn't been raised**!!!
      - Please note:
        A downgrade will only be possible to the release you've upgraded from - so if a patch set has been applied always apply it before the upgrade starts - otherwise you'll only be able to downgrade to the release you've patched

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Fallback Strategy: catdwgrd.sql

- Downgrade with **catdwgrd.sql** to 10g
  - Task in 11g environment:

```
SQL> SPOOL /tmp/downgrade.log
SQL> STARTUP DOWNGRADE
SQL> @catdwgrd.sql
SQL> SPOOL OFF
```

  - Switch to your pre-upgrade 10*g* environment:

```
SQL> STARTUP UPGRADE
SQL> SPOOL /tmp/reload.log
SQL> @catrelod.sql
-- The catrelod.sql script reloads the appropriate version of
-- all of the database components in the downgraded database.
SQL> SPOOL OFF
```

    - Please note: additional steps are required if EM repository resides in the database - please see chapter 6 ***Downgrading a Database*** in the Oracle 11g Upgrade Guide

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Best Practice #9

- After the upgrade ...

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Post Upgrade

- Create system statistics during a regular workload period - otherwise non-appropriate values for the CBO will be used:

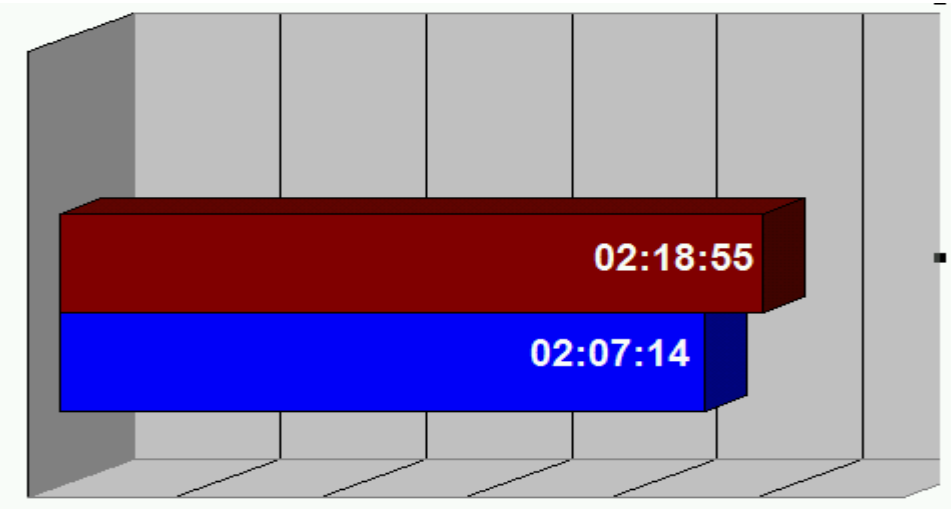
```
SQL> exec DBMS_STATS.GATHER_SYSTEM_STATS('start');
... – gather statistics while running a typical workload
SQL> exec DBMS_STATS.GATHER_SYSTEM_STATS('stop');
```

```
SQL> select pname NAME, pval1 VALUE, pval2 INFO
     from aux_stats$;

NAME                      VALUE INFO
------------------ ---------- ----------------------------
STATUS                          COMPLETED
DSTART                          04-03-2009 12:30
DSTOP                           05-03-2009 12:30
FLAGS                        1
CPUSPEEDNW            1392.39
IOSEEKTIM                8.405
IOTFRSPEED          255945.605
...
```

Post Upgrade

- Example: customer OLTP workload
  - Runtime without system statistics: 2:19h
  - Runtime with system statistics: 2:07h
    - => 9% faster



Post Upgrade

- Create fixed table statistics
  - Directly after `catupgrd.sql` has been completed
    - This will speed up processing for recompilation with `utlrp.sql`

```
SQL> exec DBMS_STATS.GATHER_FIXED_OBJECTS_STATS;
```

  - Create fixed table statistics again after a week with regular production workload
  - This task should be done only a few times per year

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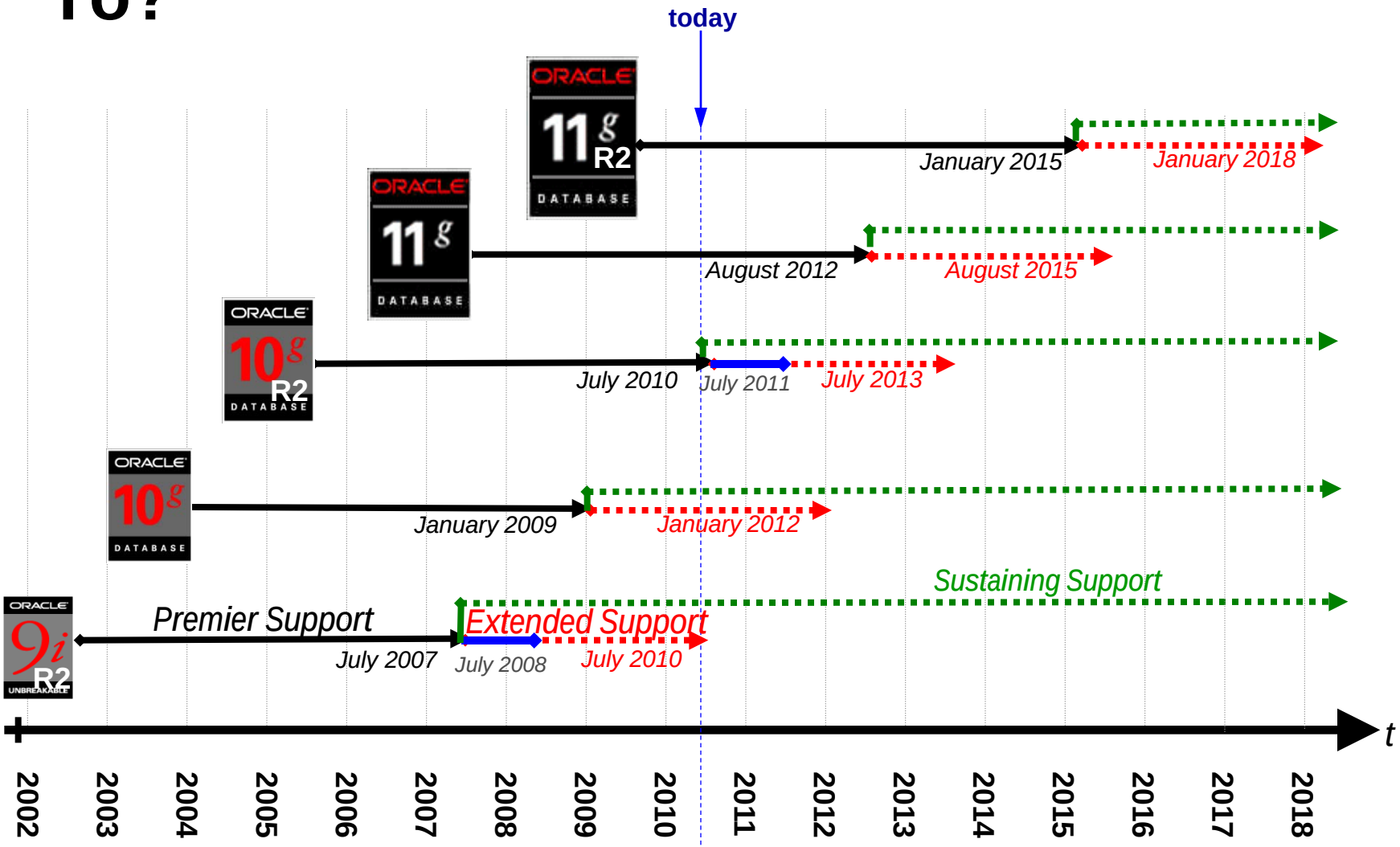
Agenda

- Best Practices
- FAQ
- Summary

FAQ: Which Version Should I Upgrade To?



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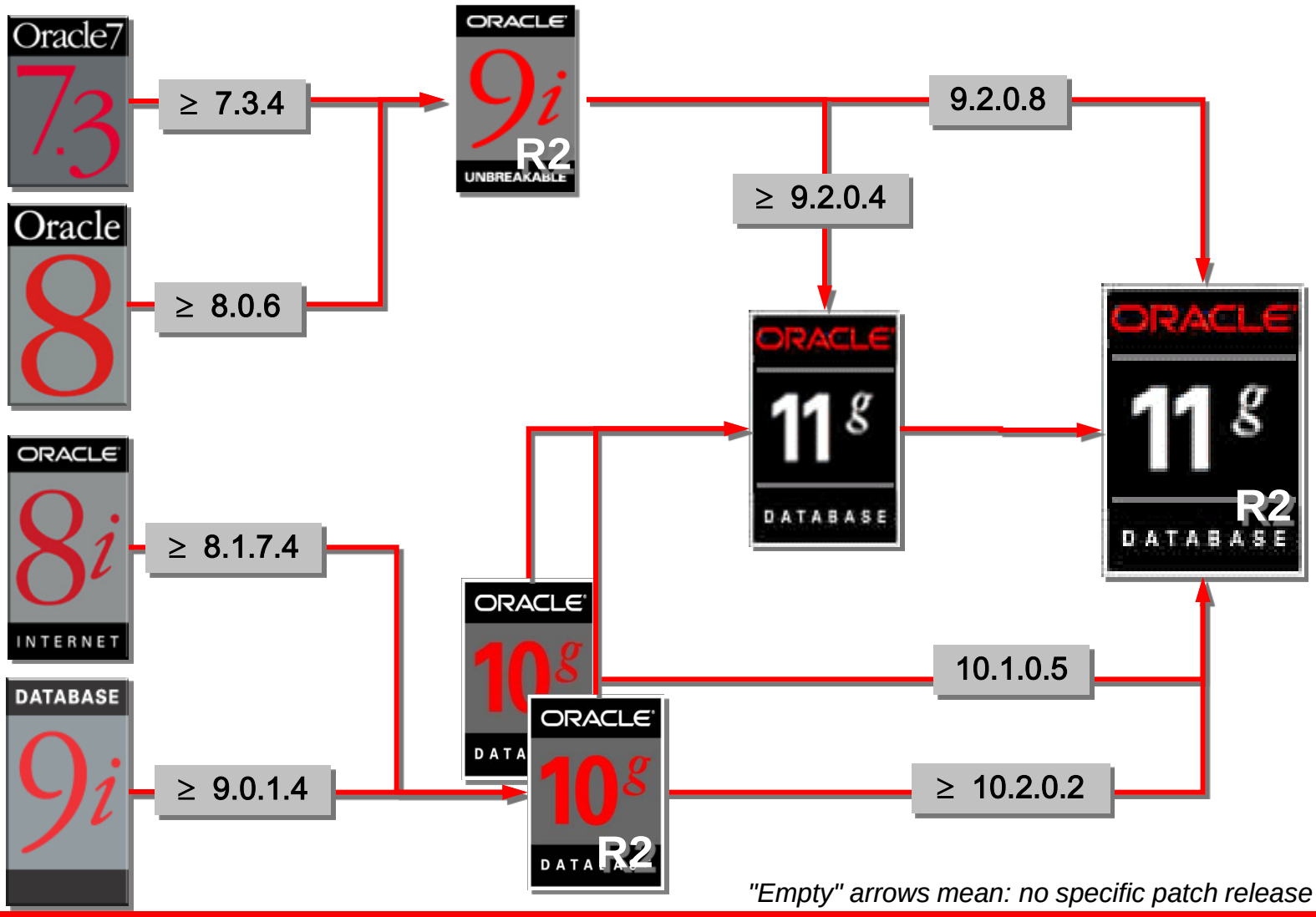
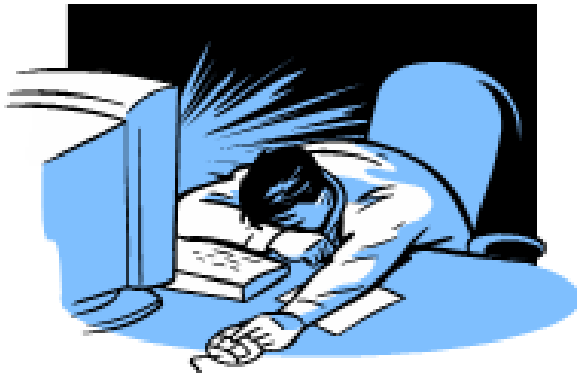
Upgrade to Oracle Database 11*g* Release 2



"Empty" arrows mean: no specific patch release required

FAQ: How long will the upgrade take?

Upgrade Length



- How long will the upgrade take to complete?
  - Independent of:
    - Size of the database
    - Used datatypes
  - Dependent mainly on:
    - The number of installed components and options
    - Valid and non-stale data dictionary statistics
    - Number of synonyms – they'll get recompiled (upgrade from 9*i*)
    - Number of objects in XDB
    - At a very low rate, if `COMPATIBLE` is increased:
      - Number of datafiles
      - Size of redo logs

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Example: Database Upgrade Time

- Usually between ~30 and ~90 minutes
  - Dependent mainly on installed options and components
  - *Actual times may vary…

```
Component                           HH:MM:SS
Oracle Server                       00:16:17
JServer JAVA Virtual Machine        00:05:19
Oracle Workspace Manager            00:01:01
Oracle Enterprise Manager           00:10:13
Oracle XDK                          00:00:48
Oracle Text                         00:00:58
Oracle XML Database                 00:04:09
Oracle Database Java Packages       00:00:33
Oracle Multimedia                   00:07:43
Oracle Expression Filter            00:00:18
Oracle Rule Manager                 00:00:12
Gathering Statistics                00:04:53

     Total Upgrade Time: 00:52:31
```

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Upgrade Length

- Speed up your upgrade performance by:
  - Truncating the auditing table SYS.AUD$

```
SQL> truncate SYS.AUD$;
```

    - Note: If you must preserve auditing records, move them temporarily to a user tablespace before truncating. Then move the records back after the upgrade.
  - Creating dictionary statistics right before the upgrade
    - Oracle 9*i*:

```
SQL> exec DBMS_STATS.GATHER_SCHEMA_STATS
    ('SYS', options => 'GATHER',estimate_percent =>
     DBMS_STATS.AUTO_SAMPLE_SIZE, method_opt => 'FOR
     ALL COLUMNS SIZE AUTO', cascade => TRUE);
```

    - Oracle 10*g*/11*g*:

```
SQL> exec DBMS_STATS.GATHER_DICTIONARY_STATS;
```

  - Switching off archiving, if business rules allow

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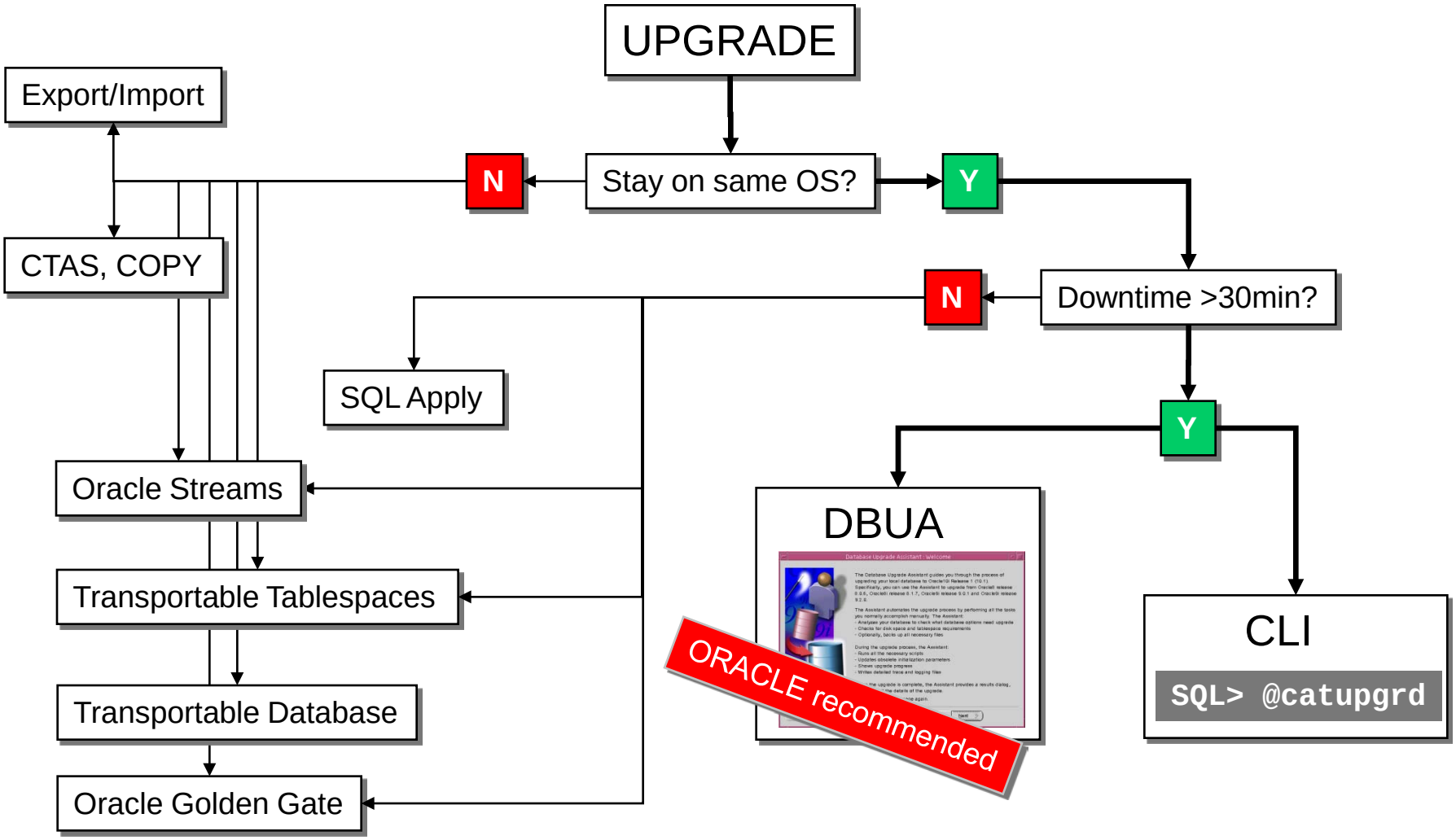
FAQ: Which Method Should I Use?



When to Choose the DBUA

- Can afford 30 – 90 minutes average downtime
- Operating system remains the same
- GUI is preferred over manual command line interface
  - Automatically performs useful pre-upgrade checks
  - Less error-prone / less manual effort
- Existing database is at least 9.2.0.8
- Note: especially useful for RAC databases
- Consideration:
  - Source and target Oracle Homes must be on the same system
  - Cannot be re-run if an error is encountered mid-upgrade

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When to Choose Command-Line

```
SQL> spool upgrade.log
SQL> @catupgrd.sql
```

- Can afford 30-90 minutes average downtime
- Manual command-line interface is preferred over GUI
- Existing database is at least 9.2.0.8
- Migrating to a new hardware platform with same OS

- Consideration
  - Cannot upgrade to a system with a different operating system architecture
  - More manual steps required
  - Potential for errors due to typos, missed details

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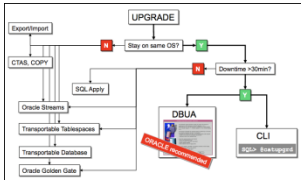
When to Choose an Alternative Method



- Alternative methods include
  - Original exp/imp or Data Pump expdp/impdp)
  - Oracle Streams or Oracle Golden Gate
  - Data Guard (SQL Apply)
  - Transportable Tablespaces, Tansportable Database
  - Moving data via CREATE TABLE AS SELECT or other techniques
- Alternative methods must be used when
  - Moving to a different operating system platform (32- and 64-bit versions of an OS are considered “the same platform” in this case
  - Upgrading from a release older than 9.2.0.8
- Alternative methods may be a good option when
  - Minimal downtime (<30 minutes) required or desired
  - Re-organizing database storage or schemas

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FAQ: Is anybody really live on 11.2?

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26 External 11.2 References (1/2)

Ref	Name	Country	Industry	System Name	Platform	OS	Release	Nodes	System Status	Application Provider
✓	Allegro Group	Poland	Consumer/Retail /Distribution	SUN DB MACHINE	Sun	Linux	11gR2	8	Production	-
✓	Avea	Turkey	Telecommunications	Avea Database Machine 1	Sun	Linux	11gR2	8	Project Initiation	Custom
✓	Banca Transilvania / Romania	Romania	Financial Services	BANCA TRANSILVANIA S.A. - SUN DB MACHINE - 1/2 SAS RACK	Sun	Linux	11gR2	4	Installation	-
✓	Commonwealth Bank of Australia	Australia	Financial Services	COMMONWEALTH BANK OF AUSTRALIA - SUN DB MACHINE - 1/2 RACK SAS	Sun	Linux	11gR2	4	Installation	-
✓	Commonwealth Bank of Australia	Australia	Financial Services	Peoplesoft / Oracle as a Service	Sun	Linux	11gR2	4	Test	Peoplesoft
✓	Interhyp	Germany	Financial Services	TSUN	HP	Linux	11gR2	3	Test	Custom OLTP
✓	Jung von Matt	Germany	Communications and Media	MAIL	Dell	Linux	11gR2	8	Test	Oracle Collaboration Suite
✓	OOCL us	United States	Travel and Transportation	MOBILE CARGO TRACKING	HP	Linux	11gR2	2	Test	-
✓	PHILIPPINE SAVINGS BANK	Philippines	Financial Services	PHILIPPINE SAVINGS BANK - SUN DB MACHINE - 1/2 SAS RACK	Sun	Linux	11gR2	4	Installation	Custom
✓	Provincia Autonoma di Bolzano – autonomous province of Bozen	Italy	Government	newGIS	Dell	Linux	11gR2	1	Pilot	Custom
✓	SI Mobile	Slovenia	Telecommunications	SI Mobile DBM 1	Sun	Linux	11gR2	2	Project Initiation	-
✓	SOGEI	Italy	Government	GeoPOI	Sun	Solaris	11gR2	1	Production	Custom
✓	Sharp HealthCare	United States	Healthcare	Data Warehouse - financial data, medical records and clinical research data	IBM	AIX	11gR2	1	Production	-
✓	Sistema informativo agricolo nazionale (SIAN)	Italy	Government	Geo Datawarehouse Condizionalità	IBM	AIX	11gR2	2	Pilot	-
✓	TARGUSinfo	United States	Services	ElementOne	Dell	Linux	11gR2	1	Production	TARGUSInfo

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26 External 11.2 References (2/2)

Ref	Name	Country	Industry	System Name	Platform	OS	Release	Nodes	System Status	Application Provider
✓	TDS Telecommunications Corp	United States	Telecommunications	Product Applications	HP	Linux	11gR2	4	Production	Custom
✓	TUI Nederland	Netherlands	Travel and Transportation	Exadata2	Sun	Linux	11gR2	8	Production	Custom
✓	TUI Nederland	Netherlands	Travel and Transportation	TUI NEDERLAND N.V. - SUN DB MACHINE - FULL RACK SAS	Sun	Linux	11gR2	8	Installation	-
✓	Tim w.e.	Portugal	Communications and Media	TIM W.E. - SUN DB MACHINE - 1/4 RACK SAS	Sun	Linux	11gR2	2	Installation	-
✓	Turkcell	Turkey	Telecommunications	Turkcell Database Machine 1	Sun	Linux	11gR2	8	Test	-
✓	Turkcell	Turkey	Telecommunications	Turkcell Database Machine 2	Sun	Linux	11gR2	2	Test	Custom
✓	University of Phoenix	United States	Education	Documentum 6.5	Other Vendor	Linux	11gR2	4	Production	Documentum
✓	University of Phoenix	United States	Education	Osiris	Other Vendor	Linux	11gR2	3	Production	Custom
✓	University of Phoenix	United States	Education	Sabrix	Other Vendor	Linux	11gR2	2	Production	Sabrix
✓	Verizon Wireless	United States	Telecommunications	Verizon Wireless	HP	Linux	11gR2	3	Production	Custom
✓	eDialog	United States	High Technology	EDIALOG - SUN DB MACHINE - FULL RACK SAS	Sun	Linux	11gR2	8	Installation	-

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Agenda

- Best Practices
- FAQ
- Summary

Summary

- Preparation and Planning are the keys to a successful upgrade
- Choose the right upgrade method for your technical scenario and business requirements
- Have a fallback strategy, and please test it
- Oracle Database 11.2 is a stable release with lots of great features. Let’s go!

- FAQ: Where can I get a copy of these slides?
  - http://blogs.oracle.com/UPGRADE

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Questions
Answers

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