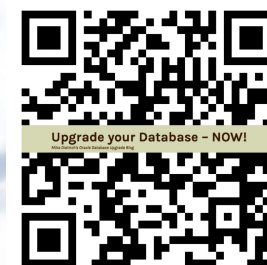# New Release and Patching Model

For the Oracle Database

Mike Dietrich
Master Product Manager
Database Upgrades & Migrations
Oracle Corporation

Roy Swonger
Vice President
Database Upgrades & Utilities
Oracle Corporation

Updated: 23-APR-2018

Upgrade your Database – NOW!

Germany

Mike Dietrich
Master Product Manager
Oracle Database Upgrades and Migrations

https://MikeDietrichDE.com
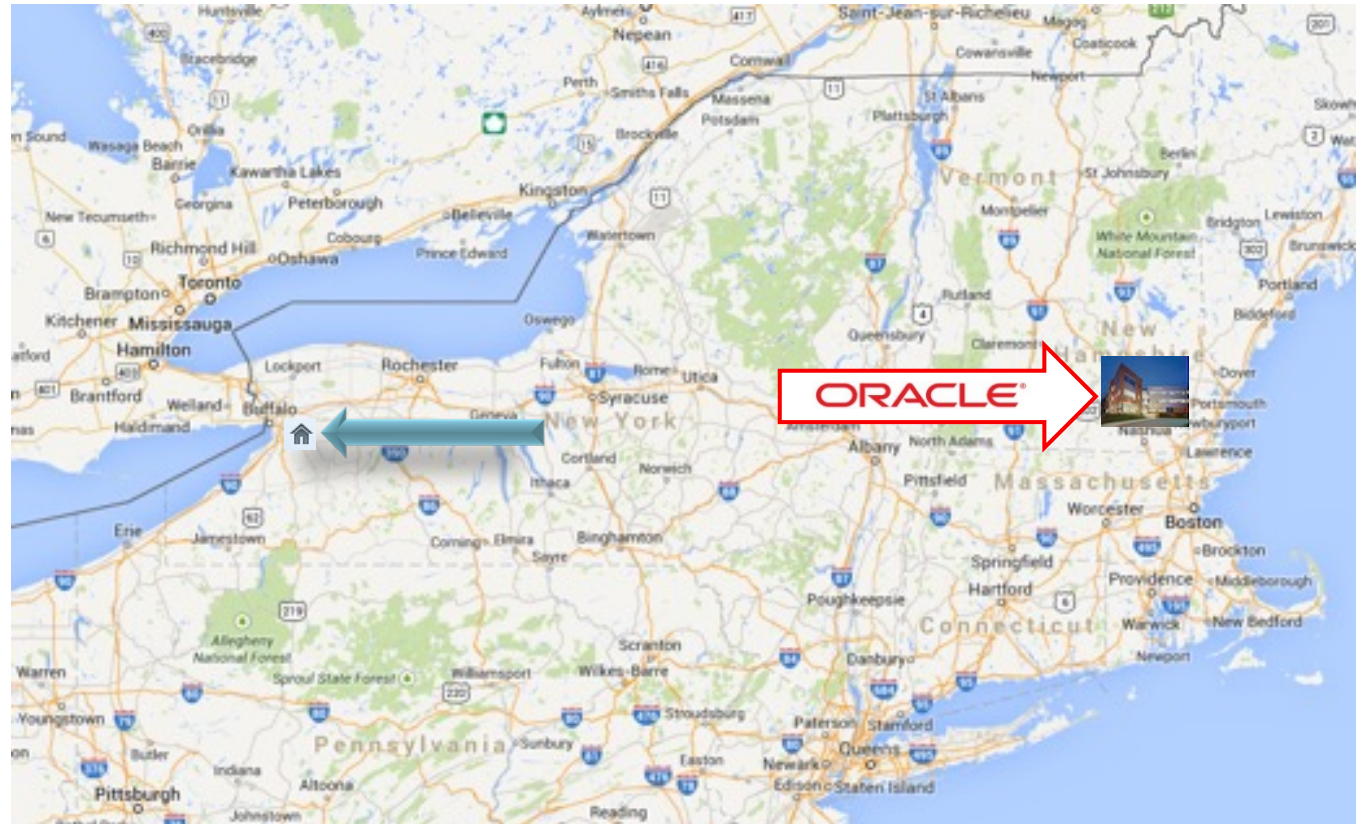
MikeDietrichDE

`$> whoami`

20+ years w/Oracle

15 years managing
Data Pump
Database Upgrade
SQL*Loader
Transportable Tablespaces

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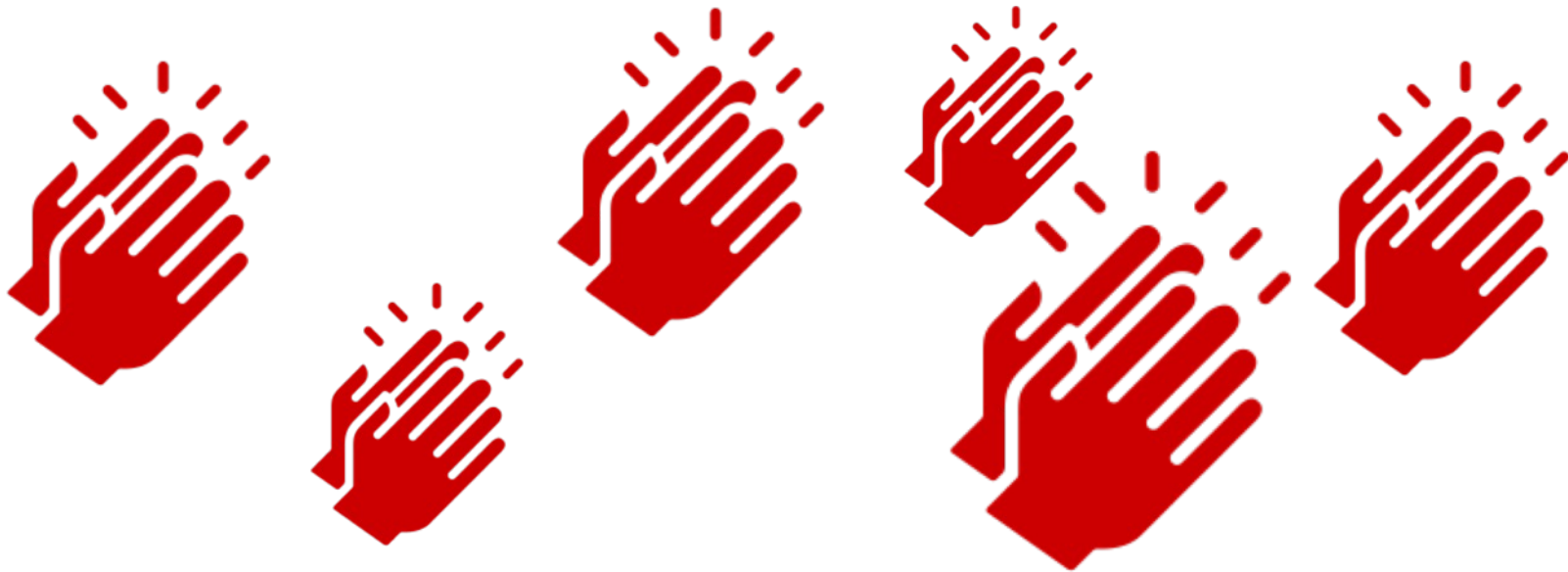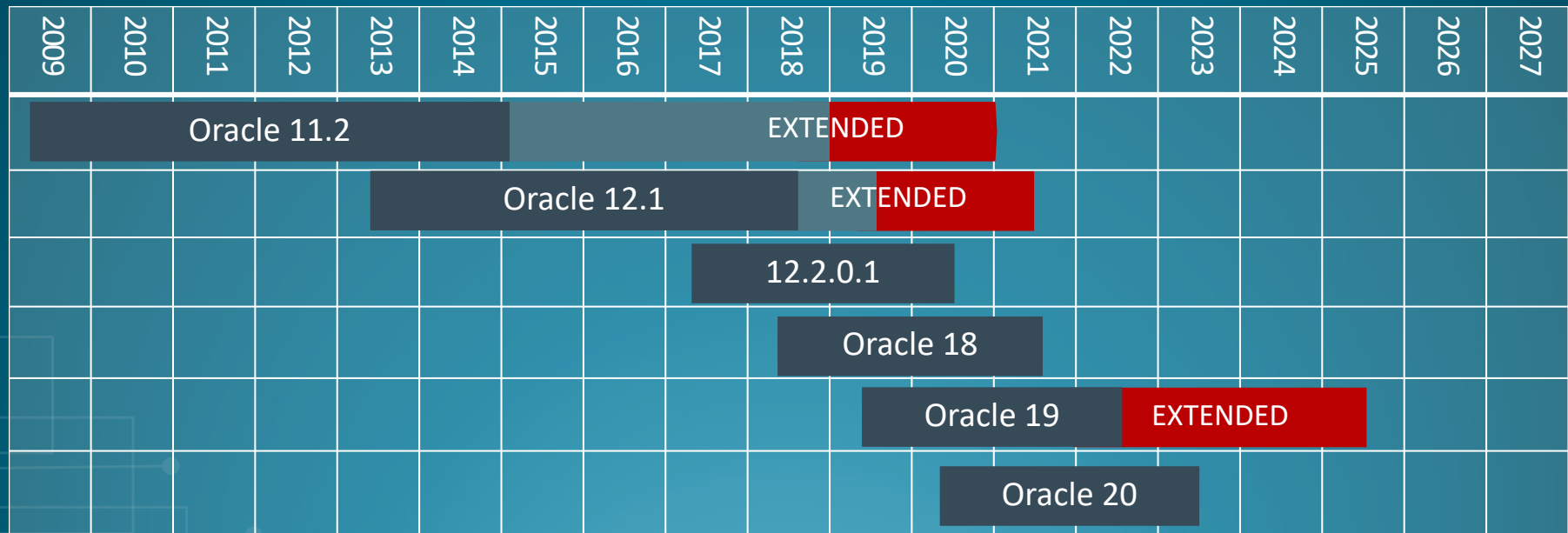# No "FIRST" and "SECOND" releases anymore!

Fewer One-Off Patches!

Lifetime Support Commitments and Plans

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027

Oracle 11.2 — EXTENDED

Oracle 12.1 — EXTENDED

12.2.0.1

Oracle 18

Oracle 19 — EXTENDED

Oracle 20

Premier Support   **Waived Extended Support**   **Paid Extended Support**
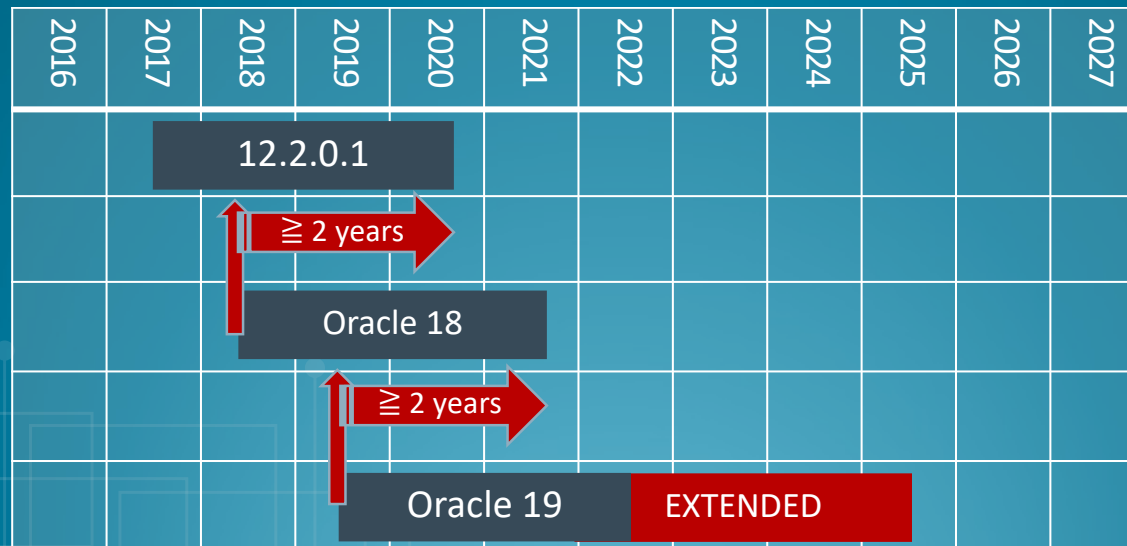
Clarification 1: Release Families

- The 18c and 19c releases are part of the Database 12.2 "Family" for Lifetime Support as if they were the 12.2.0.2 and 12.2.0.3 patch sets

- Patching end date for Oracle Database 12.2.0.1 will be determined once Oracle 18c is available on premises

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Oracle 12.2					EXTENDED					
	12.2.0.1										
		Oracle 18									
			Oracle 19			EXTENDED					

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Clarification 2: Support for Annual Releases

- Annual releases get a minimum of 2 years patching after the succeeding release is available on all enterprise (non-Engineered Systems) platforms

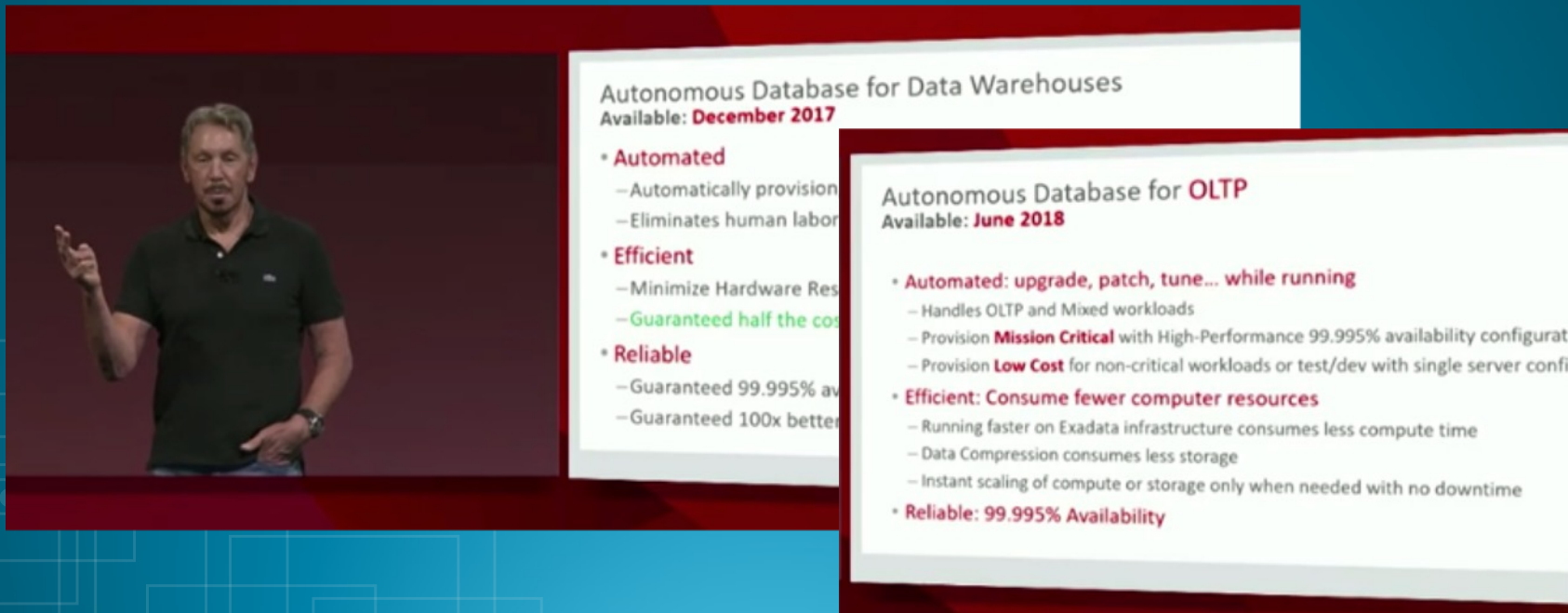- Similar to what patch sets received under the previous release model

Clarification 3: Long-Term Support Release

- The final release in a family will get longer term support
- Please check MOS Note 742060.1 for details

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
			LONG TERM SUPPORT RELEASE							

Clarification 4: Availability Dates

- Availability announcements at OOW17 were for Oracle Cloud

Autonomous Database for Data Warehouses
Available: **December 2017**

- **Automated**
  - Automatically provision
  - Eliminates human labor
- **Efficient**
  - Minimize Hardware Res
  - Guaranteed half the cos
- **Reliable**
  - Guaranteed 99.995% av
  - Guaranteed 100x better

Autonomous Database for OLTP
Available: **June 2018**

- **Automated: upgrade, patch, tune… while running**
  - Handles OLTP and Mixed workloads
  - Provision **Mission Critical** with High-Performance 99.995% availability configurat
  - Provision **Low Cost** for non-critical workloads or test/dev with single server confi
- **Efficient: Consume fewer computer resources**
  - Running faster on Exadata infrastructure consumes less compute time
  - Data Compression consumes less storage
  - Instant scaling of compute or storage only when needed with no downtime
- **Reliable: 99.995% Availability**

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Release Numbering and Patching

The Future Is Already Here

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3 Number Format

Year.Update.Revision

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Release Numbering Before/After

Old Model

- 11.2.0.1
  - 11.2.0.2
  - 11.2.0.3
  - 11.2.0.4
- 12.1.0.1
  - 12.1.0.2

New Model

- 12.2.0.1
  - 18
  - 19

- 20
  - 21
  - 22
- ...

Base release had old numbering

Annual release is like a patchset

Last release of family is like a terminal patchset

Start of a new release family

Patching before Oracle Database 12.2

Patch Set Updates and Bundle Patches

Patching before Oracle Database 12.2 with PSUs

Base Release

Patch Set Update 1 (PSU)

| Security Fixes | Regression Fixes |

Patching before Oracle Database 12.2 with PSUs

Base Release

Patch Set Update 1 (PSU)

Security Fixes	Regression Fixes

Patch Set Update 2

Security Fixes	Regression Fixes

Patching before Oracle Database 12.2 with BPs

Base Release

Bundle Patch 1 (BP)

Patch Set Update 1

Security Fixes

Regression Fixes

Optimizer / off

Functional Fixes

Patching before Oracle Database 12.2 with BPs

Base Release

Bundle Patch 1

Patch Set Update 1

Security Fixes

Regression Fixes

Optimizer / off

Functional Fixes

Bundle Patch 2

Patch Set Update 2

Security Fixes

Regression Fixes

Optimizer / off

Functional Fixes
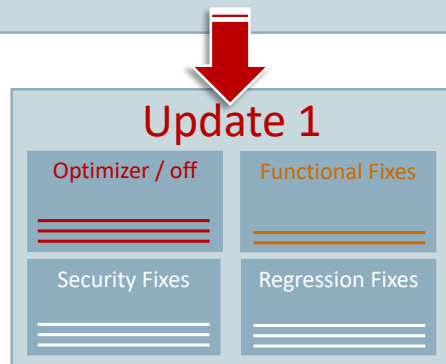
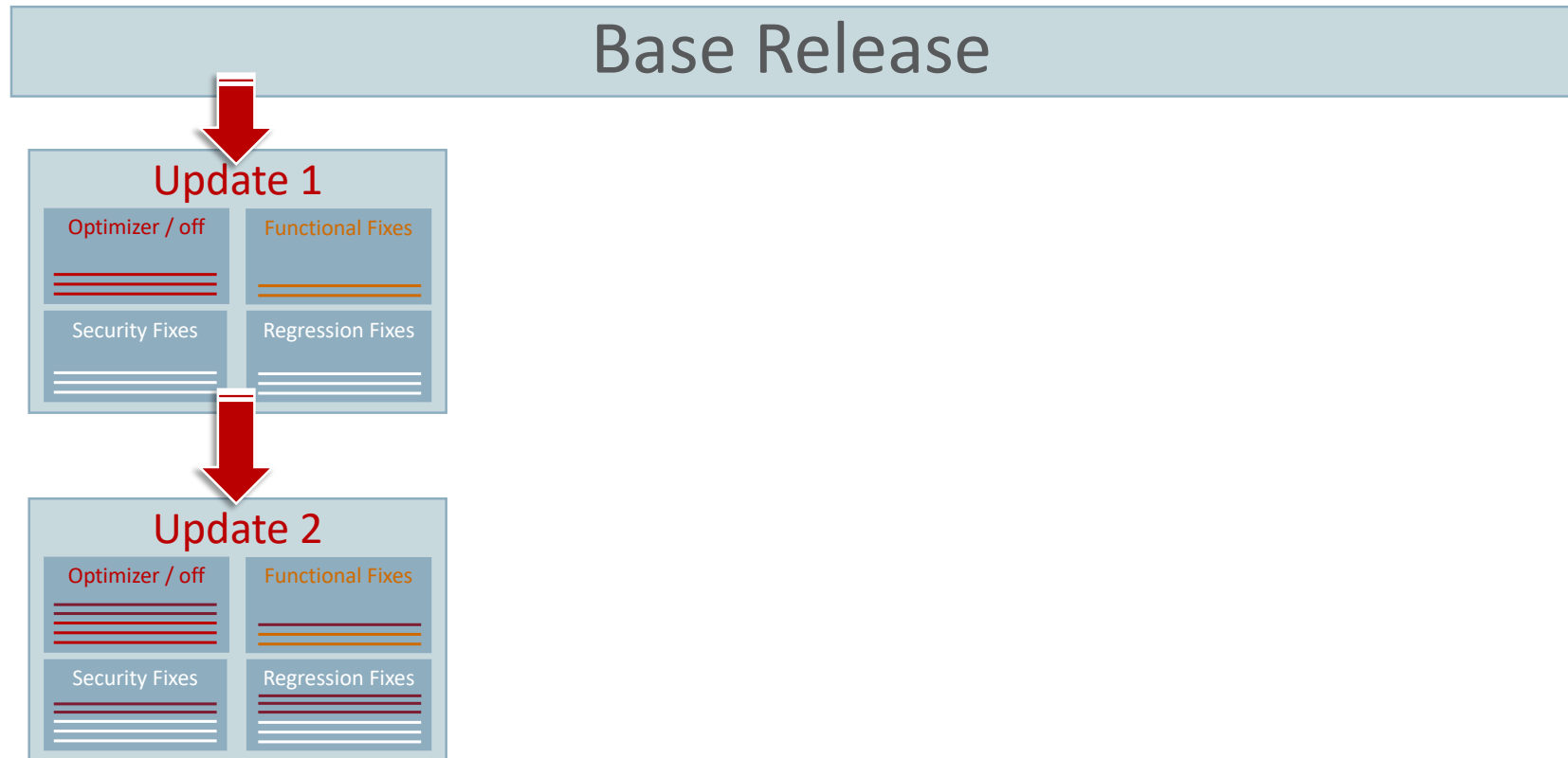# Patching before Oracle Database 12.2 - The Whole Picture

Base Release

Patch Set Update 1

Security Fixes	Regression Fixes

Bundle Patch 1

Patch Set Update 1		Optimizer / off	Functional Fixes
Security Fixes	Regression Fixes		

Patch Set Update 2

Security Fixes	Regression Fixes

Bundle Patch 2

Patch Set Update 2		Optimizer / off	Functional Fixes
Security Fixes	Regression Fixes		
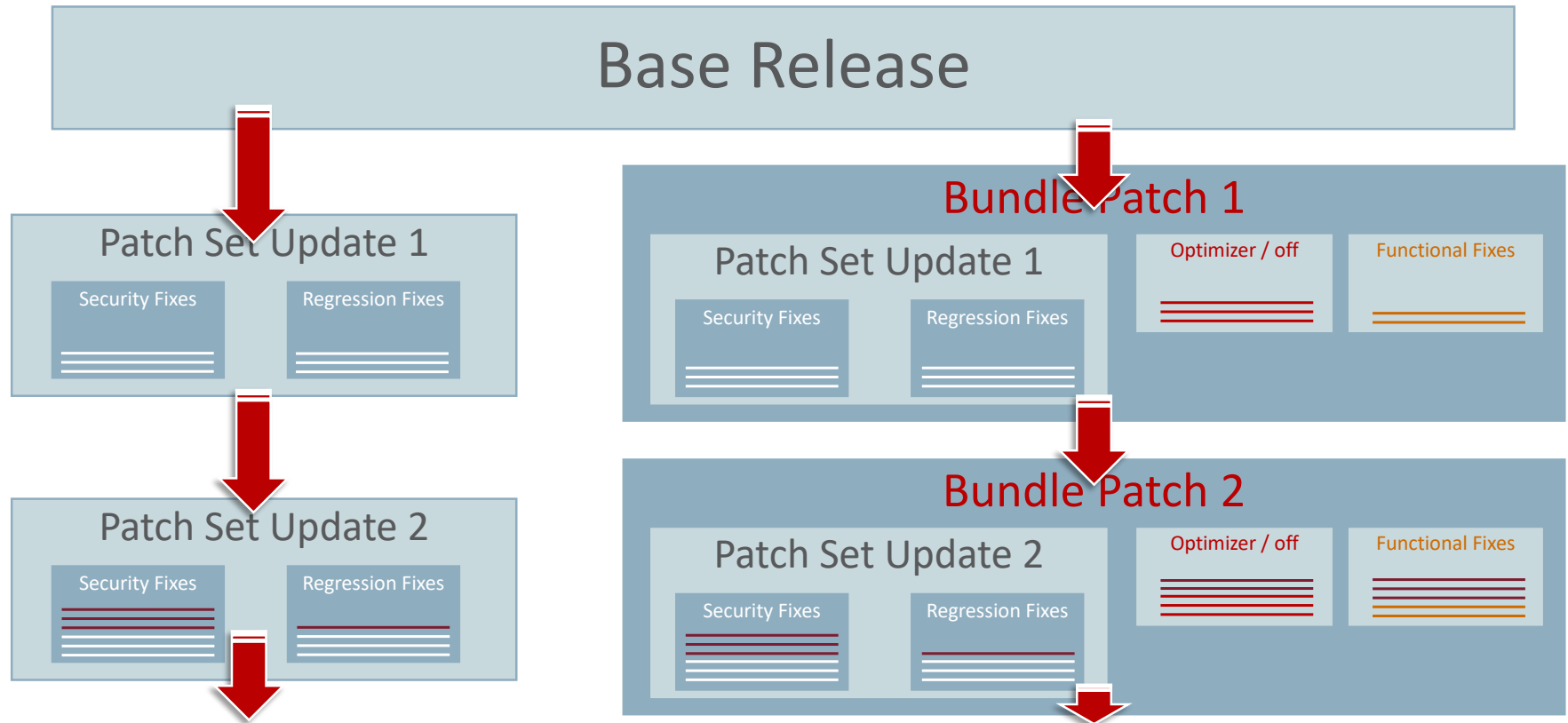
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Patching since Oracle Database 12.2

Updates (RU) and Revisions (RUR)

Patching **since** Oracle Database 12.2

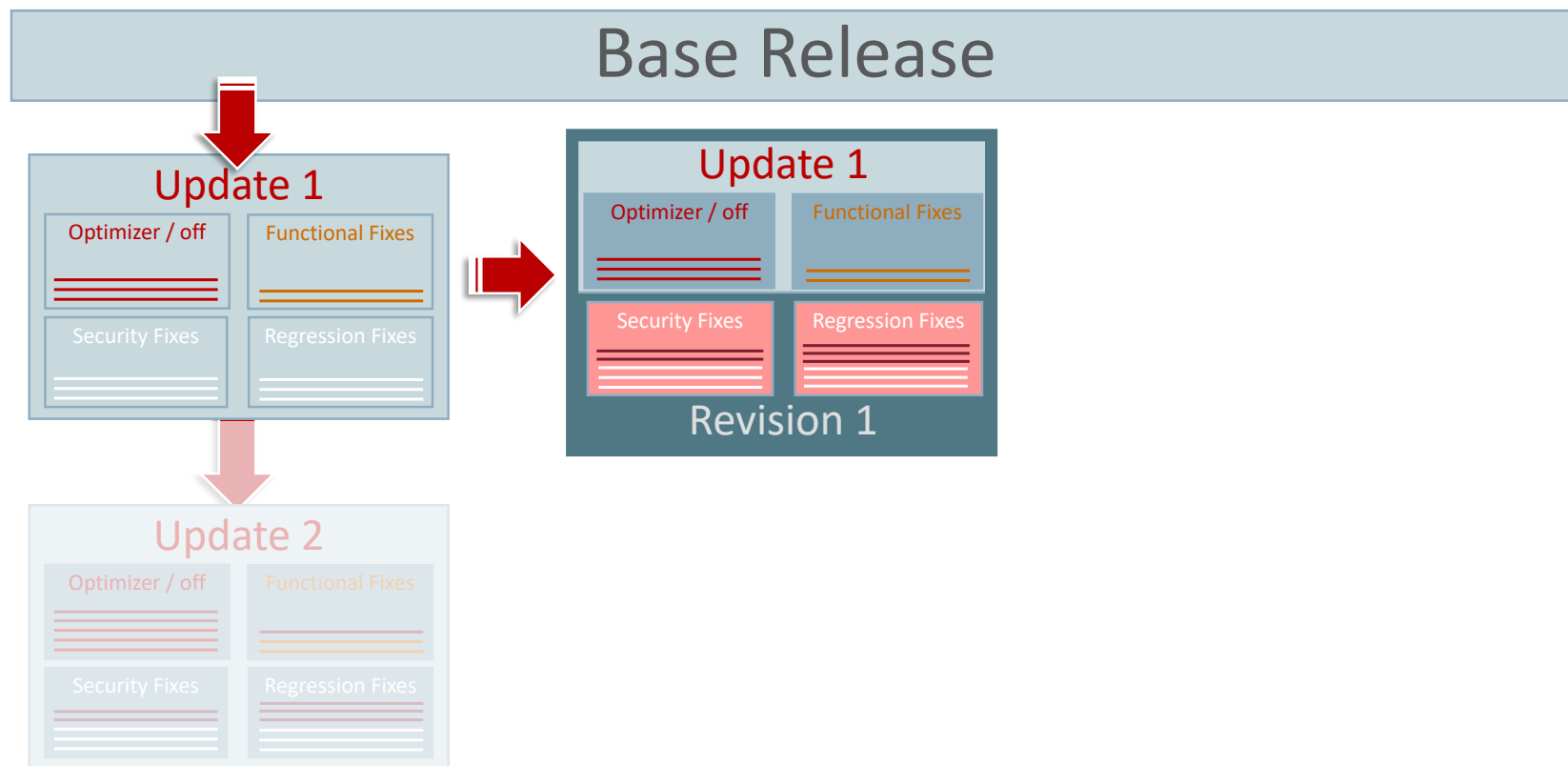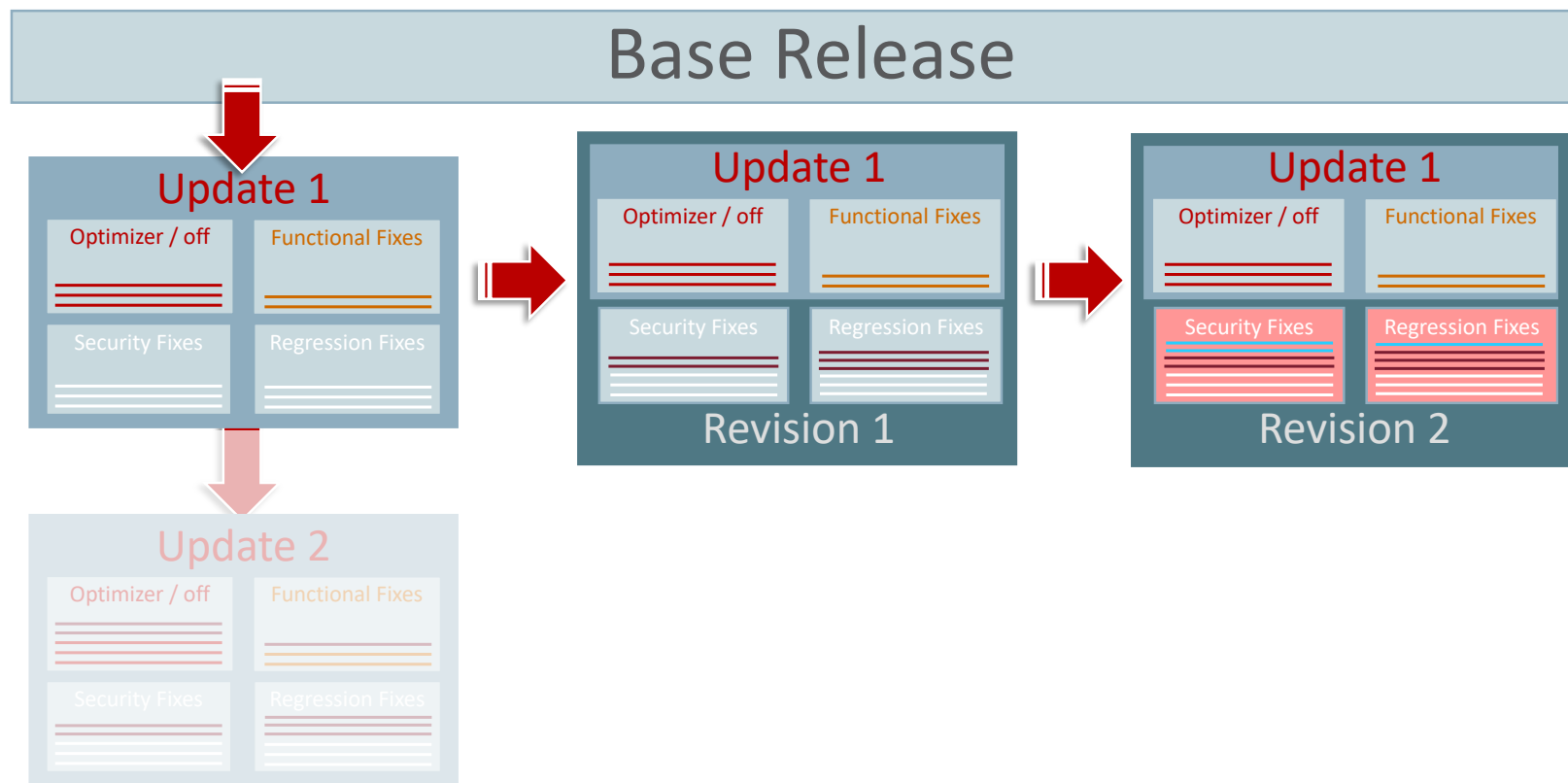| Base Release |
|---|

Update 1

Optimizer / off	Functional Fixes
Security Fixes	Regression Fixes

Patching since Oracle Database 12.2 - Quarterly

Base Release

Update 1

Optimizer / off	Functional Fixes
Security Fixes	Regression Fixes

Update 2

Optimizer / off	Functional Fixes
Security Fixes	Regression Fixes

Patching since Oracle Database 12.2 - Alternative: Revisions

Base Release

Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Revision 1

Update 2
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Patching since Oracle Database 12.2 - Alternative: Revisions

Base Release

Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Revision 1

Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Revision 2

Update 2
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Patching since Oracle Database 12.2 - Alternative: Revisions

Base Release

Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Update 2
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Revision 1
Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Revision 2
Update 1
- Optimizer / off
- Functional Fixes
- Security Fixes
- Regression Fixes

Patching since Oracle Database 12.2 - Alternative: Revisions
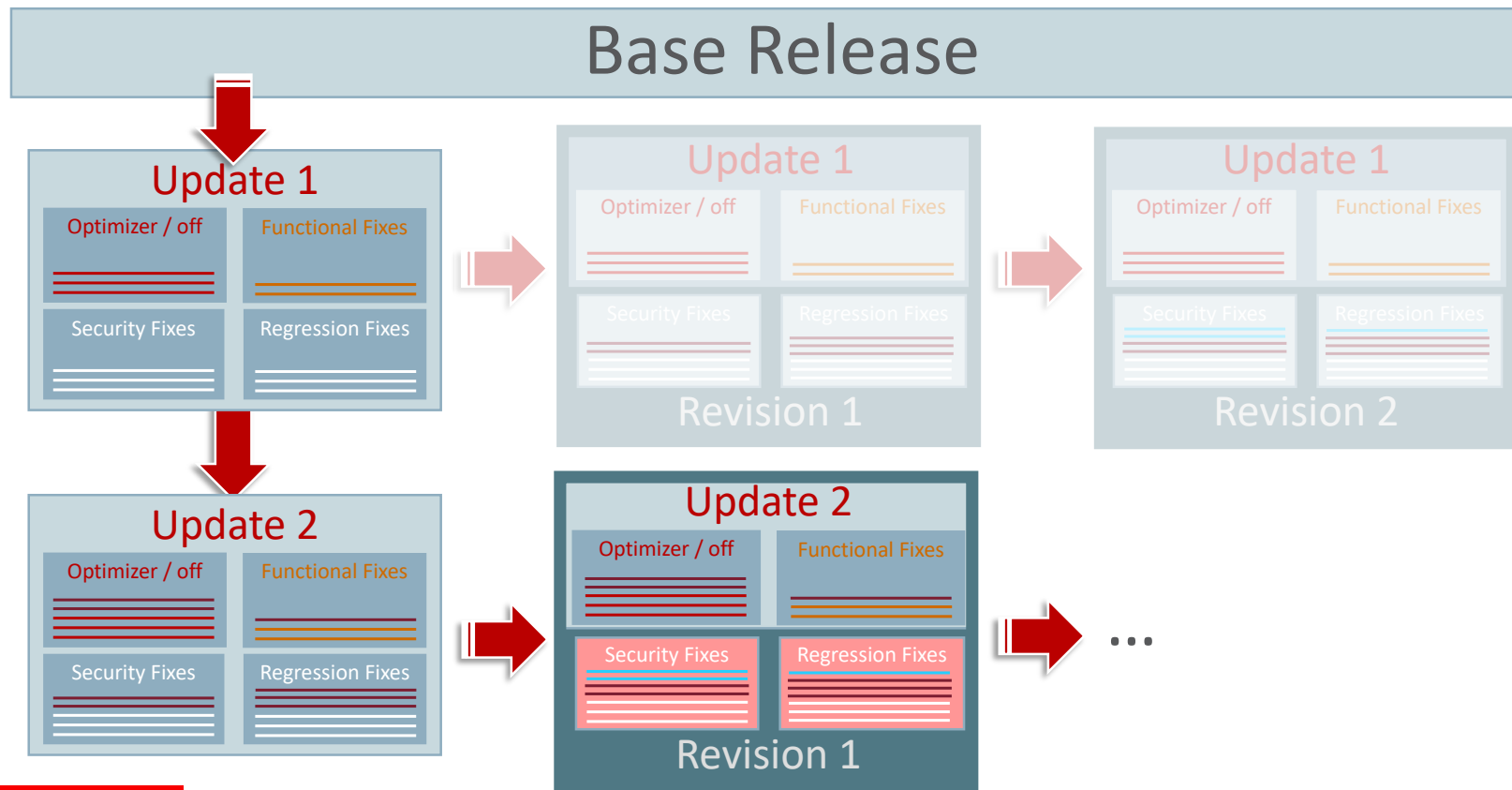
Patching since Oracle Database 12.2
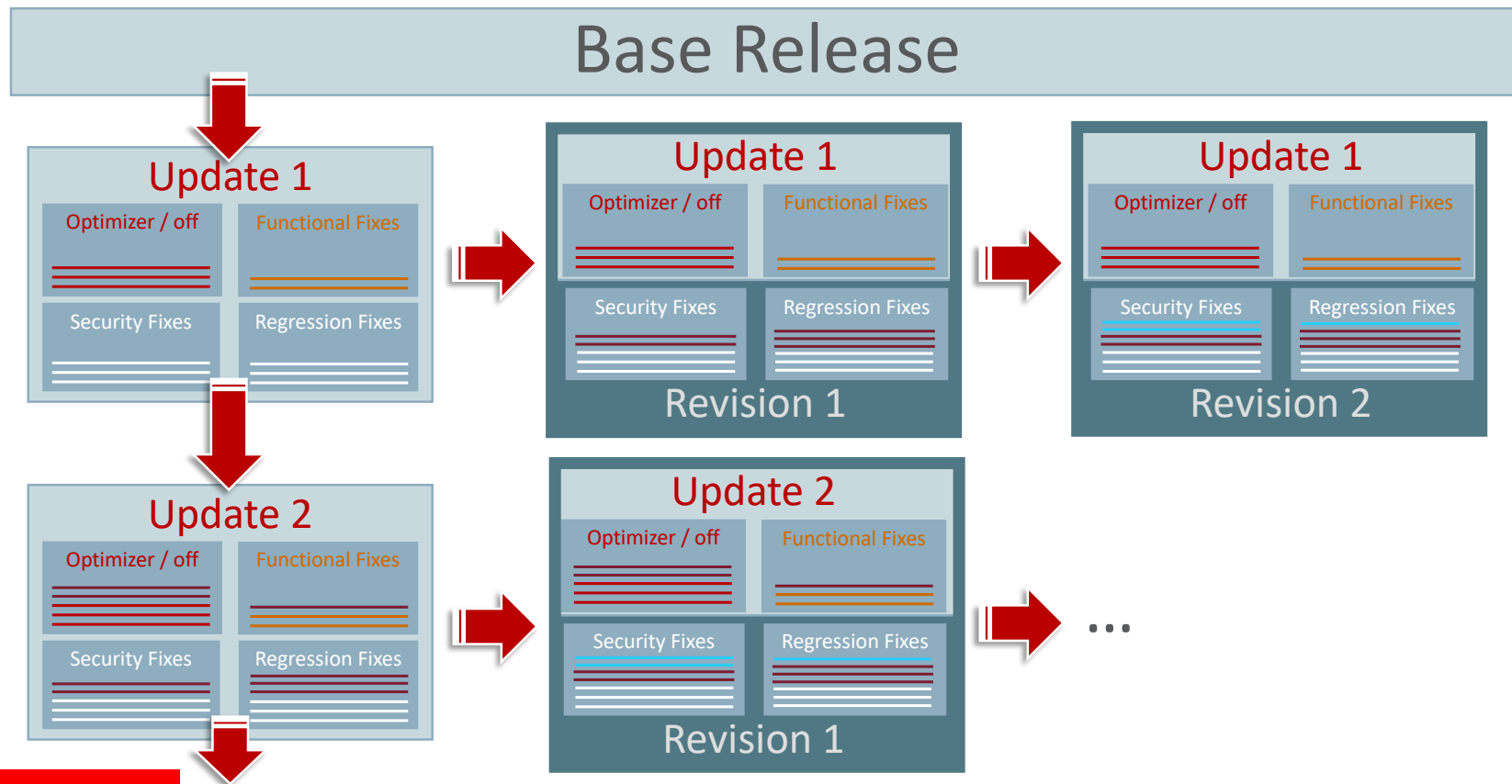
Yeah!!! No PSUs anymore!
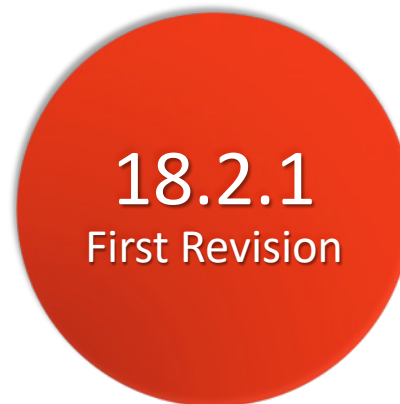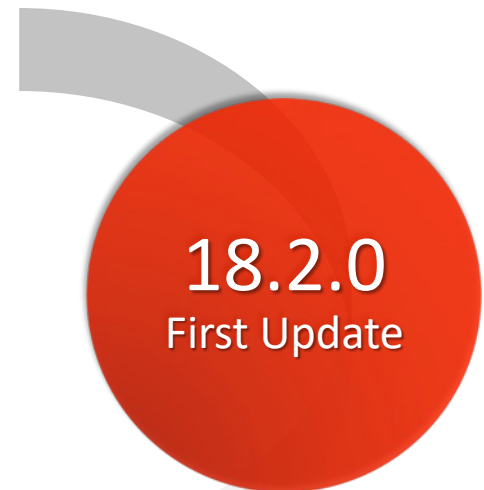
Patching Example with Oracle 18c: Release Numbering

18.1.0 - *Update-1* included already

Update 2	Update 2	Update 2
18.2.0	18.2.1	18.2.2
	Revision 1	Revision 2

Update 3	Update 3	Update 3
18.3.0	18.3.1	18.3.2
	Revision 1	Revision 2

Update 4	Update 4	Update 4
18.4.0	18.4.1	18.4.2
	Revision 1	Revision 2
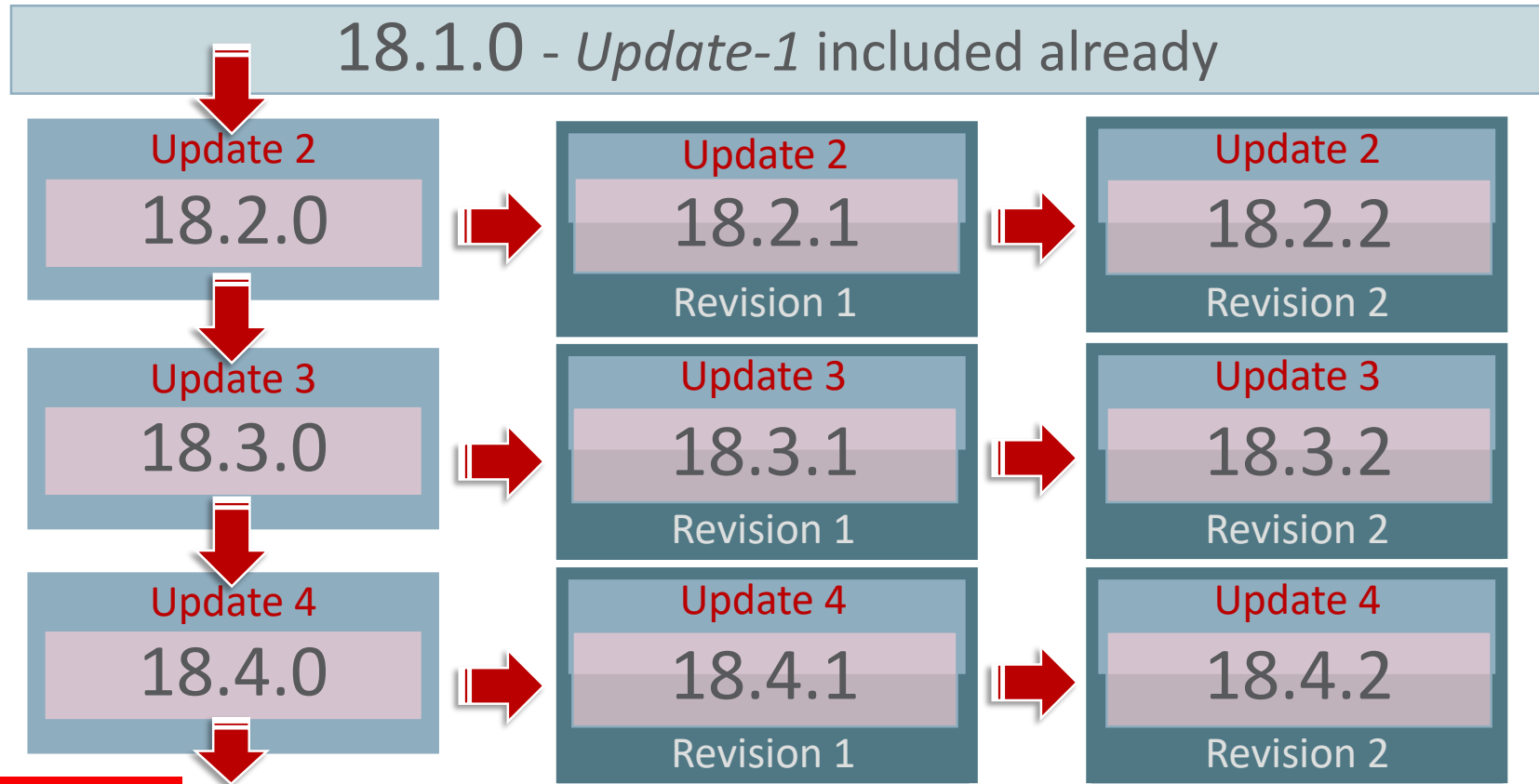
Version number reflects patch level!

A Release Update or Revision is only a patch,
not a database upgrade!

👍 **Patch**:   Oracle 18.2.1 ⋯→ Oracle 18.6.0

`opatch`

☝ **Upgrade**: Oracle 18.2.1 ⋯→ Oracle 19.1.0

`dbupgrade` and DBUA

35

Oracle 12.2: Use Updates
Oracle 12.1: Use Bundle Patches (BP)
Oracle 11.2: Use Patch Set Updates (PSU)

Don't trust Oracle 11.2 anymore - Upgrade NOW!
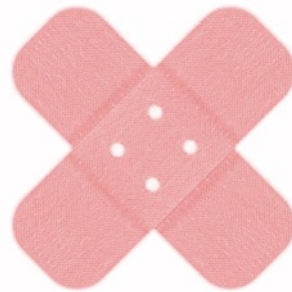
MOS Note:1962125.1 - Overview of Database Patch Delivery Methods for ≤ 12.1.0.2
MOS Note: 2337415.1 - Overview of Database Patch Delivery Methods for ≥ 12.2.0.1

Timeline Example

Yearly Releases, Updates and Revisions

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Timeline <u>Example</u> - April 2018

Production	April	July	October	January	April
18.1.0	18.2.0	← Update			

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Timeline <u>Example</u> - July 2018

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	← Update		
		18.2.1	← Revision		

ORACLE

Timeline Example - October 2018

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	← Update	
		18.2.1	18.3.1	← Revision	
			18.2.2	← Revision	

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Timeline Example - January 2019

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	
		18.2.1	18.3.1	18.4.1	
			18.2.2	18.3.2	
19c		New Feature Release ⟶		19.1.0	

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Timeline Example - April 2019

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
		18.2.2	18.3.2	18.4.2
19*c*				19.1.0	19.2.0

Timeline <u>Example</u> - Future Projection

	2018	2019							2020							2021			
Production	April	July	October	January	April	July	October	January	April	July	October	January	April	July	October
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0	18.7.0	18.8.0	18.9.0	18.10.0	18.11.0	18.12.0	18.13.0	18.14.0	18.15.0	
		18.2.1	18.3.1	18.4.1	18.5.1	18.6.1	18.7.1	18.8.1	18.9.1	18.10.1	18.11.1	18.12.1	18.13.1	18.14.1	
			18.2.2	18.3.2	18.4.2	18.5.2	18.6.2	18.7.2	18.8.2	18.9.2	18.10.2	18.11.2	18.12.2	18.13.2	
19.1.0	Release →			19.1.0	19.2.0	19.3.0	19.4.0	19.5.0	19.6.0	19.7.0	19.8.0	19.9.0	19.10.0	19.11.0	19.12.0
					19.2.1	19.3.1	19.4.1	19.5.1	19.6.1	19.7.1	19.8.1	19.9.1	19.10.1	19.11.1
					19.2.2	19.3.2	19.4.2	19.5.2	19.6.2	19.7.2	19.8.2	19.9.1	19.10.2	
20.1.0	New Feature Release →							20.1.0	20.2.0	20.3.0	20.4.0	20.5.0	20.6.0	20.7.0	20.8.0
									20.2.1	20.3.1	20.4.1	20.5.1	20.6.1	20.7.1
									20.2.2	20.3.2	20.4.2	20.5.2	20.6.2	
21.1.0	New Feature Release →									21.1.0	21.2.0	21.3.0	21.4.0	
										21.2.1	21.3.1			

Patching End 18c

Choices and Recommendations

What are your choices, what do we recommend?

Which approach is the best? Update vs Revision

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
			18.2.2	18.3.2	18.4.2

?

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
			18.2.2	18.3.2	18.4.2

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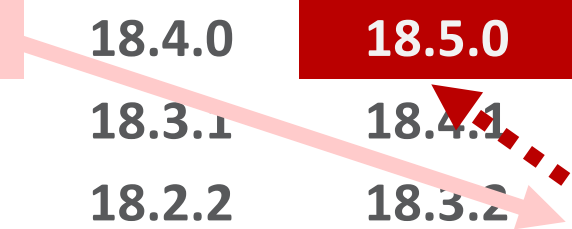
This is possible ...

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
			18.2.2	18.3.2	18.4.2

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
			18.2.2	18.3.2	18.4.2

But this isn't …

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	**18.5.0**	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
			18.2.2	18.3.2	18.4.2

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Our Recommendation!

Production	April	July	October	January	April
18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0
		18.2.1	18.3.1	18.4.1	18.5.1
			18.2.2	18.3.2	18.4.2

- Oracle recommends that customers stay current with Updates
  - Minimize the chance of encountering known bugs and security vulnerabilities
  - Reduce the likelihood of requiring separate interim one-off patches or merge patches
- Customers in a stable state may choose to be conservative and adopt revisions
  - Security and regression fixes will be current
  - Functional and performance fixes will lag behind updates by 3 or 6 months
  - Higher chance of hitting known issues that are already fixed in a more recent update

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How to Adopt a Long Term Release

Target of 19*c*

July	Oct	Jan	Apr	Jul	Oct	Jan	Apr
18.3.0	18.4.0	18.3.0	18.4.0				
		19.1.0	19.2.0				

Start Dev-Test-QA cycle

How to Adopt a Long Term Release

Target of 19*c*

July	Oct	Jan	Apr	Jul	Oct	Jan	Apr
18.3.0	18.4.0	18.3.0	18.4.0	18.5.0			
		19.1.0	19.2.0	19.3.0			
				19.2.1			

Choose Go-Live Update based on business requirements

How to Adopt a Long Term Release

Target of 19*c*

July	Oct	Jan	Apr	Jul	Oct	Jan	Apr
18.3.0	18.4.0	18.3.0	18.4.0	18.5.0	18.6.0		
		19.1.0	19.2.0	19.3.0	19.4.0	19.5.0	19.6.0
				19.2.1	19.3.1	19.4.1	19.5.1
				19.2.2	19.3.2	19.4.2	
				Go-Live			

Upgrading

Directly to Oracle 18c?

52
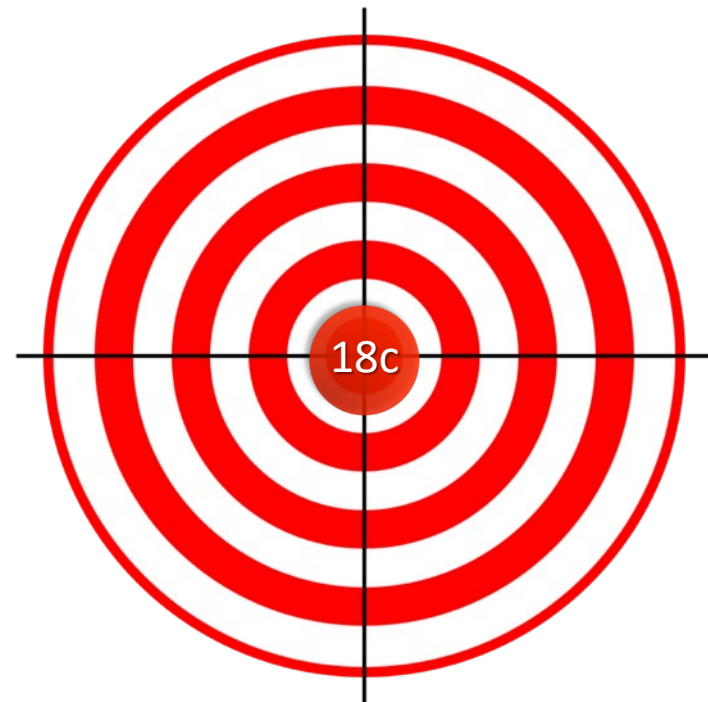
Upgrades and Downgrades

- Applies to non-CDBs and CDBs
  - One exception:
    No downgrade back to 12.1.0.1 for Multitenant
- Valid for all Updates and Revisions

11.2.0.3

11.2.0.4

12.1.0.1

12.1.0.2

12.2.0.1

18c
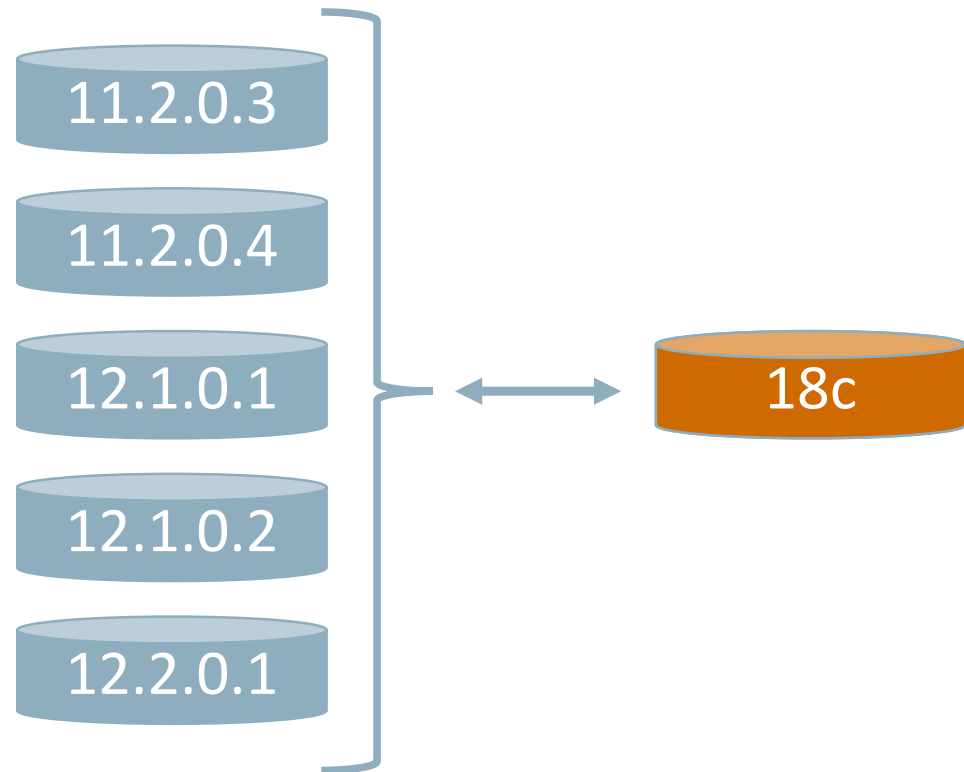
When will Oracle Database 18c be available on premises?

- See MOS Note:742060.1:

[13] **Oracle Database 18c** is expected to be available for on-Prem platforms (non-Engineered Systems) with the July 2018 Release Update

- **Future Oracle Database releases** are planned for the other platforms but due to Oracle's revenue recognition policy we are unable to publish those schedules at this time. This schedule only includes releases which have already been released on at least one platform.

Further Information
The most important Links and MOS Notes

| The New Release and Patching Model   57

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Blog posts: `https://MikeDietrichDE.com`

Upgrade your Database – NOW!
Mike Dietrich's Oracle Database Upgrade Blog

Blog   Slides   Hands-On Lab   Events   Papers / Docs   Videos   Scripts   Links   About

- [News about the new Oracle Database Release Schedule](#)
- [My thoughts on the new Oracle Database Release Schedule](#)
- [PSU or BP? Patch Set Update or Bundle Patch? RUR or RU?](#)
- [More Information about RU and RUR patches for Oracle 12.2](#)
- [Applying the first RU to Oracle Database 12.2.0.1](#)
- [Download Assistant for RUs, RURs, BPs, PSUs, Patch Sets and Releases](#)
- [Are OJVM patches included in the Oracle 12.2 RU / RUR](#)
- [Differences between PSU / BP and RU / RUR](#)
- [Oracle Database RU and RUR Recommendations and Facts](#)

Download the Most Recent Patch Bundles

- MOS Note: 2118136.2
  Assistant: Download Reference for Oracle Database/GI RU, BP, PSU …
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=2118136.2

Most Important Notes

- MOS Note: 742060.1
  Release Schedule of Current Database Releases
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=742060.1

Source of Truth!

- MOS Note: 2285040.1
  Release Update Introduction and FAQ
  https://support.oracle.com/epmos/faces/DocumentDisplay%3Fid=2285040.1

- MOS Note: 2245178.1
  12.2.0.1 Database Release Update - List of Fixes in each RU/RUR
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=2245178.1

- MOS Note: 2245185.1
  12.2.0.1 Grid Infrastructure Release Update - List of Fixes in each RU/RUR
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=2245185.1

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Most Important Notes

- MOS Note: 756671.1
  Master Note for Database Proactive Patch Program
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=756671.1

- MOS Note: 1962125.1
  Oracle Database - Overview of Database Patch Delivery Methods for 12.1.0.2 and lower
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=1962125.1

- MOS NOTE 2337415.1
  Oracle Database - Overview of Database Patch Delivery Methods for 12.2.0.1 and greater
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=2337415.1

- MOS Note: 2118136.2
  Assistant: Download Reference for Oracle Database/GI PSU, SPU(CPU), Bundle Patches, Patchsets and Base Releases
  https://support.oracle.com/epmos/faces/DocumentDisplay?id=2118136.2

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Slides Download: https://MikeDietrichDE.com