LAOUC Tour 2023

How Database Development at Oracle Works

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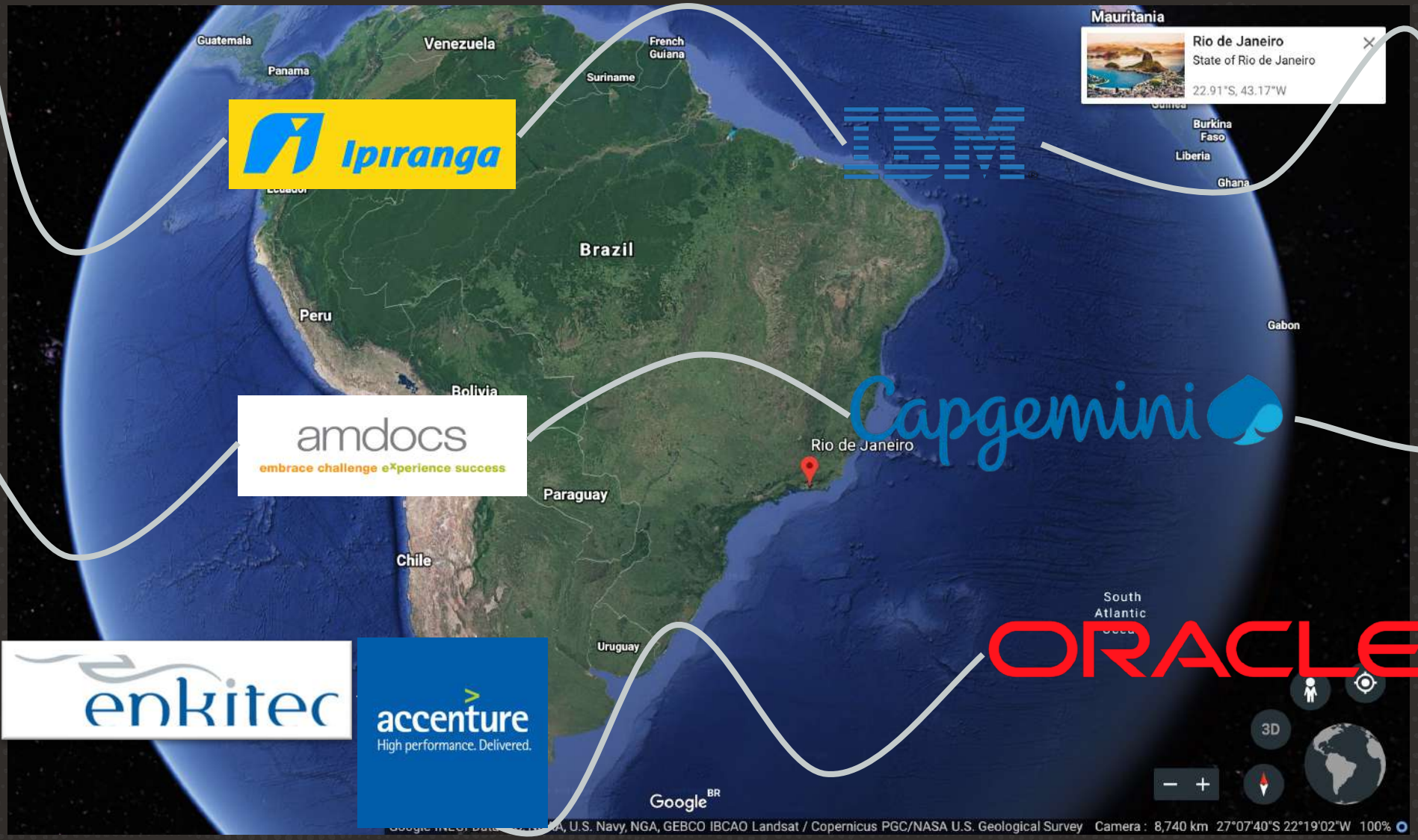
Upgrade / Migration / Patching
July / August 2023



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- OCMs 11g / 12c / MAA / Cloud
- OCEs 11g / 12c
- (…)

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DBA - Rodrigo Jorge - Oracle Tips and Guides

Blog about Databases, Security and High Availability

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Episode 1

Release and Patching Strategy

105 minutes – Feb 4, 2021

Episode 2

AutoUpgrade to Oracle Database 19c

115 minutes – Feb 20, 2021

Episode 3

Performance Stability, Tips and Tricks and Underscores

120 minutes – Mar 4, 2021

Episode 4

Migration to Oracle Multitenant

120 minutes – Mar 16. 2021

Episode 5

Migration Strategies – Insights, Tips and Secrets

120 minutes – Mar 25, 2021

Episode 6

Move to the Cloud – Not only for techies

115 minutes – Apr 8, 2021

Recorded Web Seminars

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REALITY CHECK

A true customer story

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Insights into the Patching Process

ERROR **FIX** **BACKPORT** **INCLUSION**

- Report via My Oracle Support
- Service Request inspected by automation

How many Service Requests are solved by automation within one day?

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Automation solves 60 % of
all Service Requests within a day

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Insights into the Patching Process

ERROR **FIX** **BACKPORT** **INCLUSION**

- Support Engineer creates a bug
- Help us help you:
  - Clear description
  - Reproducible test case
  - Logs, traces, dumps
  - Various release tests

Bug 41886745 : ORA-600 [happens_on_mondays_only] before java is brewed

Bug Attributes

Type	B - Defect	**Fixed in Product Version**	
Severity	2 - Severe Loss of Service	**Product Version**	19.17.0.0.0
Status	10 - New	**Platform**	226 - Linux x86-64
Created	Oct 17, 2022	**Platform Version**	ORACLE LINUX 7
Updated	Oct 17, 2022	**Base Bug**	N/A
Database Version	19.17.0.0.0	**Affects Platforms**	Generic
Product Source	Oracle	Knowledge, Patches, Service Requests and Bugs related to this bug	

Related Products

Line	Oracle Database Products	**Family**	Oracle Database Suite
Area	Oracle Database	**Product**	5 - Oracle Database - Enterprise Edition

```
Hdr: 41886745 : ORA-600 [happens_on_mondays_only] before java is brewed
Abstract: Happens on most important sales table. Sales are yelling ... loudly
```

When your case needs further attention

1.
Update the SR
and raise severity

2.
Call Oracle Support

[Blog Post: Request Management Attention for your SR]

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Insights into the Patching Process

ERROR

FIX

BACKPORT

INCLUSION

- Developer creates a fix
- Always in MAIN branch first

Insights into the Patching Process

ERROR

FIX

BACKPORT

INCLUSION

- Developer verifies the fix
- Regression tests on *Farm* in OCI
  - Subset of tests before merge
  - All tests run daily, ~1 million functional tests (runtime ~25.000 hours)

Insights into the Patching Process

ERROR

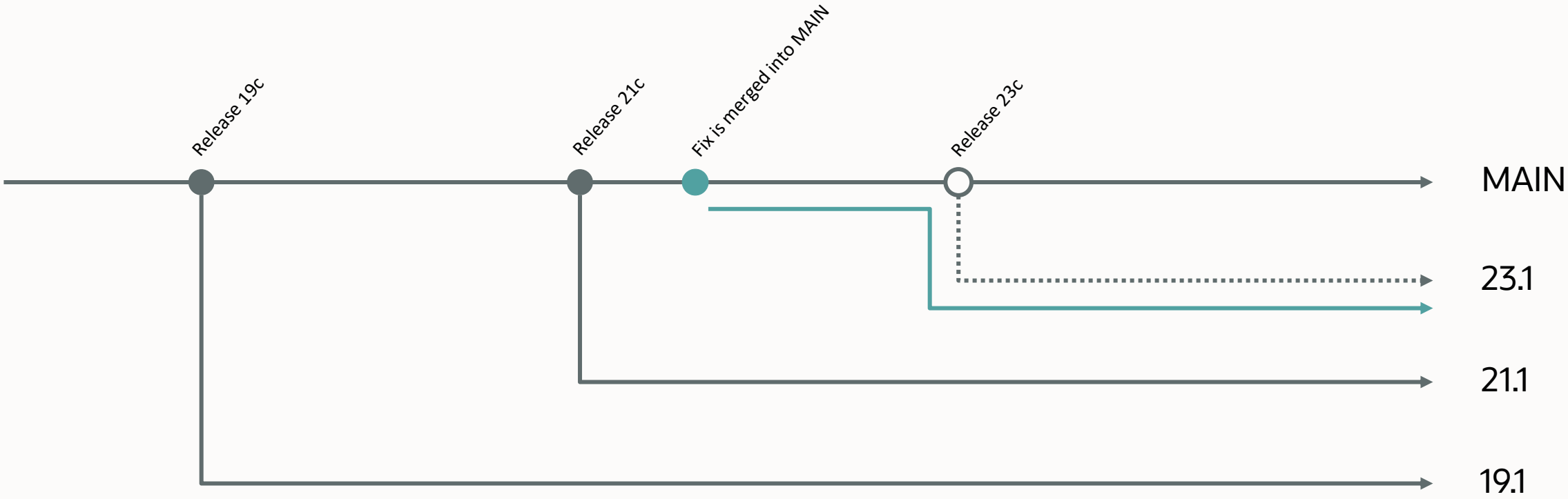
FIX

BACKPORT

INCLUSION

- In case, fix isn't working as expected?
  - Fix the fix
  - Regression tests again
- Fix is ok?
  - Merge into MAIN
  - Merge can only happen with no failing tests

Branches


Release 19c
Release 21c
Fix is merged into MAIN
Release 23c
MAIN
23.1
21.1
19.1

Bug 41886745 : ORA-600 [happens_on_mondays_only] before java is brewed

Bug Attributes

Type	B - Defect	**Fixed in Product Version**	23.1
Severity	2 - Severe Loss of Service	**Product Version**	19.17.0.0.0
Status	80 - Development to QA/Fix Delivered Internal	**Platform**	226 - Linux x86-64
Created	Oct 17, 2022	**Platform Version**	ORACLE LINUX 7
Updated	Oct 17, 2022	**Base Bug**	N/A
Database Version	19.17.0.0.0	**Affects Platforms**	Generic
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Hdr: 41886745 : ORA-600 [happens_on_mondays_only] before java is brewed
Abstract: Happens on most important sales table. Sales are yelling ... loudly
```

Photo by Andre Hunter on Unsplash

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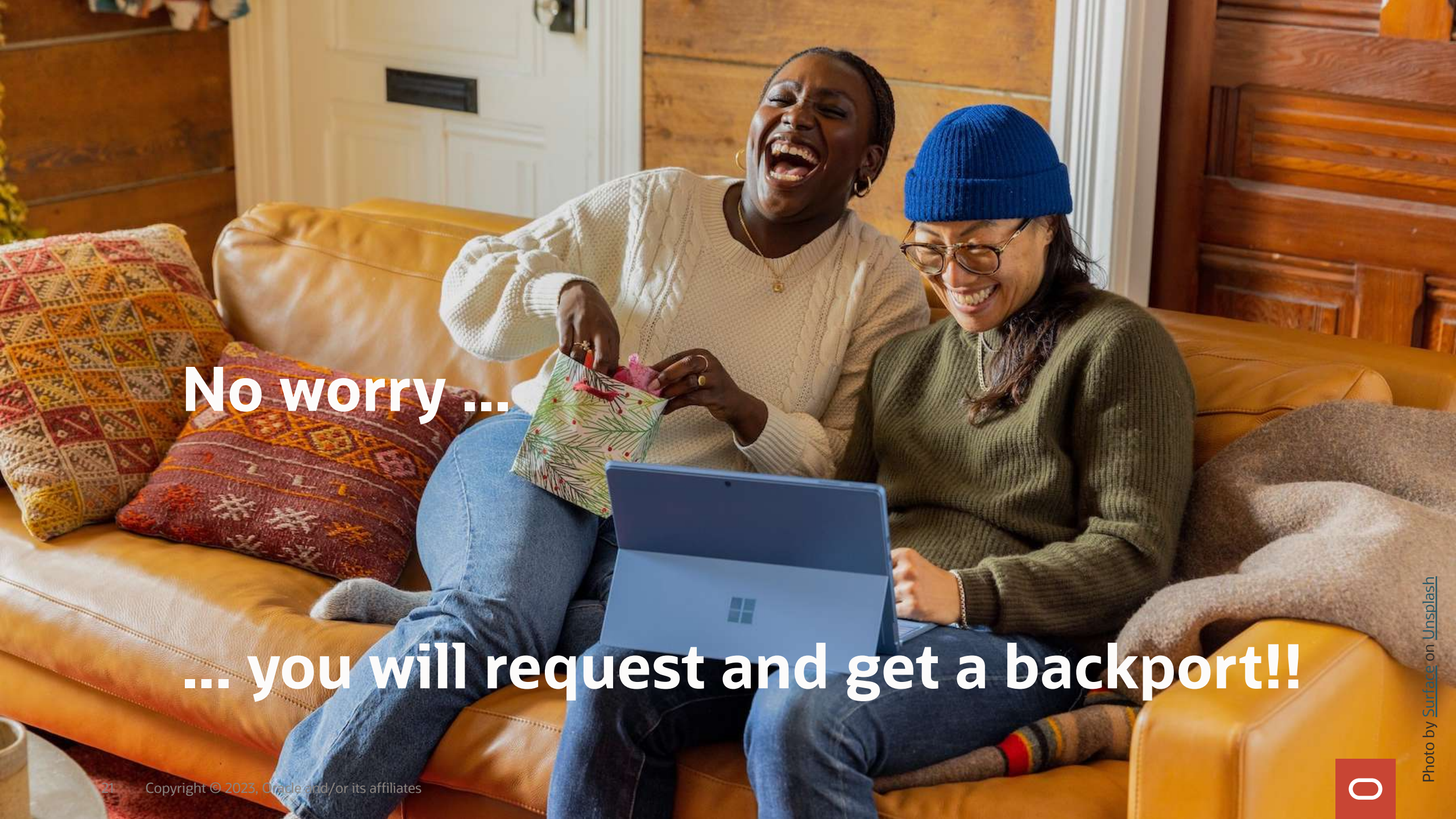

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Insights into the Patching Process

ERROR

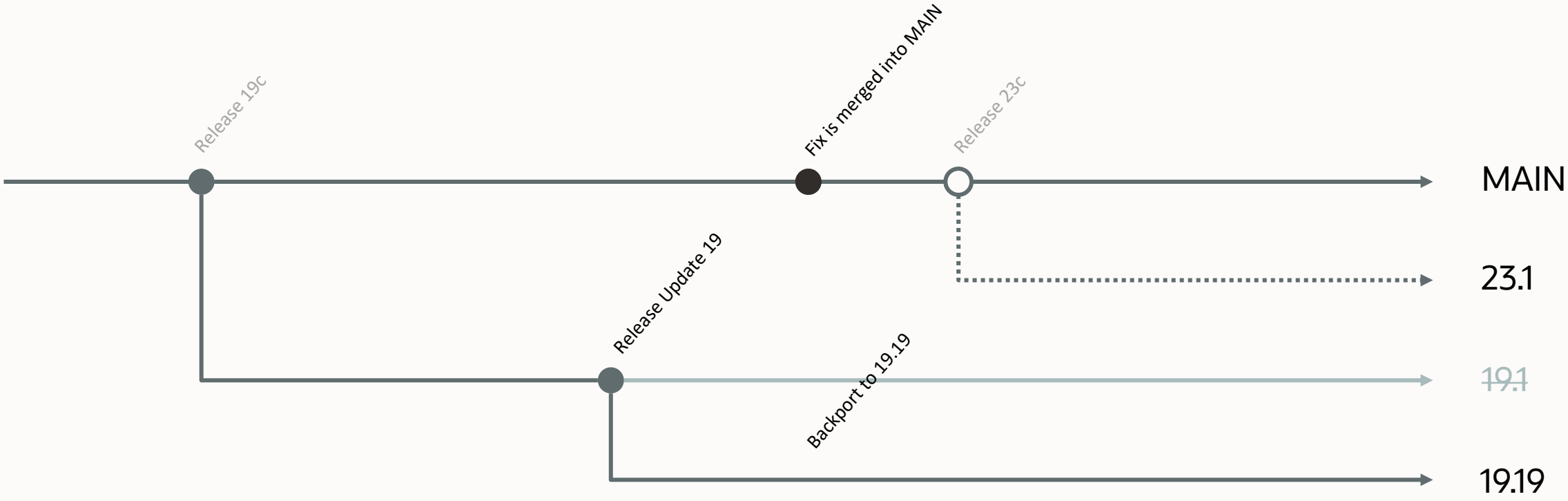
FIX

BACKPORT

INCLUSION

- Backport created on request
- Backports are specific for a release
  and usually also for a patch level, e.g., on top of 19.19.0
- `opatch lsinventory`

Backport


Release 19c
Fix is merged into MAIN
Release 23c
MAIN
23.1
Release Update 19
Backport to 19.19
19.1
19.19

Insights into the Patching Process

ERROR

FIX

BACKPORT

INCLUSION

- Automated flow, manual handling might be required
  - Some conflicts
  - Dependencies
- Manual handling may postpone patch delivery

Patch Simple Search Results

Filters: Patch Name or Number is 31517417; Platform is Linux x86-64;

Edit Search

Table ▾ View ▾ Detach Share Link

Patch Name	Description	Release	Platform (Language)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.16.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.15.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.14.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.13.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.12.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.11.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.10.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.9.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.8.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.6.0.0.0DBRU	Generic Platform (American English)
31517417	ORA-22308: OPERATION NOT ALLOWED ON EVOLVED TYP (Patch)	19.4.0.0.0DBRU	Generic Platform (American English)

19.7.0 missing

Why is the patch not in the next Release Update?

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Insights into the Patching Process

ERROR

FIX

BACKPORT

INCLUSION

- What goes into a Release Update?
- Screening and monitoring for candidates
- Support can request inclusion via base bug

Request for Inclusion

BUG 32765738 - AIM:ORA-7445 [KEWSSYSVF_1] - KEWSSYSVF_1

Edit this bug Bug Tree ARU Report

Bug No:	32765738 (Bug)
Filed By:	[redacted]
Updated By:	[redacted]
Sup Rep:	[redacted]
Customer:	[redacted]
Status:	80 - Development to QA/Fix Delivered Internal

BUG 32765738 - AIM:ORA-7445 [KEWSSYSVF_1] - KEWSSYSVF_1

Edit this bug Bug Tree ARU Re

Bug No: 32765738

Filed By:

Updated By:

Sup Rep:

Customer:

Status: 80 - Development to QA/Fix Delivered Internal

SRs in Bug Hierarchy: Open: 12 Others: 274 (Show Details)

Automatic Incident Management

Automatic Incident Management

- Scans for incidents
- Monitors also shared autonomous databases
- Automatically creates bugs
- Report and fix bugs before customers

Ensure your Service Request is associated with the corresponding bug

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Insights into the Patching Process

ERROR

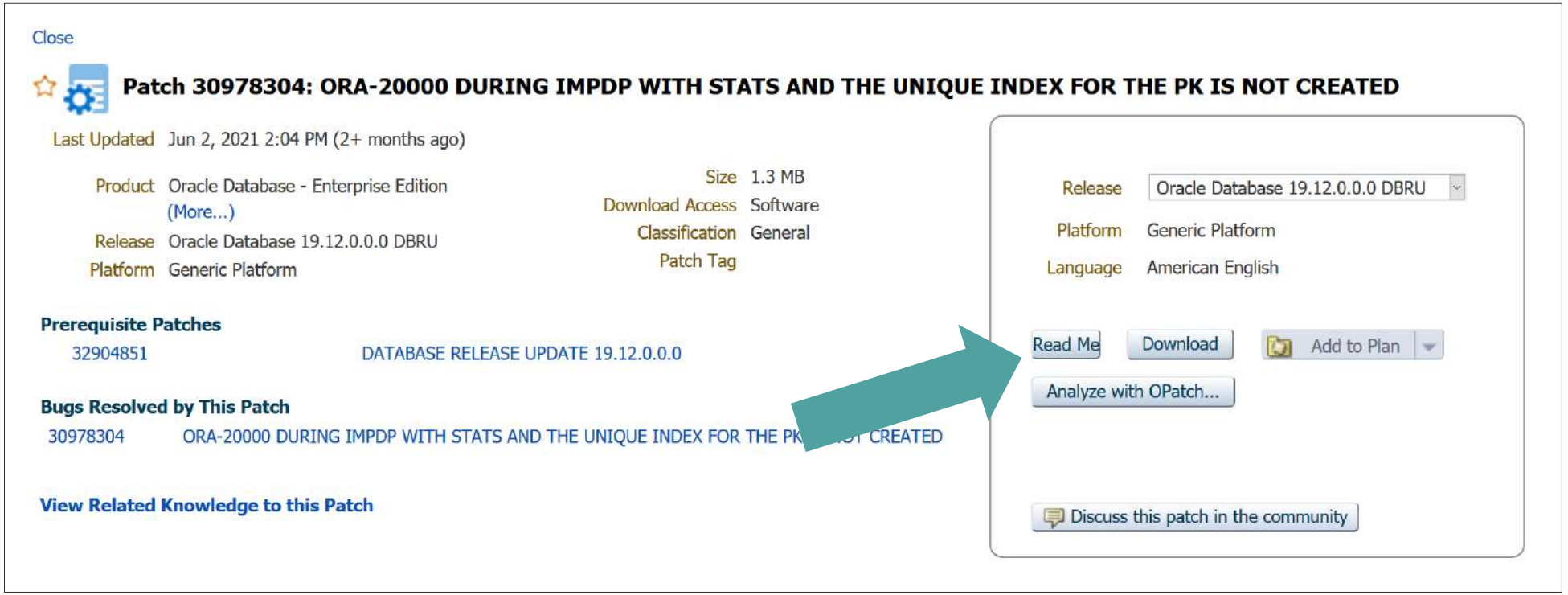
FIX

BACKPORT

INCLUSION

- Evaluated for Release Update inclusion
- Strict requirements apply
  - RAC Rolling
  - Standby-First

Inclusion Evaluation and Criteria



Inclusion Evaluation and Criteria

```
Oracle Database 19 Release 19.12.0.0.210720DBRU

ORACLE DATABASE Patch for Bug# 30978304 for Generic Platforms

This patch is non-RAC Rolling Installable.

This patch is non-Data Guard Standby-First Installable - Please read My Oracle Support Note
1265700.1 https://support.us.oracle.com/oip/faces/secure/km/DocumentDisplay.jspx?id=1265700.1
Oracle Patch Assurance - Data Guard Standby-First Patch Apply for details on how to remove risk
and reduce downtime when applying this patch.
```

NEVER INCLUDED

```
(1) Prerequisites
--------------------
Before you install or deinstall the patch, ensure that you meet the following requirements:
```

Insights into the Patching Process

ERROR

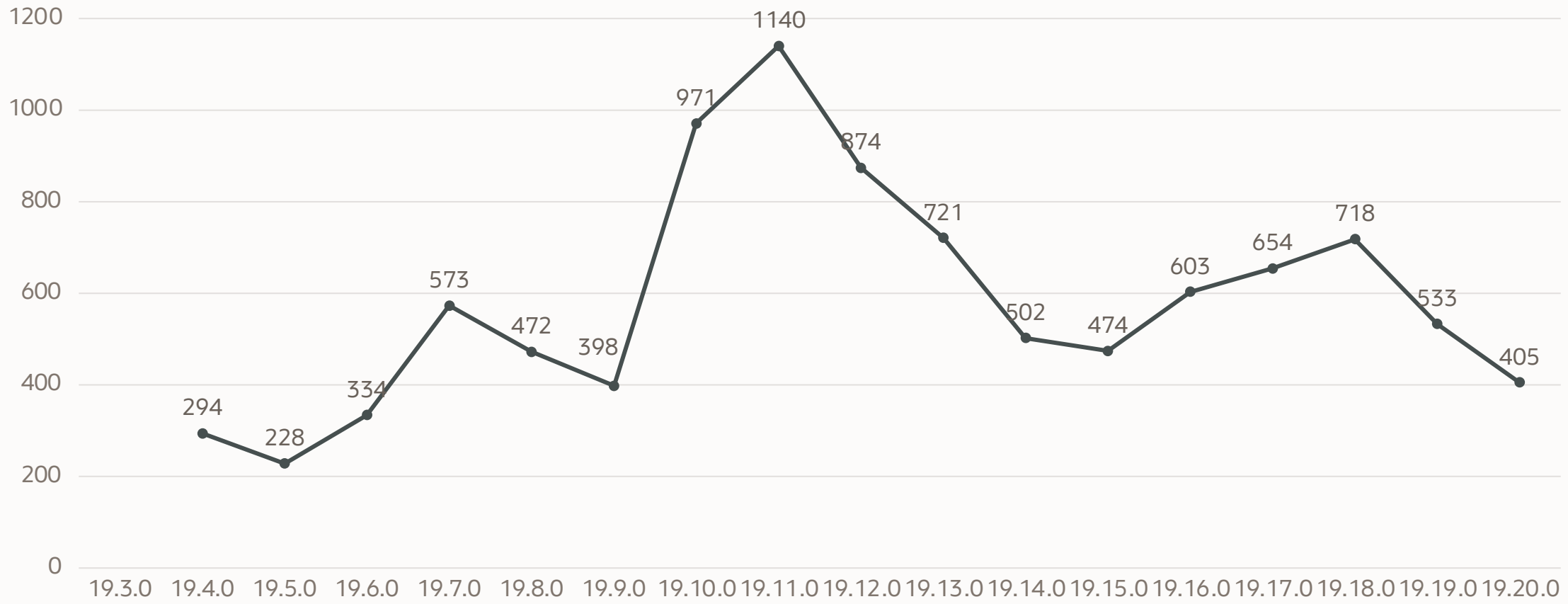
FIX

BACKPORT

INCLUSION

- Limited number of fixes per Release Update
- Release Updates and Revisions regression tests

Limitation



Database 19 Release Updates and Revisions Bugs Fixed Lists (Doc ID 2523220.1)

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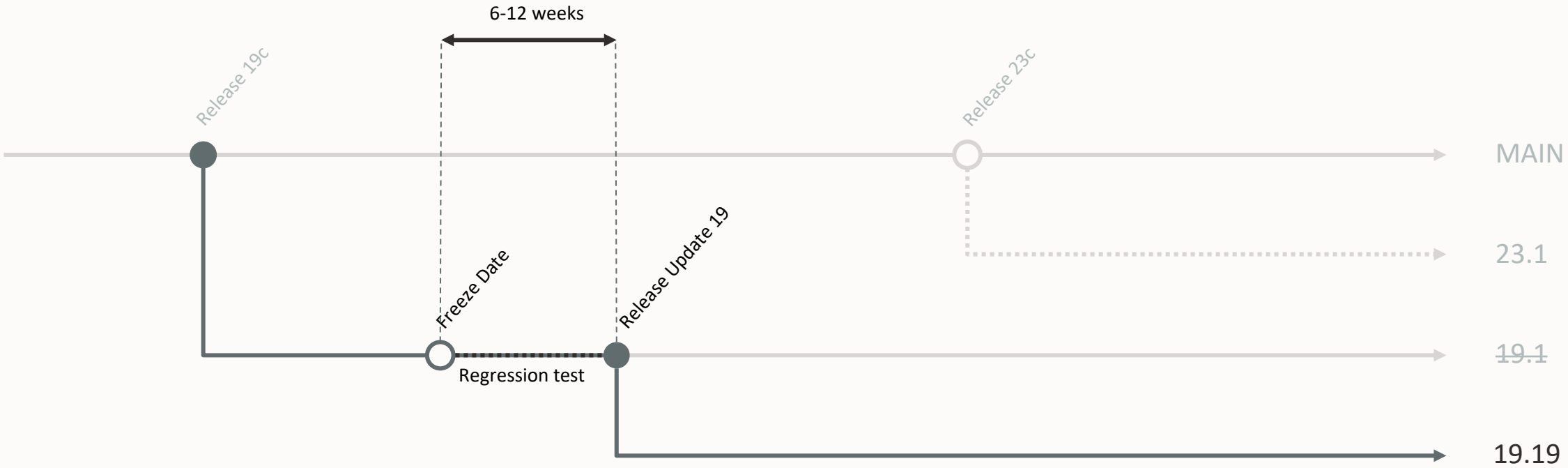
Limitation


6-12 weeks
Release 19c
Release 23c
MAIN
23.1
Freeze Date
Release Update 19
19.1
Regression test
19.19

WHY DO YOU ALWAYS ASK FOR

OPATCH lsinventory

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TO AVOID CONFLICTS

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```
$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -ph ./

Invoking prereq "checkconflictagainstohwithdetail"
ZOP-40: The patch(es) has conflicts with other patches installed in the
Oracle Home (or) among themselves.
Prereq "checkConflictAgainstOHWithDetail" failed.
Summary of Conflict Analysis:
There are no patches that can be applied now.
Following patches have conflicts. Please contact Oracle Support and get
the merged patch of the patches :
35012562, 35095748
Conflicts/Supersets for each patch are:
Patch : 35095748
Conflict with 35012562
Conflict details:
/u01/app/oracle/product/19.19.0/db_1/lib/libserver19.a:kko.o

OPatch succeeded.
```


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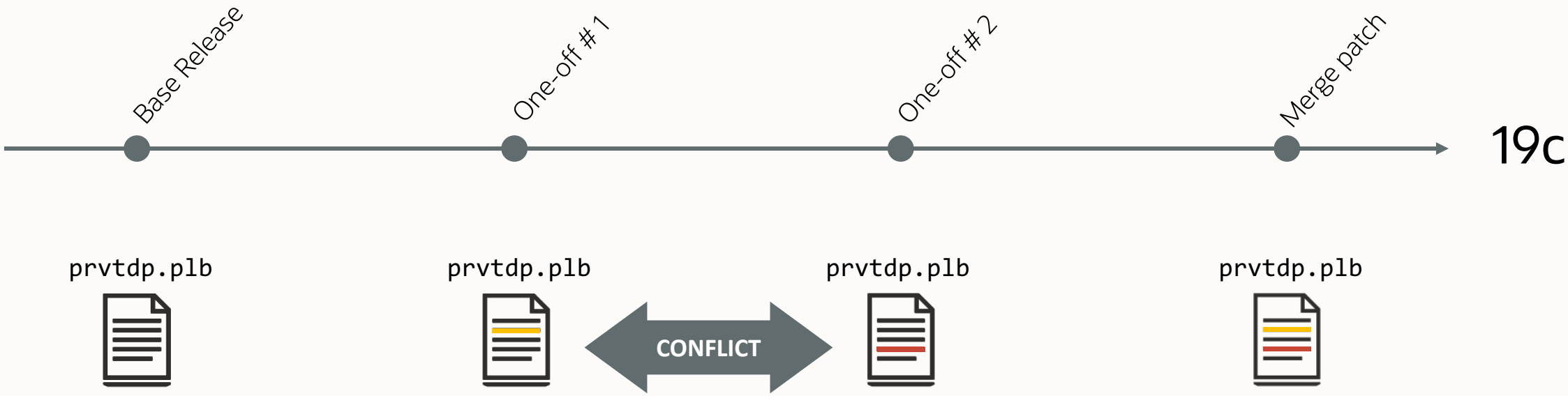
Basic Facts | Conflicts



Always attach the output of
`opatch lsinventory` to your Service Request

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Don't name it

- `optch_lsinvt.txt`
- `tekst_fra_opatch.txt`
- `alle_meine_patches.txt`
- `textodeopatch.txt`

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Just name it `opatch_lsinventory.txt`

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But … I am on MS Windows …

Photo by Sebastian Herrmann on Unsplash

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Windows is different …

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Windows Bundle Patches is the term used for Release Updates on Windows

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A Windows Bundle Patch and a Release Update from the same quarter, e.g., April 2023, do not contain the same patches

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Comparing Release Updates and Bundle Patches

19.19.0 Linux Release Update

- 533 bug fixes
- 5 were not in the Windows bundle patch

19.19.0 Windows Bundle Patch

- 153 additional bug fixes
- 528 bug fixes in common

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Where do I find the Windows Bundle Patches?

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Assistant: Download Reference for Oracle Database/GI Update, Revision, PSU, SPU(CPU), Bundle Patches, Patchsets and Base Releases (Doc ID 2118136.2)

Visibility: EXTERNAL (94)

Selection(s)

What would you like to download?

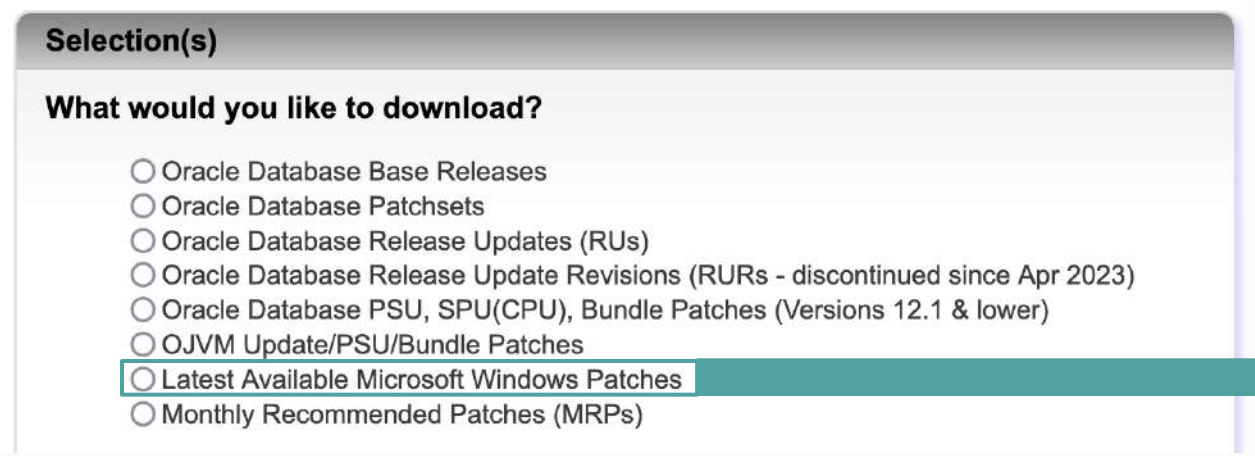
- ○ Oracle Database Base Releases
- ○ Oracle Database Patchsets
- ○ Oracle Database Release Updates (RUs)
- ○ Oracle Database Release Update Revisions (RURs - discontinued since Apr 2023)
- ○ Oracle Database PSU, SPU(CPU), Bundle Patches (Versions 12.1 & lower)
- ○ OJVM Update/PSU/Bundle Patches
- ◯ Latest Available Microsoft Windows Patches
- ○ Monthly Recommended Patches (MRPs)

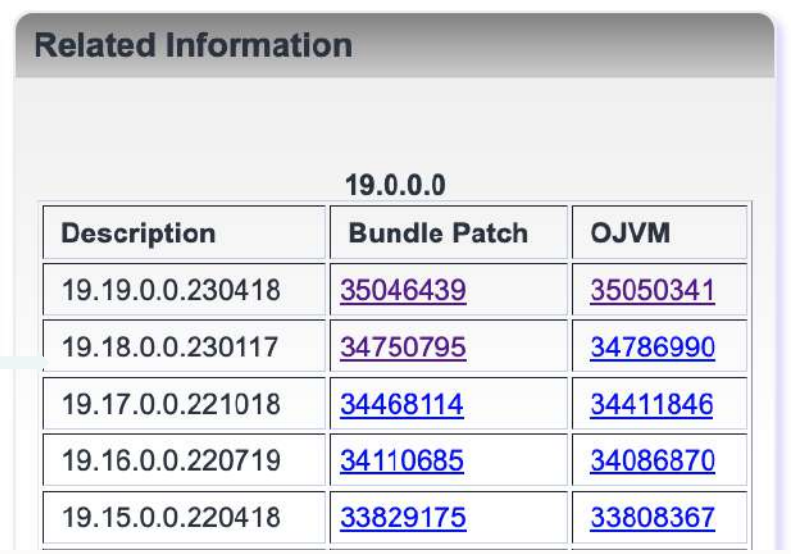
Solution(s)

Possible Solutions w
you make your selec

Basic Facts | Patch Availability

MOS Note: 2118136.2 - Assistant: Download Reference for DB and GI Patch Bundles





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Find the PAD by searching for
Patch Availability Document Apr 2023

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Oracle Linux Development Platform

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Porting

Oracle Linux x86-64

Porting

- Microsoft Windows
- SPARC Solaris
- Intel Solaris x86-64
- IBM AIX
- IBM zLinux
- HP UX Itanium
- BS2000
- ARM

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Some of the platforms from our bug tracking system

Blast from the past

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Blast from the Past | Platforms

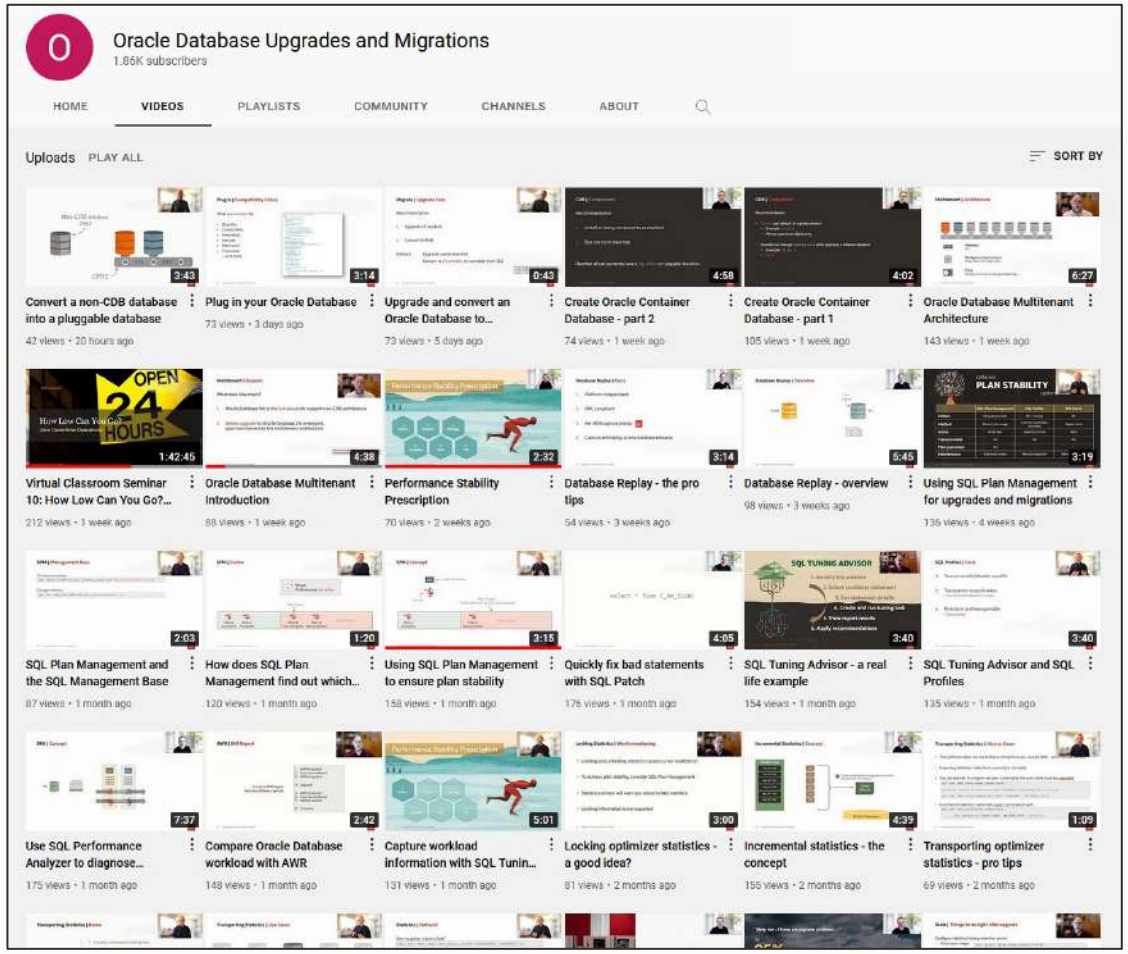
Microsoft Windows Phone
Oracle JRockit Virtual Edition x86
SunOS
Monta Vista x86
Acme Packet 1100
iTron
Embedded Linux on cnMIPS
Embedded Linux SH4
HP NonStop Itanium (OSS)
QNX Unix
Acme Packet 6100
Linux MIPS 64-bit
Fujitsu BS2000/OSD (SQ series)
Mediatek MTZ
HP NonStop (Guardian) on x86
Fujitsu BS2000
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

YouTube | Oracle Database Upgrades and Migrations



Link

- 300+ videos
- New videos every week
- No marketing
- No buzzword
- All tech

SCAN ME

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THANK YOU

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