



Downtime Optimization Approaches for SAP S/4HANA

Mirja Kempin
Cloud & Lifecycle Management, SAP
April 2023
Public

Technical Downtime Optimization App

Starting point for downtime optimization



Easy to consume
analytics



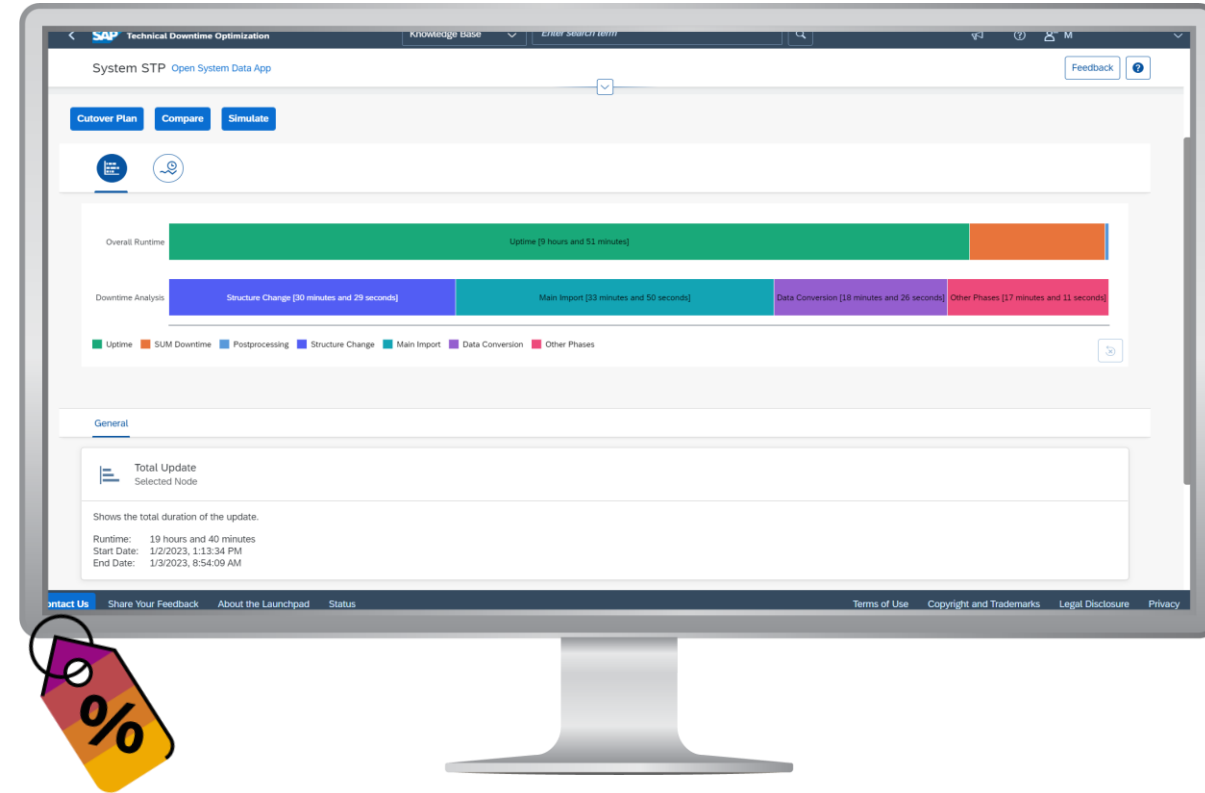
Tailored downtime
minimization advice



Simulation from up-to-
date knowledge base



Modifiable **Cutover**
Plan for download



No extra costs



[SAP Note 2881515](#) - Introduction to the Technical Downtime Optimization App

Access the app via the SAP ONE Support Launchpad: <https://me.sap.com/app/downtimeoptimization>

Downtime-optimization approaches for ABAP maintenance activities

Approach	Abbreviation	Scenario	Availability*	SAP Note
near-Zero Downtime Maintenance (ABAP)	nZDM (ABAP)	Update/Upgrade, Conversion to SAP S/4HANA	Unrestricted available	1678565
Zero Downtime Option for SAP S/4HANA	ZDO	Update/Upgrade	Available for educated experts	2707731
Customer Transport Integration	CTI	Update/Upgrade, Conversion to SAP S/4HANA	Unrestricted available (with ZDO: project-based)	1759080
downtime-optimized Database Migration Option	downtime-optimized DMO	Migration to SAP HANA database	Unrestricted available	2442926
downtime-optimized Conversion		Conversion to SAP S/4HANA	Available for educated experts	3211805



Overview in the [SAP Support Portal](#)

* This is the current state of planning and may be changed by SAP at any time.

Different approaches for updating or upgrading SAP S/4HANA using the Software Update Manager



Standard approach

Several downtime optimizations (for example, shadow system operations)



Near-Zero Downtime Maintenance (nZDM)

Downtime reduction by moving downtime-relevant phases to uptime

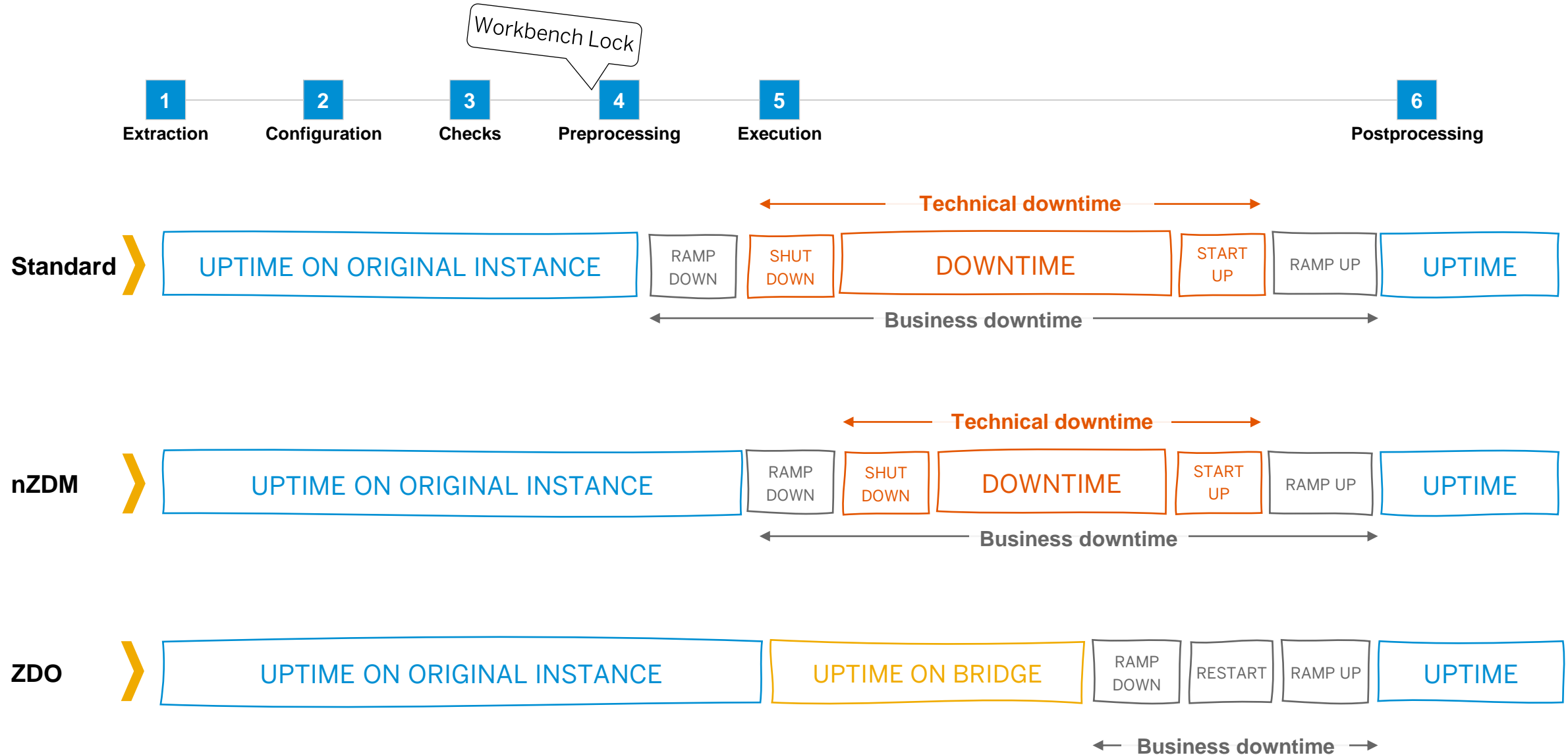


Zero Downtime Option (ZDO)

Complete upgrade running in parallel with continuous business operations



Technical Downtime of different procedures for maintenance events



Customer Transport Integration (CTI) in Software Update Manager

Public



Customer Transport Integration

Motivation

Utilize Software Update Manager capabilities and downtime-optimization options to import your customer releases.

Solution Approach

Buffer “CUST”
(transport list)

TR12345
TR98765
TR11111
TR22222
TR33333



SAP Software Update Manager 2.0 SP8 (PL0)

Tasklist Logs Breakpoints Help

Extraction Configuration Checks Preprocessing Execution Postprocessing

9% - Process is in dialog state

Current Phase: PREP_EXTENSION/BIND_PATCH

Inclusion of Customer Buffer File

Customer Buffer

You can include a customer transport buffer file that contains customer transports for the target release.

PATH TO THE BUFFER FILE

Back Next



[SAP Note 1759080](#) – Prerequisites and restrictions of Customer Transport Integration with SUM

How to use Customer Transport Integration in SUM

Overview

- **Activation of Customer Transport Integration**
 - See standard [SUM guide](#) chapter 5.10
 - Can be activated independent of the scenario (e.g. standard, nZDM, ZDO, ...)
- **One customer buffer file for all transports**
 - SPDD and SPAU adjustments
 - client dependent and client independent
 - repository objects
 - customizing objects
- **Additional parameter for transport profile**
 - create version at import time



The screenshot displays the SAP Software Update Manager 2.0 interface. The top navigation bar includes the SAP logo, the title 'Software Update Manager 2.0', and the subtitle 'CTI only on AS ABAP (ZDO)'. On the right, there are links for 'Tasklist', 'Logs', 'Breakpoints', and 'Help'. Below the navigation bar is a progress bar with icons for 'Extraction', 'Configuration' (active), 'Checks', 'Preprocessing', 'Execution', and 'Postprocessing'. A progress indicator shows '9% - Process is in dialog state' and 'Current Phase: PREP_EXTENSION/BIND_PATCH'. The main content area is titled 'Inclusion of Customer Buffer File' and contains the following sections:

- Customer Buffer**: A text description stating 'You can include a customer transport buffer file that contains customer transports for the target release.' Below this is a text input field labeled 'PATH TO THE BUFFER FILE' with the value '/usr/sap/trans/buffer/CUST' and a file selection icon.
- Values for the Transport Profile**: A text description stating 'The preselected values for the transport profile will be taken from "/usr/sap/trans/bin/TP_DOMAIN_PM2.PFL"'. Below this is another text description: 'The client table logging will be turned off.'
- Decision**: A text description stating 'Decide, if you want to override the preset value of parameter VERS_AT_IMP by creating transport profile versions at import time:'. Below this are two radio buttons: 'YES' (unselected) and 'NO' (selected).

At the bottom of the interface, there are 'Back' and 'Next' buttons.

Customer Transport Integration: Creation of customer buffer file

Upgrade Transport Integration Wizard

- The **Upgrade Transport Integration Wizard** can be used for creating a customer buffer file that can be provided to SUM
- For additional information on the tool, see SAP Community blog “[Integrating customer transport requests in updates and upgrades](#)”

1 Welcome 2 Choose System 3 Choose Integration Task 4 **Select Transports** 5 Confirm Selection 6 Download Buffer

Select Relevant Transports For System
JF0

Select the transport relevant for upgrade integration from the list below. The data is built from the current buffer and enhanced with process information (e.g. SAP Change Request Management or SAP Quality Gate Management).

Select All Deselect All Reset Decision State Expand All Collapse All Clear All Filters

Change / Request	Short Description	Status	Technical ID	Owner	Details	Project/Cycle	Branch	Landscape
<input checked="" type="checkbox"/> JF0K900120	Release 1801: Correction for HR		JF0K900120	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900121	Release 1801: Correction for CO		JF0K900121	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900122	Release 1801: Correction for FI		JF0K900122	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900123	Release 1801: Correction for Basis		JF0K900123	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900124	Release 1801: User roles for MM		JF0K900124	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900125	Release 1801: User roles for RFC users		JF0K900125	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900126	Release 1801: New functionality for Master Data		JF0K900126	DDIC_DEV	More Information			
<input checked="" type="checkbox"/> JF0K900127	Release 1801: Critical correction for MM		JF0K900127	DDIC_DEV	More Information			


SAP Upgrade Transport Integration Wizard

Download Buffer

1 Welcome 2 Choose System 3 Choose Integration Task 4 **Select Transports** 5 Confirm Selection 6 **Download Buffer**

Download Buffer For System
JF0

The buffer file has been created and can be included during the upgrade. The file is stored in the buffer directory of the transport directory of the selected system under the filename:

 UPGSEL_20171023123813.JF0

The final buffer can be included into any upgrade/update process in the correct pre-processing phase.

Previous Next Cancel

Key takeaways about Customer Transport Integration

Availability

- Customer Transport Integration (CTI) does not require an additional license.
- CTI is **generally available** for usage with standard and nZDM procedure. For details on prerequisites and restrictions, see SAP Note [1759080](#).
- CTI is not in general availability scope of ZDO.
- CTI can be used with all maintenance scenarios (customer releases, updates, upgrades, system conversion).

Advantages

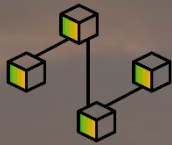
- CTI **reduces the technical downtime** and therefore overall business downtime for maintenance events including customer releases.
- Customer objects are applied with Software Update Manager.
- Tooling available to facilitate buffer creation.



near-Zero Downtime Maintenance (nZDM) for ABAP of Software Update Manager

Public

**Option of Software
Update Manager**



**KEY FACTS ABOUT
NEAR-ZERO
DOWNTIME OPTION**



**Record & Replay
framework ensures
data consistency**



**Reduces downtime
with extended
shadow operations**



**Minimal database
space
requirements**

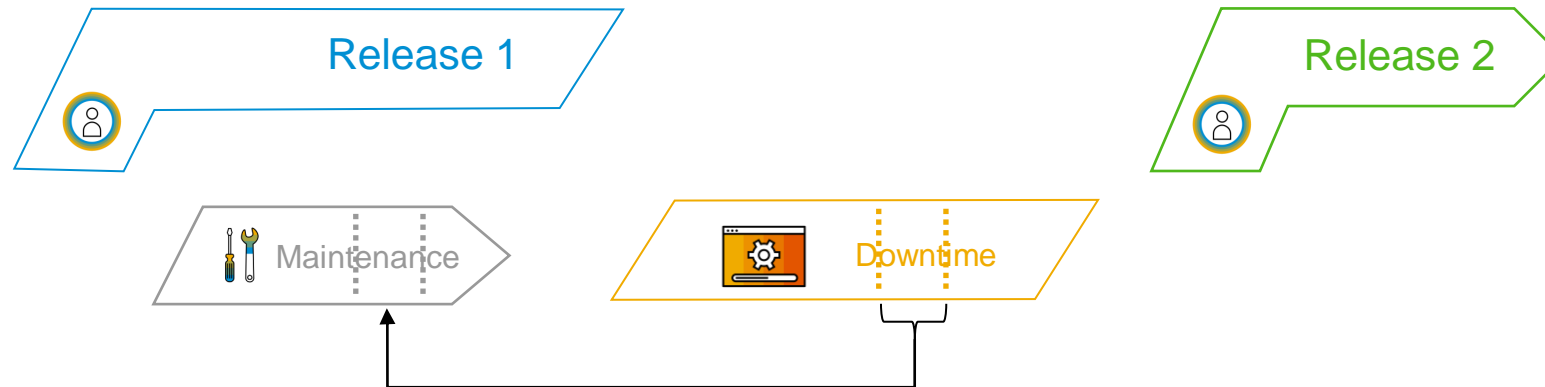


near-Zero Downtime Maintenance for ABAP-based solutions

Motivation

Perform software maintenance events like upgrades and updates of SAP ABAP software with reduced technical downtime.

Solution Approach

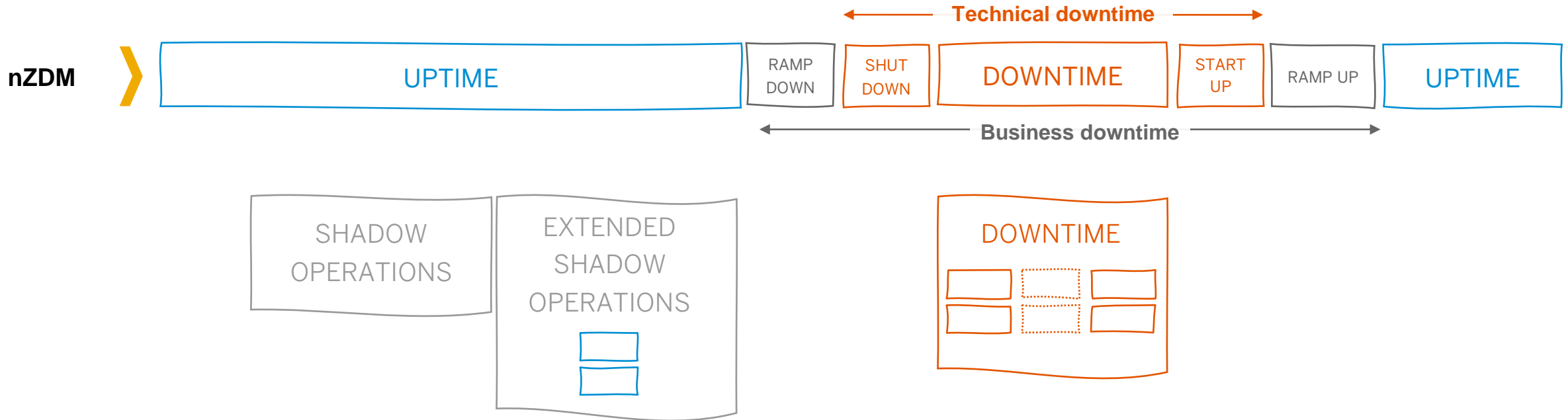


[SAP Note 1678564](#) – Restrictions, Database-specific Settings, and Troubleshooting of nZDM (near-Zero Downtime Maintenance) for ABAP-based solutions



Maintenance events

What's the difference compared to the standard approach?



near-Zero Downtime Maintenance moves time consuming upgrade activities like the import of new table content and table conversions partly into uptime. The **Record & Replay framework** ensures the consistency of business transactions.



[SAP Note 1678564](#) – Restrictions, Database-specific Settings, and Troubleshooting of nZDM (near-Zero Downtime Maintenance) for ABAP-based solutions

[SAP Note 1678565](#) - Prerequisites, Terms and Conditions for nZDM/SUM

Optimizing the business downtime using near-Zero Downtime Maintenance

How can nZDM be activated?

SAP Software Update Manager 2.0 SP8 (PL3)
CTI only

Tasklist Logs Breakpoints Help

Get Roadmap

0% - Process is in dialog state
Current Phase: MOD_SELROADMAP/SELECT_ROADMAP

Scenario Strategy
Specify the scenario strategy

☐ Single System (longer downtime, no shadow instance used)

☐ Standard (standard configuration)

☒ Downtime-optimized (high configuration)

☒ *Near-Zero Downtime Maintenance (nZDM)

Back Next

Key takeaways about near-Zero Downtime Maintenance

Availability

- Near-Zero Downtime Maintenance (nZDM) does not require an additional license.
- nZDM is **generally available**. For details on prerequisites and restrictions, see SAP Note [1678564](#).
- nZDM can be used for all maintenance scenarios (customer releases, updates, upgrades, system conversion).

Advantages

- nZDM **reduces the technical downtime** and therefore overall business downtime for maintenance events like upgrades and updates.
- It moves activities from technical downtime to extended shadow operations during uptime.
- Record & Replay framework **ensures consistency** of business operation.



Zero Downtime Option (ZDO) of Software Update Manager for SAP S/4HANA

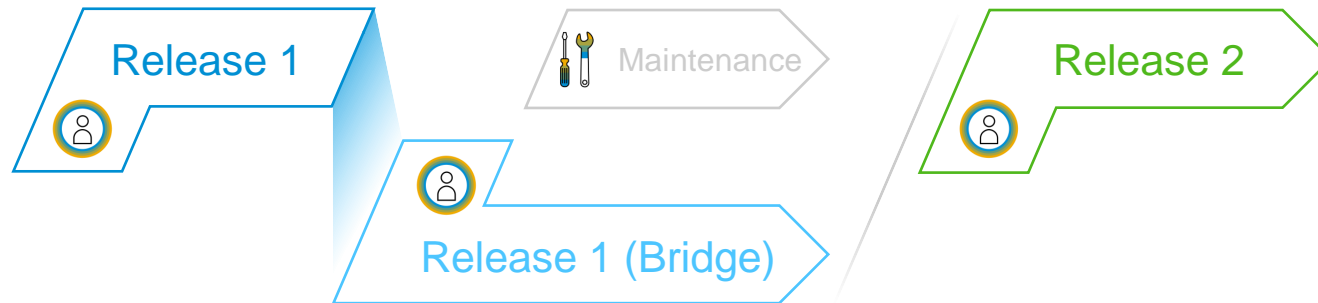
Public

Zero Downtime Option for SAP S/4HANA

Motivation

Perform software maintenance events like upgrades and updates of SAP S/4HANA without technical downtime.

Solution Approach



[SAP Note 2707731](#) – Prerequisites and restrictions of the Zero Downtime Option of Software Update Manager for SAP S/4HANA



KEY FACTS ABOUT ZERO DOWNTIME OPTION

Option of
Software Update
Manager



Smooth
transition to the
bridge



Only a single
restart needed



Minimal
database space
requirements



General availability of the Zero Downtime Option for SAP S/4HANA

Availability for SAP S/4HANA



Updates and upgrades of SAP S/4HANA 2020 or higher

Support of add-on products



A few add-ons which are not supported by Zero Downtime Option*

Training and assessment



Passing SAP Learning Journey is mandatory

* Attached to [SAP Note 2707731](#)



Important considerations of Zero Downtime Option for SAP S/4HANA

Training and assessment



Passing [SAP Learning Journey](#) is mandatory

Functional validation of essential business processes



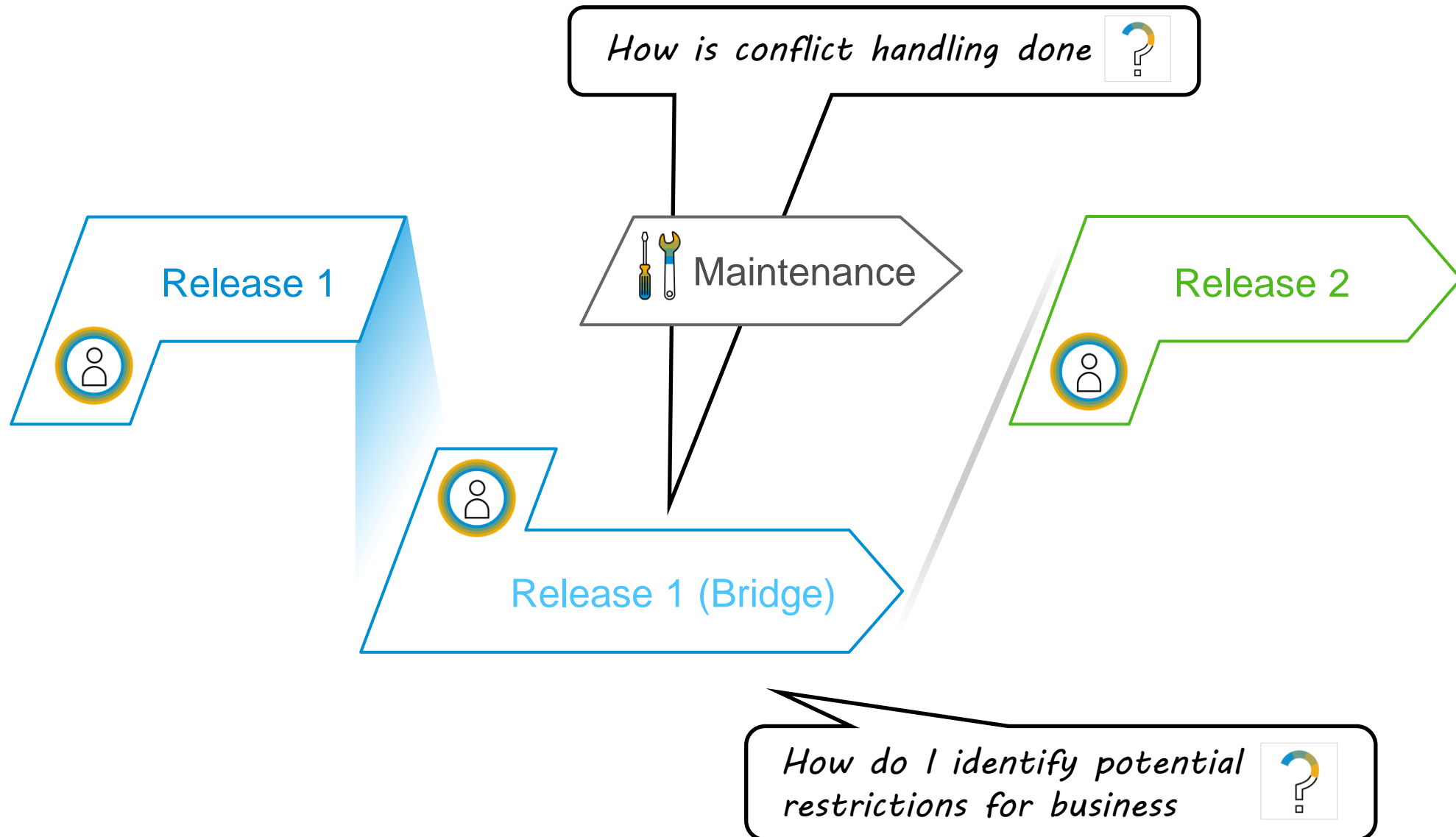
Careful analysis of Impact Analysis and functional tests on bridge required

Project plan needs to consider bridge execution time



Choose timeframe for bridge execution based on load and process analysis

ZDO Key Considerations



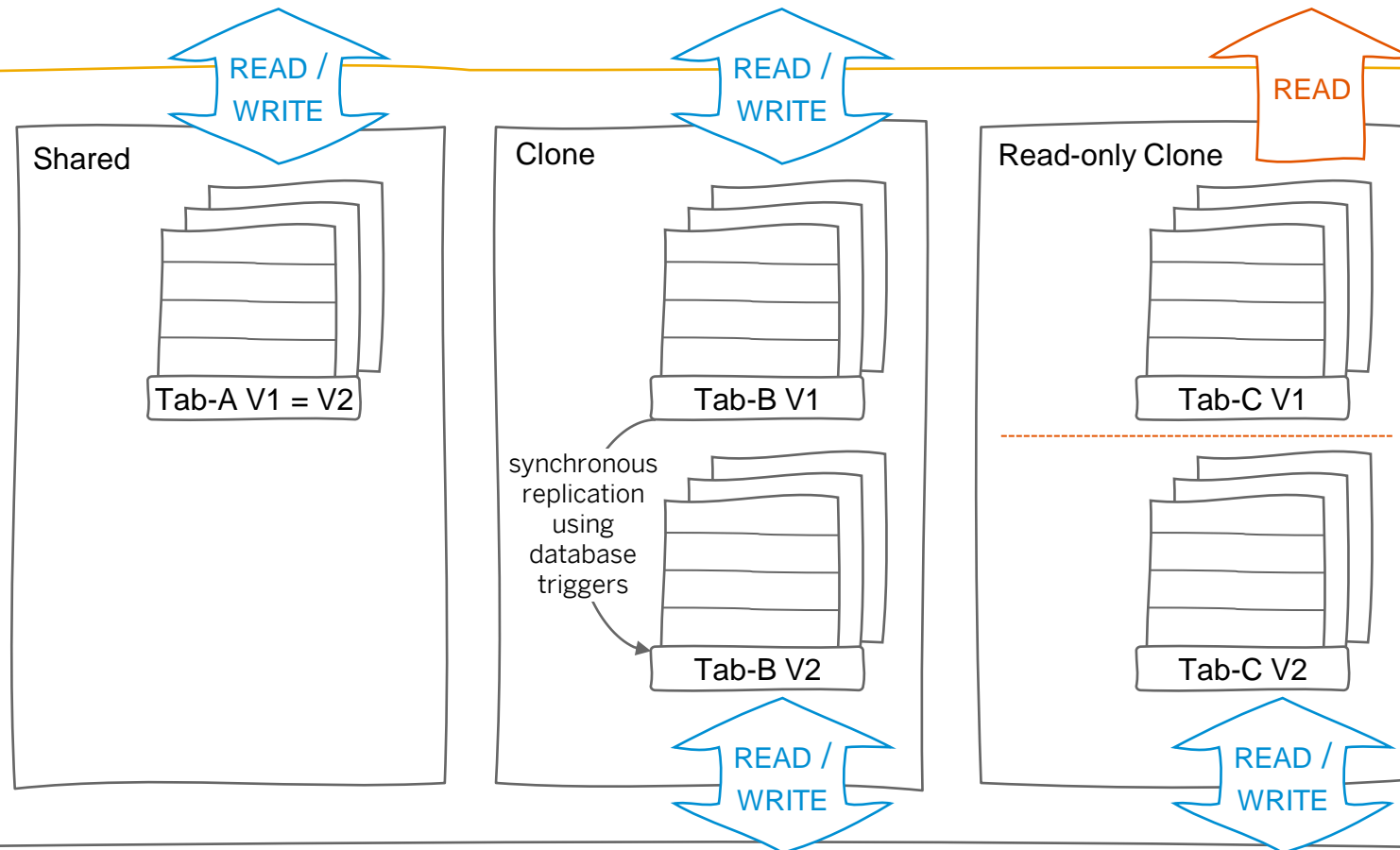
Zero Downtime Option – Conflict Handling

Concept of Table Classification



BRIDGE

Production



SUM

Public

UPGRADE

DDL

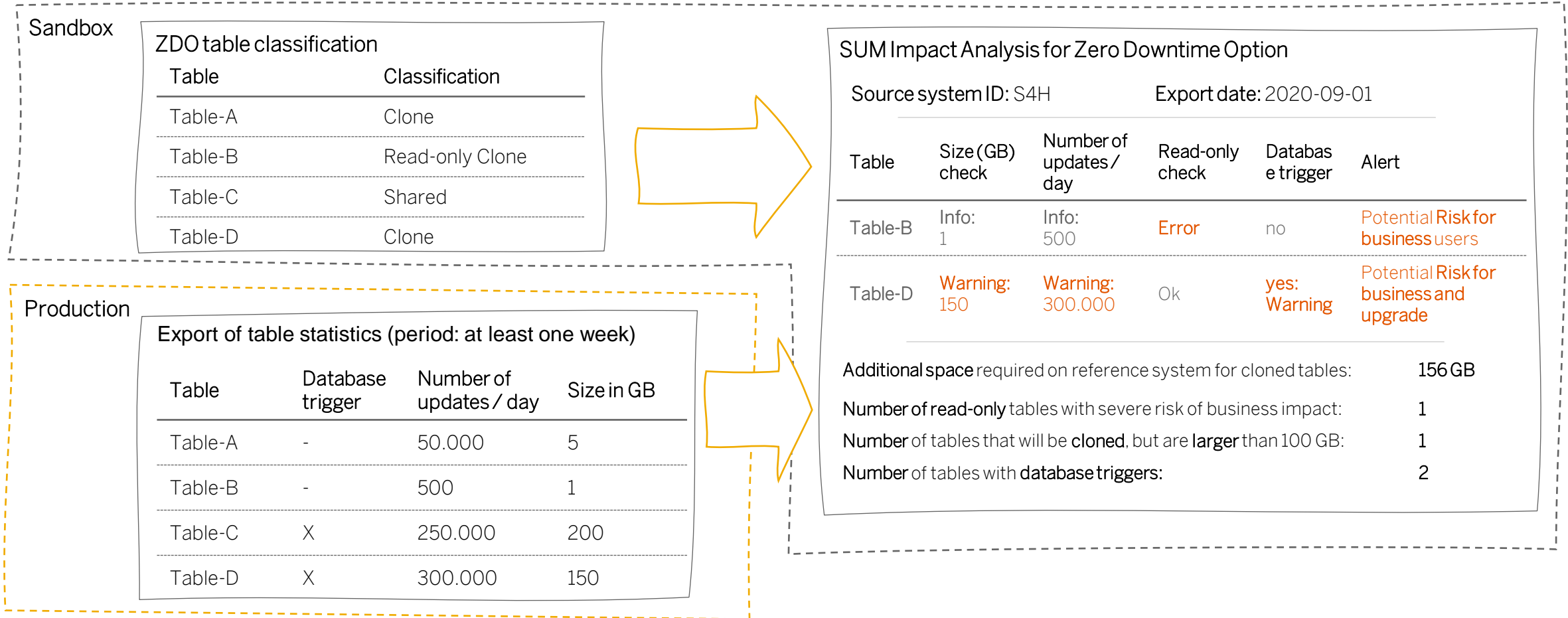
TABU

AIM

XPRA

Impact Analysis for Zero Downtime Option

Concept of Impact Analysis



[SAP Note 2402270](#) - Export of Table Statistics for SUM Impact Analysis

[SAP Note 2471883](#) - SUM Impact Analysis for ZDO

Key takeaways about the Zero Downtime Option for SAP S/4HANA

Availability

- The Zero Downtime Option (ZDO) does not require an additional license.
- From SAP S/4HANA 2020, ZDO is **generally available**. For details on prerequisites and restrictions, see SAP Note [2707731](#).
- Complete SAP Learning Journey [Leverage SAP S/4HANA Updates and Upgrades with Zero Downtime Option of SUM](#) on SAP Learning ([learning.sap.com](#)).

Advantages

- ZDO for SAP S/4HANA reduces the overall business downtime for maintenance events like upgrades and updates.
- It significantly reduces the unavailability of a system to **a single restart** of the application servers.
- There is a **minimal database free space** requirement by smart recognition on changes performed by the maintenance event.



Thank you.

Contact information:

Mirja Kempin

Product Manager, Cloud & Lifecycle Management

Email: mirja.kempin@sap.com

