Service Report

EarlyWatch ® Alert

Confidential

SAP System ID	WP2
Product	SAP NetWeaver 7.5
Status	Productive
DB System	SAP HANA Database 2.00.059.04
Customer	Bell Schweiz AG Basel Switzerland

Processed on	SAP Solution Manager	SPA
Release	SOLUTION MANAGER 7.2	
Service Tool	720 SP25	
Service Content	02.09.2024	

Analysis from	09.09.2024	Session No.	0010000024796
Until	15.09.2024	Installation No.	0020256234
		Customer No.	0000010364

1 Service Summary

This EarlyWatch Alert session detected issues that could potentially affect your system. Please evaluate the recommendations.

Alert Overview

	ABAP number ranges are almost exhausted.
	Gateway Access Control List sec_info is not effective. Well-known attacks may endager your system.
	SAP HANA network settings for System Replication is insecure.
	SAP Software on this system is outdated. Support with SAP Security Notes is no longer ensured.
	SAP HANA database: User SYSTEM is active and valid.
	Users with critical authorizations, which allow to do anything in client 000
	Users with critical authorizations, which allow to do anything in other client(s) than 000
	Users with critical authorizations, which should not be used in production in other client(s) than 000
	Noticeable potential for reduction of data volume was identified.
	Some important SAP Notes recommended for your current EWM support pack are not implemented.
	Your current version of component 950 is more than five Support Packages behind the latest support pack
	Missing important SAP Notes for EWM correction functionality
	SAP Notes that collect statistics on EWM inconsistencies and corrections are not implemented
	We found more than 30 ABAP dumps in your system.
	SAP HANA database: Parameters are not set in accordance with the recommendation.
	SAP HANA database: Memory consumption of tables exceeds 50% of usable memory.
	SAP HANA database: The size of the delta store in one or more table partitions is large.
	SAP HANA database: Column unloads occurred on the system
	SAP HANA database: Consistency checks are scheduled without the global consistency check.
	Expensive SQL statement causing unnecessary load identified.
	Missing index causes expensive SQL statement.
	SAP HANA database: Recommended Audit configuration is not applied.
	TMSADM exists in another client than 000

To provide feedback on the alerts, please use the 'Hide and Snooze Alert' functionality in the Solution Finder . You can hide alerts if you consider them irrelevant or snooze them if the recommendations are already in implementation. The blog Hide and Snooze SAP EarlyWatch Alerts explains how to use it and the required authorization "Manage Alert(s)" in SAP EarlyWatch Alert.

Note: If you send SAP EarlyWatch Alert data to SAP, this report can be viewed in "SAP for Me" . One of the benefits of using SAP EarlyWatch Alert Workspace is receiving proactive alerts that are calculated in the workspace only and are not available in a Solution Manager. Do not miss any important findings: subscribe to notifications with just a few clicks on Notification Activation . For detailed configuration options, read this Best Practices blog.

How to get access to the SAP EarlyWatch Alert apps is explained in SAP Note 2520319 . The following link to the SAP EarlyWatch Alert Reports app always opens up the latest report for this system. Similarly, this link to the SAP EarlyWatch Alert Dashboard shows you the analytical dashboard for this system. Specific links to analytical detail pages in SAP EarlyWatch Alert Workspace are included in the respective sections in this report.

The EWA Status App is your entry point for analysis if you are missing the current data in EarlyWatch Alert apps.

Based on these findings, it is recommended that you perform the following Guided Self-Services.

Guided Self Service	FAQ SAP Note
SQL Statement Tuning	1601951
Data Volume Management	1904491

For more information about Guided Self-Services, see SAP Enterprise Support Academy . Academy -

Check Overview

Topic Rating	Topic	Subtopic Rating	Subtopic
⚡	Software Configuration for WP2		
		✔	SAP Application Release - Maintenance Phases
		⚡	Security Risk Due to Outdated Support Packages
		✔	Database - Maintenance Phases
		✔	Operating System(s) - Maintenance Phases
		!	SAP Kernel Release
✔	Performance Overview WP2		
		✔	Performance Evaluation
⚡	SAP System Operating WP2		
		✔	Availability based on Collector Protocols
		!	Program Errors (ABAP Dumps)
		✔	Update Errors
		!	Table Reorganization
		⚡	Critical Number Ranges
✔	Hardware Capacity		
⚡	Security		
		✔	System Recommendations (HANA)
		✔	Maintenance Status of current SAP HANA Database Revision
		✔	SAP HANA System Privilege DATA ADMIN
		✔	SAP HANA Password Policy
		!	SAP HANA Audit Trail
		✔	SAP HANA SQL Trace Level
		✔	SAP HANA Network Settings for Internal Services
		⚡	SAP HANA Network Settings for System Replication Communication (listeninterface)
		⚡	Activation Status and Validity of User SYSTEM
		✔	System Recommendations (ABAP)
		⚡	Age of Support Packages
		!	Default Passwords of Standard Users
		✔	Control of the Automatic Login User SAP*
		✔	Protection of Passwords in Database Connections
		✔	ABAP Password Policy
		⚡	RFC Gateway Security
		✔	Message Server Security
		⚡	Critical authorizations, which allow to do anything

Topic Rating	Topic	Subtopic Rating	Subtopic
			Critical authorizations, which should not be used in production
			Critical authorizations, which should only see very limited use in production
	Software Change and Transport Management of WP2		
			Number of Changes
			Emergency Changes
			Failed Changes
	Data Volume Management (DVM)		
	SAP HANA Database WPH		
			SAP HANA Stability and Alerts
			SAP HANA Database Configuration
			SAP HANA Resource Consumption
			SAP HANA Workload and Performance
			Size and Growth
			Administration

The check overview includes checks executed with a green result, which do not appear in the report.

Note: All recommendations in this report are based on our general experience. Test them before using them in your production system. Note that EarlyWatch Alert is an automatic service.

Note: If you have any questions</B> about the accuracy of the checks in this report or the correct configuration of the SAP EarlyWatch Alert service, create a customer case under component SV-SMG-SER-EWA.

Note: If you require any assistance in resolving concerns about your system performance or if you require a technical analysis of other aspects of your system as highlighted in the report, please follow the instructions below:

Create a case using the Get Support application in SAP for Me (KBA 1296527). Contact one of the administrators in your company if your S-user ID does not have the required authorizations.

Within case creation, select the system. From the menu, choose:

- *Product* : Customer Project-Based Solution

- *Component* : insert required component (for example, if you wish to open a case on the topic 'performance', please use component SV-PERF.)

If you need assistance, contact your local Customer Interaction Center (CIC) or SAP representative. Please refer to SAP Note 560499 . For information about how to set the appropriate priority level, see SAP Note 67739 .

1.1 Performance Indicators for WP2

The following table shows the relevant performance indicators in various system areas.

Area	Indicators	Value	Trend
System Performance	Active Users (>400 steps)	126	→
	Avg. Availability per Week	100 %	→
	Avg. Response Time in Dialog Task	1057 ms	↘
	Max. Dialog Steps per Hour	3234	↗
	Avg. Response Time at Peak Dialog Hour	911 ms	↘
	Avg. Response Time in RFC Task	340 ms	↘
	Max. Number of RFCs per Hour	625494	↗
	Avg. RFC Response Time at Peak Hour	293 ms	↘
Hardware Capacity	Max. CPU Utilization on DB Server	2 %	↘
	Max. CPU Utilization on Appl. Server	5 %	→

Area	Indicators	Value	Trend
Database Performance	Avg. DB Request Time in Dialog Task	358 ms	↘
	Avg. DB Request Time for RFC	46 ms	↘
	Avg. DB Request Time in Update Task	128 ms	↘
Database Space Management	DB Size	1548.32 GB	→
	DB Growth Last Month	7.72 GB	↘

2 Landscape

2.1 Products and Components in current Landscape

Product

System	SAP Product	Product Version
WP2~ABAP	SAP NetWeaver	7.5

Main Instances

Related System	Main Instance
WP2~ABAP	Application Server ABAP
WP2~ABAP	Add-on: EWM on SAP ERP - 9.5

Databases

Related System	Database System	Database Version	DB ID
WP2~ABAP	SAP HANA Database	2.00.059.04	WPH

2.2 Servers in current Landscape

Related System	Host	Logical Host (SAPDBHOST)
SAP Application Servers	lxbell705	lxbell705

System	Host	Instance Name	Logical Host	ABAP	JAVA
WP2~ABAP	lxbell708	vwp2ap2_WP2_10	vwp2ap2	✓	
WP2~ABAP	lxbell704	vwp2ap1_WP2_10	vwp2ap1	✓	
WP2~ABAP	lxbell703	vwp2ci_WP2_10	vwp2ci	✓	
WP2~ABAP	lxbell709	vwp2ap3_WP2_10	vwp2ap3		

Related System	Component	Host	Instance Name	Logical Host
WP2~ABAP	ABAP SCS	lxbell704	vwp2ap1_WP2_10	vwp2ap1

2.3 Hardware Configuration

Host Overview

Host	Hardware Manufacturer	Model	CPU Type	CPU MHz	Virtualization	Operating System	CPUs	Cores	Memory in MB
lxbell703	VMware, Inc.	VMware Virtual Platform	Xeon Platinum 8260M	2400	VMWARE	SUSE Linux Enterprise Server 15 (x86_64)	64		193177
lxbell704	VMware, Inc.	VMware Virtual Platform	Xeon Platinum 8260M	2400	VMWARE	SUSE Linux Enterprise Server 15 (x86_64)	32		96409
lxbell705	VMware, Inc.	VMware Virtual Platform	Xeon Platinum 8260M	2400	VMWARE	SUSE Linux Enterprise Server 15 (x86_64)	96	96	503641
lxbell708				0		5.3.X	32		96274
lxbell709				0		5.3.X	32		96274

2.4 Transport Landscape

Transport Track	Position	System Role	System ID	Installation Number	System Number	EWA Dashboard Link
WD2WP2	1	Development	WD2	0020256234		System does not send EWA data to SAP
WD2WP2	2	Test	WQ2	0020256234		System does not send EWA data to SAP
WD2WP2	3	Production	WP2	0020256234	000000000850248550	Link

The current system is WP2

Note: only real systems are considered, virtual systems are excluded.

* the system role is based on the expectation of 2 - 4 systems in the longest transport tracks being development, test, pre-production and production system with test & pre-production system being optional. All systems on parallel, but shorter tracks, are considered quality systems.

** the system number and link to the SAP EarlyWatch Alert Dashboard can only be determined for systems sending data to SAP.

Rating	Check Performed
✔	Sending EarlyWatch Alert of WP2 to SAP Backbone
✔	Configuring WP2 for SAP Note Assistant
✔	Service Data Quality
!	Service Preparation of WP2

3 Service Data Quality and Service Readiness

3.1 Sending EarlyWatch Alert of WP2 to SAP Backbone

	System WP2 is prepared for SAP Support Backbone update sending EWA data on HTTPS through Solution Manager 7.2 SPA

The SAP NetWeaver system WP2 is not fully prepared for delivery of future remote services .

All connections to SAP Support Backbone use https protocol only. For a how to, refer to Connectivity to SAP .

The following table shows the latest data transmissions for system WP2:

Latest Service Data for System WP2 Sent to SAP

Date (collected)	System	Sends EWA?	Kernel	Kernel	ST-PI	ST-PI	Destination	User	Ready for 2020	Date (last sent)	Dest. Functional?
16.09.2024	Solution Manager 7.2 SPA	yes	753_REL 1100	✔	740 27	✔	HTTPS -> SAP	S-user	✔	16.09.2024	✔

3.2 Service Preparation of WP2

Rating	Check Performed
✔	Service Preparation Check (RTCCTOOL)
✔	Service Data Control Center of WP2
!	Hardware Utilization Data

In preparation for SAP services, ensure that connections, collectors, and service tools are up to date. These functionalities are explained in SAP Notes 91488 and 2253047 .

3.2.1 Performance DB (ST03 / ST06)

Analysis of control table SAPWLSERV indicates severe problems with ST03 or ST06 history data. Implement SAP Note 1135491 .

3.2.2 Hardware Utilization Data

Host	Operating System	Performance Data
lxbell703	SUSE Linux Enterprise Server 15 (x86_64)	OK
lxbell704	SUSE Linux Enterprise Server 15 (x86_64)	OK
lxbell705	SUSE Linux Enterprise Server 15 (x86_64)	OK
lxbell708	OS not detected	OK
lxbell709	OS not detected	OK

Hardware capacity checks could not be run successfully due to missing data. See SAP Note 1309499 .

Your system's software versions are checked. If known issues with the software versions installed are identified, they are highlighted.

4 Software Configuration for WP2

4.1 SAP Application Release - Maintenance Phases

SAP Product Version	End of Mainstream Maintenance	Status
SAP NETWEAVER 7.5	31.12.2027	✔

Rating Legend

We have listed important recommendations concerning the current software configuration on your system. These recommendations should be implemented at the earliest opportunity.

Rating	Description
✔	Mainstream / Extended maintenance offered by SAP is available for the next 18 months or longer.
!	Mainstream / Extended maintenance offered by SAP will end in 6 to 18 months.
⚑	Mainstream / Extended maintenance offered by SAP has expired or will expire in the next 6 months.

Your main product version runs under SAP mainstream maintenance until 31.12.2027.

Please note that this check, if created on your on-premise SAP Solution Manager, does not take account of extended maintenance options. In this case, **your main product version is checked for SAP mainstream maintenance only** , which might lead to invalid ratings, especially for SAP S/4HANA 1709, SAP S/4HANA 1809, and SAP S/4HANA 1909.

A complete verification, including also your individual extended maintenance contracts, is available only on your EWA Workspace account at SAP ONE Support Launchpad or SAP for Me respectively.

For general information about EarlyWatch Alert Workspace see How to access the SAP EarlyWatch Alert apps in the SAP ONE Support Launchpad .

4.2 Security Risk Due to Outdated Support Packages

The chapter Security provides the following ratings regarding the maintenance status of implemented Support Packages:

Rating	Check	System ID
✔	Maintenance Status of current SAP HANA Database Revision	WPH
⚑	Age of Support Packages	WP2

The Support Package level of your system has run out of security maintenance. For more information, see chapter Security .

4.3 Support Package Maintenance - ABAP

The following table shows an overview of currently installed software components.

Support Packages

Software Component	Version	Patch Level	Latest Avail. Patch Level	Support Package	Component Description
BTCMAN	52	0			
EA-IPPE	618	6	9	SAPK-61806INEAIPPE	SAP Integrated Product and Process Engineering
MDG_FND	749	17	23	SAPK-74917INMDGFND	MDG Foundation
QIE	200	12	12	SAPK-20012INQIE	Quality Inspection Engine
SAP_ABA	750	20	30	SAPK-75020INSAPABA	SAP Anwendungsbasis
SAP_AP	750	14	20	SAPK-75014INSAPAP	SAP Application Platform
SAP_BASIS	750	20	30	SAPK-75020INSAPBASIS	SAP Basis component
SAP_BS_FND	748	16	22	SAPK-74816INSAPBSFND	SAP Business Suite Foundation
SAP_BW	750	20	30	SAPK-75020INSAPBW	SAP Business Warehouse

Software Component	Version	Patch Level	Latest Avail. Patch Level	Support Package	Component Description
SAP_GWFND	750	21	30	SAPK-75021INSAPGWFND	SAP NetWeaver Gateway Foundation
SAP_UI	754	7	15	SAPK-75407INSAPUI	User Interface Technology
SCMBPLUS	714	10	16	SAPK-71410INSCMBPLUS	SCM Basis PLUS
SCMEWM	950	8	14	SAPK-95008INSCMEWM	Extended Warehouse Management
SCM_BASIS	714	16	22	SAPK-71416INSCMBASIS	SAP SCM BASIS
ST-A/PI	01W_731	0			ST-A/PI Service Tools for Applications Plug-In
ST-PI	740	27	27	SAPK-74027INSTPI	Solution Tools Plugin
WEBCUIF	748	16	22	SAPK-74816INWEBCUIF	SAP Web UIF
XITING	017_751	0			

4.4 Database - Maintenance Phases

Database Version	End of Standard Vendor Support*	Comment	Status	SAP Note
SAP HANA Database 2.0		Follows Application	✔	2378962

* Maintenance phases and duration for the DB version are defined by the vendor. Naming of the phases and required additional support contracts differ depending on the vendor. Support can be restricted to specific patch levels by the vendor or by SAP. Check in the referenced SAP Note(s) whether your SAP system requires a specific patch release to guarantee support for your database version.

4.5 Operating System(s) - Maintenance Phases

Host	Operating System	End of Standard Vendor Support*	End of Extended Vendor Support*	Comment	Status	SAP Note
2 Hosts	LINUX_X86_64				◆	
3 Hosts	SUSE Linux Enterprise Server 15 (x86_64)	31.07.2028	31.07.2031	Limited (LTSS)	✔	936887

* Maintenance phases and duration for the operating system version are defined by the vendor. Naming of the phases and required additional support contracts differ depending on the vendor. Support can be restricted to specific patch levels by the vendor or by SAP. Check in the referenced SAP Note(s) whether your SAP system requires a specific patch release to guarantee support for your operating system version.

The automatic determination of the used operating system version(s) of system WP2 did not work correctly for at least one host. For more information and possible reasons, refer to the section 'Service Preparation and Data Quality of WP2'.

4.6 HANA Database Version for WPH

The following table shows your current/planned SAP HANA database version.

HANA Database Version

SID	SPS Stack	SP Revision	Maintenance Revision	In Maintenance ?	SAP Notes	Upgrade Information
WPH	2.00 SP 05	2.00.059.004	yes	✔	2378962	✔

4.7 SAP HANA: SQLDBC Version

4.7.1 SAP HANA: Installed SQLDBC Version

The following table shows your currently installed SAP HANA database client component version.

Instance Name	SQLDBC Version	Rating
4 Instances	2.13.022	✔

SAP Note	Description
1906576	HANA client and server cross-version compatibility
2339267	The SAP HANA client version and installation manifest file doesn't match currently available SAP HANA server version information

4.8 SAP HANA: Installed DBSL Version

The following table shows the DBSL version currently installed.

Instance	Current DBSL Release	Current DBSL Patch	Recommended DBSL Release	Recommended DBSL Patch	Rating
vwp2ap3_WP2_10	753	801	753	423	✔
vwp2ci_WP2_10	753	801	753	423	✔
vwp2ap1_WP2_10	753	801	753	423	✔
vwp2ap2_WP2_10	753	801	753	423	✔

Your installed SAP HANA DBSL meets the recommended requirement to access the SAP HANA database.

4.9 SAP Kernel Release

The following table lists all information about your SAP kernel(s) currently in use.

Instance(s)	SAP Kernel Release	Patch Level	Age in Months	OS Family
4 instances	753	801	40	Linux (x86_64)

4.9.1 Newer SP Stack Kernel Available

Your current SAP kernel patch level is not up to date.

> **Recommendation:** Consider updating to the latest SP Stack Kernel. For details see SAP Note 2083594 , 3116151 , and 19466 .

4.9.2 Additional Remarks

SAP releases Support Package stacks (including SAP kernel patches) on a regular basis for most products (generally 2–4 times a year). We recommend that you base your software maintenance strategy on these stacks.

You should only consider using a more recent SAP kernel patch than that shipped with the latest Support Package Stack for your product if specific errors occur.

For more information, see SAP Service Marketplace at https://support.sap.com/software/patches/stacks.html (SAP Support Package Stack information) and https://me.sap.com/softwarecenter/support/index (Support Packages & patch information).

For each patch there is an SAP Note in which all known regressions for this level are listed. Find it using the keyword KRNL753PL801 in the SAP Note search. For detailed information, see SAP Note 1802333 – Finding information about regressions in the SAP kernel.

5 Hardware Capacity

We have checked your system for potential CPU or memory bottlenecks and found that the hardware of your servers is sufficient for the current workload.

Note: Hardware capacity evaluation is based on hosts for which data is at least partially available.

5.1 Overview System WP2

General This analysis focuses on the workload during the peak working hours **(9-11, 13)** and is based on the hourly averages collected by SAPOSCOL. For information about the definition of peak working hours, see SAP Note 1251291 .

CPU If the average CPU load exceeds **75%** , temporary CPU bottlenecks are likely to occur. An average CPU load of more than **90%** is a strong indicator of a CPU bottleneck.

Memory If your hardware cannot handle the maximum memory consumption, this causes a memory bottleneck in your SAP system that can impair performance. The paging rating depends on the ratio of paging activity to physical memory. A ratio exceeding **25%** indicates high memory usage (if Java has been detected **0%**) and values above **50%** (Java **10%**) demonstrate a main memory bottleneck.

Server	Max. CPU load [%]	Date	Rating	RAM [MB]	Max. Paging [% of RAM]	Date	Rating	Analysis Start	Analysis End
lxbell705	2	09.09.2024	✔	503.641	0		✔	09.09.2024	15.09.2024
lxbell709	3	14.09.2024	✔	96.274	0		✔	09.09.2024	15.09.2024
lxbell703	2	09.09.2024	✔	193.177	0		✔	09.09.2024	15.09.2024
lxbell704	5	10.09.2024	✔	96.409	0		✔	09.09.2024	15.09.2024
lxbell708	4	13.09.2024	✔	96.274	0		✔	09.09.2024	15.09.2024

Note: For virtualization or IaaS scenarios (for example, IBM PowerVM, VMware, Amazon AWS, ...) it is possible that the CPU rating for some hosts is YELLOW or RED, even though the utilization value is quite low. In this case, the relevant host could not use maximum usable capacity due to a resource shortage within the virtualized infrastructure (for example, IBM PowerVM: Shared Pool CPU utilization).

6 Workload Overview WP2

6.1 Workload By Users

User activity is measured in the workload monitor. Only users of at least medium activity are counted as 'active users'.

Users	Low Activity	Medium Activity	High Activity	Total Users
dialog steps per week	1 to 399	400 to 4799	4800 or more	
measured in system	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

6.2 Workload By Task Types

This chart displays the main task types and indicates how their workload is distributed in the system.

Task Type	Response Time[s]	DB Time[s]	CPU Time[s]	GUI Time ins
RFC	9889019	1343964	1456372	0
APC	8519216	98836	58070	0
Batch	2363065	294967	510957	0
Others	943396	306257	306272	12624

The chart below lists the top task types in terms of total response time in s.

6.3 Top Applications

This table lists the top applications of the RFC task type. The unit of measure is milliseconds [ms] for average time and seconds [s] for total time.

RFC Profile

Initial System	Initial Action	Total Response Time[s]	% of Total Load	Steps	Avg. Resp. Time[ms]	Avg. Proc. Time[ms]	Avg. CPU Time[ms]	Avg. DB Time[ms]
WP2/vwp2ci_WP2_10	/XITING/RB_SU53_COLLECTOR_200	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
WP2/vwp2ci_WP2_10	SAPMSSY1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
WP2/vwp2ap1_WP2_10	SAPMSSY1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
WP2/vwp2ci_WP2_10	/XITING/XT_USR07_COLLECTOR_MANDT	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
WP2/vwp2ap2_WP2_10	SAPMHTTP	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
PE4/vpe4ci_PE4_00	Z_EWM_2009_POST_GI	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
PE4/vpe4ci_PE4_00	Z_EWM_BFG_REPROCESS_QUEUES	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
WP2/vwp2ci_WP2_10	/SCWM/RFUI	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
WP2/vwp2ap1_WP2_10	/SCWM/MON	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
PE4/vpe4ci_PE4_00	Z_EWM_6500_Z_EWM_6500_COLLDIENST	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

This table lists the top applications of the Batch task type. The unit of measure is milliseconds [ms] for average time and seconds [s] for total time.

Jobs Profile

Report	Response Time[s]	% of Total Load	Steps	CPU Time[s]	DB Time[s]
/SCWM/R_MFS_PERIODCHK_PREP	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
/XITING/XT_USR07_COLL_MANDT	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
/XITING/RB_SU53_AGENT_EVENT	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
SWNC_TCOLL_STARTER	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
YEWMGI_POST_GI	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RBDAPP01	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RSARCHD	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
/SCDL/DLV_REQ_ARCH_DELETE	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
/SCDL/DLV_REQ_ARCH_WRITE	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
Z5EWMMP_CREATE_NEST_SUBHUS	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

6.4 RFC Load by Initiating Action

The load in task type RFC is shown. In the workload monitor, this information is shown as 'Load from External Systems'. The calling system can be an application server of the system itself or any external system using the RFC interface. The 'Initial Action' is the calling program initiating the RFC. The total response time for each initial action is shown as an absolute value and as a percentage compared to the total RFC load considered in this table. ... Text cut, see SAP Note 3210457

Calls from external systems are shown if they account for at least 8h or 5% of the total RFC load. Local calls are shown if they account for at least 24h or 20% of the total RFC load.

Please refer to this Guided Answer on how to analyze RFC performance issues.

Load Overview

Initial System	Load [s]	Load %
Local system WP2	3.892.407	78,72
Sum of external systems	1.052.480	21,28
RFC load (sum of above)	4.944.887	100,00
RFC load in Performance Overview	10.183.692	205,94
Load of all task types in Performance Overview	21.714.694	439,13

Top 20 RFC Calls From External Systems - Average Times [ms]

Initial System	Initial Action	Total Resp. Time ins	% of RFC Load	Avg. Response Time	Avg. CPU Time	Avg. DB Time	Avg. Roll Wait Time
PE4	Z_EWM_2009_POST_GI	464.795	9,40	1.838,6	113,5	526,4	170,9
PE4	Z_EWM_BFG_REPROCESS_QUEUES	295.180	5,97	489,9	34,4	37,4	0,2
PE4	Z_EWM_6500_Z_EWM_6500_COLLDIENST	151.291	3,06	34.964,3	30.734,2	3.063,5	0,1
PE4	BATCHMAN_SCHEDULER	46.778	0,95	713,4	51,3	78,9	5,9
SPA	EFWK RESOURCE MANAGER	28.539	0,58	3.039,3	1.833,8	366,8	101,1
SPA	/BDL/TASK_PROCESSOR	16.738	0,34	56.737,9	19.477,1	3.015,7	0,3
PE4	Z_EWM_6500_VERTEILUNGLIEFERUNGEN	13.107	0,27	80,5	26,3	29,5	0,5
PE4	Z_EWM_6500_YEWMSR_CREATE_REQUEST	10.254	0,21	161,6	46,2	97,9	0,5
PE4	Z_EWM_2009_HO_NEST_HUS	5.714	0,12	39,1	8,5	8,1	2,2
PE4	Z_EWM_BFG_REPROCESS_IDOCS_STA64	2.797	0,06	22,7	7,7	5,4	0,1
PE4	Z_EWM_6500_YEWMGI_PICK_FULL_PALL	2.762	0,06	186,8	35,0	47,1	0,2
PE4	Z_EWM_2009_ANZAHLGEBINDE_FILIALE	2.641	0,05	124,9	11,5	17,5	0,2
CM_COCKPIT	R000000051/8000002788/PRD	1.504	0,03	558,5	29,6	67,8	2,3
PE4	Z_BIL_BFG_CSBFF_DESADV_IN_OUT	1.053	0,02	184,6	40,4	66,5	0,1
PE4	BATCHMAN_MASTERJOB	904	0,02	183,9	12,3	18,2	29,4
PE4	Z_PAR_5800_PULL_PPS2SAP	786	0,02	137,6	22,4	40,2	0,1

Initial System	Initial Action	Total Resp. Time ins	% of RFC Load	Avg. Response Time	Avg. CPU Time	Avg. DB Time	Avg. Roll Wait Time
PE4	Z_EWM_6500_NOTIFY_PICK	552	0,01	68,9	14,8	16,0	2,6
PE4	Z_MM_6100_IMPORT_BESTAND	481	0,01	110,2	22,9	42,3	0,1
CM_SCMA	I000000091/8000000524/WQ2~200	473	0,01	466,5	19,5	46,4	242,8
PE4	Z_BC_6500_MFS_CHK_ACT	406	0,01	39,9	12,4	11,6	0,3

Top 20 RFC Calls From Local System - Average Times [ms]

Initial System	Initial Action	Total Resp. Time ins	% of RFC Load	Avg. Response Time	Avg. CPU Time	Avg. DB Time	Avg. Roll Wait Time
WP2	SAPMSSY1	1.180.710	23,88	352,9	117,7	90,7	1,0
WP2	/XITING/RB_SU53_COLLECTOR_200	818.681	16,56	502,8	2,5	0,0	0,7
WP2	/SCWM/RFUI	555.826	11,24	390,2	127,3	115,4	2,6
WP2	/XITING/XT_USR07_COLLECTOR_MANDT	398.512	8,06	504,9	2,2	0,0	1,3
WP2	/SCWM/MON	282.310	5,71	2.876,1	704,5	466,1	4,1
WP2	SAPMHTTP	278.372	5,63	51,9	11,3	14,5	1,9
WP2	/SDF/SMON_SCHEDULER	145.408	2,94	5.193.134,6	179.616,8	239.328,0	3.055,0
WP2	SAP_COLLECTOR_PERFMON_RSDOOS_MSC	126.310	2,55	15.872,1	652,5	948,2	9,9
WP2	SAP_COLLECTOR_PERFMON_SWNCCOLL	54.100	1,09	5.887,5	4.182,8	1.709,3	0,1
WP2	EWMMFS_200_6500_20240906_075648	36.254	0,73	52,7	16,9	27,0	0,5
WP2	/SCWM/PRDO	4.900	0,10	3.011,7	72,2	1.431,2	0,2
WP2	SAP_CCMS_MONI_BATCH_DP	4.439	0,09	1.614,8	465,5	1.255,2	0,1
WP2	<BGRFC WATCHDOG>	2.702	0,05	83,8	6,1	5,6	0,4
WP2	<AUTO ABAP PROCESSING>	823	0,02	51,0	10,7	31,9	0,5

Initial System	Initial Action	Total Resp. Time ins	% of RFC Load	Avg. Response Time	Avg. CPU Time	Avg. DB Time	Avg. Roll Wait Time
WP2	SAP_COLLECTOR_PERFMON_RSAMON40	678	0,01	504,8	4,0	1,1	0,6
WP2	SAP_COLLECTOR_PERFMON_RSDOTM_SYN	452	0,01	4.034,3	235,1	102,0	0,2
WP2	XITING_TIMES	293	0,01	3.802,0	3.421,3	22,7	0,1
WP2	/XITING/TIMES_MULTI	261	0,01	1.260,5	93,2	197,2	0,2
WP2	SAP_COLLECTOR_PERFMON_RSHOSTDB	186	0,00	185,0	15,8	20,8	78,5
WP2	SAP_COLLECTOR_PERFMON_RSICFDMN	135	0,00	133,8	9,0	17,5	58,7

7 Performance Overview WP2

The performance of your system was analyzed with respect to average response time and total workload. No problems that could significantly impair system performance were detected.

Rating	Check
✔	Performance Evaluation

7.1 Performance Evaluation

The following table shows the average response times of task types running in dialog work processes. Data is from Solution Manager BW.

Dialog WP related task types

Task Type	Steps	Avg. Resp. Time[ms]	Avg. CPU Time[ms]	Avg. Wait Time[ms]	Avg. DB Time[ms]	Avg. GUI Time[ms]
RFC	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
HTTP(S)	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
Dialog	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

The measured times are compared against reference times to provide a rating.

- If the task type is not listed in the "Task Type Overview" table in the "Workload Overview WP2" section, the task type is not included in the evaluation.

- DIALOG, RFC, and HTTP(S) are considered to be related to the end user's dialog activity.

The table below indicates that performance problems are anticipated for tasks rated YELLOW or RED.

Ratings

Task	Steps	Application Server Performance	Database Server Performance
RFC	... Text cut, see SAP Note 3210457	✔	✔

Reference Times

Task	Ref. for Avg. Response Time[ms] - Yellow Rating	Ref. for Avg. Response Time[ms] - Red Rating	Ref. for Avg. DB time[ms] - Yellow Rating	Ref. for Avg. DB time[ms] - Red Rating
RFC	2.400	3.600	1.200	1.800

The chart below displays the time profile for the RFC task type.

Rating table

Rating	Check	Description
✔	History of response time of WP2	The long-term or short-term analysis of the response time does not show a critical trend
✔	Application profile of WP2	The long-term analysis of applications does not show a critical trend

8 Trend Analysis for WP2

In the following, we analyzed the trend within the following time frames:

Short term: From calendar week 34/2024 to 37/2024

Long term: From calendar week 10/2024 to 37/2024

8.1 History of Response Time of WP2

The performance of your system was analyzed with respect to the trend of response times per system and per application. We found no major problems that could affect system performance.

We analyzed the growth of the average response time within this system. The long-term is %/year and short-term is %/year. This is not critical and no action is required.

The graphs below show the time profiles of the following task types: RFC.

In the following, we analyzed the trend within the following time frames:

Short term: From calendar week 34/2024 to 37/2024

Long term: From calendar week 10/2024 to 37/2024

The table below shows the long-term and short-term growth in average response time extrapolated to a year.

Growth Extrapolated To A Year

Task Type	Long Term Growth (%/year)	Trend	Rating	Short Term Growth (%/year)	Trend	Rating
ALL	-5,1	↘	ℹ	-201,0	↓	ℹ
RFC	-6,4	↘	ℹ	-434,1	↓	ℹ

The table below shows the long-term and short-term weekly average growth in the average response time.

Average Growth

Task Type	Long Term Growth (%/week)	Trend	Rating	Short Term Growth (%/week)	Trend	Rating
ALL	-0,1	→	ℹ	-3,9	→	ℹ
RFC	-0,1	→	✔	-8,3	↘	✔

Rating Legend

ℹ	The trend is only for information
✔	The trend is not critical
!	The trend is critical
!!	The trend is very critical

8.2 Application profile

In the following, we analyzed the trend within the following time frames:

Short term: From calendar week 34/2024 to 37/2024

Long term: From calendar week 10/2024 to 37/2024

The table below shows the time profile of the top applications by total workload during the analyzed period.

Top Applications by Response Time

Task Type	Application	Total Resp. Time ins	% of Total Load	Avg. Resp. Time in ms	Long Term Growth (%/year)	Short Term Growth (%/year)	Avg. DB Time in ms	Avg. CPU Time in ms
RFC	WP2/vwp2ci_WP2_10|/XITING/RB_SU53_COLLECTOR_200	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	0,1	3,5	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ci_WP2_10|SAPMSSY1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-5,4	-379,1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ap1_WP2_10|SAPMSSY1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	1,7	-445,7	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ci_WP2_10|/XITING/XT_USR07_COLLECTOR_MANDT	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	0,1	8,6	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ap1_PE4_00|Z_SD_6500_CIF MATERIALIEN TKOE	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-132,4	1.112,8	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

Task Type	Application	Total Resp. Time ins	% of Total Load	Avg. Resp. Time in ms	Long Term Growth (%/year)	Short Term Growth (%/year)	Avg. DB Time in ms	Avg. CPU Time in ms
RFC	WP2/vwp2ci_WP2_10|/SCWM/RFUI	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-4,6	-566,7	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ap4_PE4_00|Z_EWM_6500_YEWMGI_PICK_FULL_PALL	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	96,1	-1.042,7	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ap1_WP2_10|/SCWM/MON	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	15,3	-169,8	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ap1_PE4_00|Z_EWM_BFG_REPROCESS_QUEUES	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-18,3	-82,4	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
HTTP(S)	Z5EWMGI00	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	5,0	-208,6	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ap1_PE4_00|Z_EWM_2009_POST_GI	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	36,0	2.033,7	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ap1_WP2_10|Z_EWM_6500_YEWMGI_PICK_FULL_PALL	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-22.454,1	-3.391,3	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ap2_WP2_10|SAPMHTTP	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	14,1	-1.185,1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
Dialog	/SCWM/MON	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-23,1	41,6	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ci_PE4_00|Z_EWM_2009_POST_GI	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	92,3	-7,1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ap1_PE4_00|Z_EWM_6500_Z_EWM_6500_COLLDIENST	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	54,9	-600,9	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

Task Type	Application	Total Resp. Time ins	% of Total Load	Avg. Resp. Time in ms	Long Term Growth (%/year)	Short Term Growth (%/year)	Avg. DB Time in ms	Avg. CPU Time in ms
RFC	PE4/vpe4ci_PE4_00|Z_EWM_BFG_REPROCESS_QUEUES	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	-196,4	-574,5	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	PE4/vpe4ci_PE4_00|Z_EWM_6500_Z_EWM_6500_COLLDIENST	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	36,5	-24,6	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ci_WP2_10|SAP_COLLECTOR_PERFMON_RSDOOS_MSC	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	39,4	664,6	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457
RFC	WP2/vwp2ap2_WP2_10|SAPMSSY1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457	7,5	-215,1	... Text cut, see SAP Note 3210457	... Text cut, see SAP Note 3210457

The graph below shows how the average response time of the top five applications varies over time. Data is normalized to 100% equaling the average value.

9 SAP System Operating WP2

We analyzed the daily operation of your system and detected severe problems that may have a serious financial impact on your business.

Rating	Check
✔	Availability based on Collector Protocols
!	Program Errors (ABAP Dumps)
✔	Update Errors
!	Table Reorganization
⚡	Critical Number Ranges

9.1 Availability based on Collector Protocols

A value of 100% means that the collector was available all day. "Available" in the context of this report means that at least one SAP instance was running. If the SAP collector was not running correctly, the values in the table and graphics may be incorrect.

To check these logs, call transaction ST03N (expert mode) and choose "Collector and Performance DB -> Performance Monitor Collector -> Log".

This check is based on the logs for job COLLECTOR_FOR_PERFORMANCEMONITOR that runs every hour.

The job does NOT check availability; it carries out only general system tasks such as collecting and aggregating SAP performance data for all servers/instances. The log does not contain any direct information about availability; it contains only information about the status of the hourly statistical data collection.

As of SAP Basis 6.40, system availability information is available in the CCMS (Computing Center Management System) of an SAP System, in Service Level Reporting of SAP Solution Manager.

This function is provided by the relevant Solution Manager Support Packages as an advanced development. For more information, refer to SAP Note 944496, which also lists the prerequisites that must be fulfilled before implementation can take place."

9.2 Update Errors

In a system running under normal conditions, only a small number of update errors should occur. To set the rating for this check, the number of active users is also taken into consideration.

We did not detect any problems.

9.3 Table Reorganization

When analyzing your database, we detected large or rapidly growing tables or indexes.
Recommendation: Implement the SAP Notes listed below to reduce the size of some of these tables or indexes.
Background: For more information about SAP Data Volume Management, see

SAP DVM Community .

Table / Index Name	Size of Table / Index [MByte]	Recommended SAP Note
BALDAT	38.548,0	195157

9.4 Program Errors (ABAP Dumps)

64 ABAP dumps have been recorded in your system in the period 09.09.2024 to 15.09.2024. ABAP dumps are generally deleted after 7 days by default. To view the ABAP dumps in your system, call transaction ST22 and choose Selection. Then select a timeframe.

Date	Number of Dumps
09.09.2024	11
10.09.2024	14
11.09.2024	8
12.09.2024	16
13.09.2024	12
14.09.2024	2
15.09.2024	1

Name of Runtime Error	Dumps	Server (e.g.)	Date (e.g.)	Time (e.g.)
OBJECTS_OBJREF_NOT_ASSIGNED	2	vwp2ci_WP2_10	09.09.2024	20:54:04
CALL_FUNCTION_REMOTE_ERROR	1	vwp2ci_WP2_10	10.09.2024	14:38:33
GETWA_NOT_ASSIGNED	1	vwp2ci_WP2_10	11.09.2024	13:35:57
RAISE_EXCEPTION	1	vwp2ci_WP2_10	12.09.2024	08:32:17
MESSAGE_TYPE_X	4	vwp2ci_WP2_10	12.09.2024	08:41:43
ITAB_LINE_NOT_FOUND	2	vwp2ci_WP2_10	12.09.2024	18:23:04
RFC_NO_AUTHORITY	3	vwp2ci_WP2_10	13.09.2024	01:36:32
ASSERTION_FAILED	2	vwp2ci_WP2_10	13.09.2024	14:22:50
ITS_TEMPLATE_NOT_FOUND	16	vwp2ci_WP2_10	13.09.2024	17:08:02
TIME_OUT	7	vwp2ci_WP2_10	13.09.2024	17:09:57
UNCAUGHT_EXCEPTION	21	vwp2ci_WP2_10	13.09.2024	17:21:58
DBSQL_SQL_ERROR	3	vwp2ci_WP2_10	14.09.2024	15:10:34
LOAD_PROGRAM_LOST	1	vwp2ap2_WP2_10	15.09.2024	19:46:23

It is important that you monitor ABAP dumps using transaction ST22 on a regular basis. If ABAP dumps occur, you should determine the cause as soon as possible.

Based on our analysis, we found several ABAP dumps that need your attention. Evaluate and resolve the above dumps. If you cannot find a solution, create a case using the Get Support application in SAP for Me (KBA 1296527).

9.5 Critical Number Ranges

We have checked the usage of ABAP number ranges and found some that have already been used 90% or more.

The object names in column "Object" are provided with a direct link into the analysis of number ranges in the EarlyWatch Alert Workspace. There you can view the time series of the number range and a predicted worst-case date when the number range may be exhausted, provided that enough data is already available.

Rating	Client	% Used	% Warning	Object	Short text	Subobject	Interval	Length	Remaining Numbers	Rolling (Yes/No)	Weeks until full	# per Week
	200	99,03	90,00	/SCWM/HUID	HU Identification	2009	2P	1.000.000	9.740	Yes	1	31.550
	000	93,44	90,00	SPO_NUM	Spooler numbers		01	999.900	65.600	Yes		14.500
	200	79,20	10,00	/IGZ/SR	/IGZ/SR	6500	71	999.999	207.952	Yes		11.201

This table shows our findings.

Please note that the following number ranges are not considered relevant for the check and thus are not included in the service data that is extracted from your system:

- Number ranges that have never been used

- External number ranges

- Number ranges of the client 000 except SPO_NUM, AENDBELEG

Furthermore, there are number ranges that are no longer considered critical and thus have been removed from the display here in the EarlyWatch Alert report:

- Rolling number ranges that have rolled successfully in the past

- After three successful EarlyWatch Alert sessions, number ranges that do not change in their level are removed from the check.

These are still visible in the EarlyWatchAlert Workspace

The column "Length" indicates the total number of numbers in the number range.

The column "% Warning" corresponds to the "% Warning" value that is set in the transaction SNRO, except that in SNRO the percentage means the share of not yet used numbers. Here we show the share of already used numbers like everywhere else where a fill level threshold is used.

The column "Weeks" may contain a figure that indicates in how many weeks a number range might fill completely if it is used in the same rate like in the last two weeks.

In contrary to the prediction of the date when a number range may fill completely that is available in the EarlyWatch Alert Workspace this prediction is not calculated by means of machine learning but by simple linear extrapolation of up to three last known values. Take them with a grain of salt.

All empty columns will be hidden to improve the readability of the table.

When there are too many number range objects to report, up to 8 of each object per client are listed above.

This table lists those superfluous number range objects. Please use the links in the table for further analysis of these number ranges.

If a number range is exhausted, then the following may happen:

Non-rolling Number Range

- The process gets no new number and receives an error message.

Rolling Number Range

- The next number drawn after the last one will again be the one defined by the “from” value. There is no warning.

- There might be old objects with keys that are now drawn again from the number range. Depending on the business process, either existing objects will be overwritten, or they cannot be saved because of conflicting unique keys. The former might happen undetected and usually this is not what you want.

Recommendation: Check the number ranges that are critical to your business and make sure that you have enough numbers available. Depending on the business process and application area, the number range can be extended:

- By adapting the interval parameters "from number", "to number", and "level"

- By providing a new interval. This might happen automatically for some applications.

In case of rolling number ranges, make sure that old objects are reorganized, deleted, or archived in time before the number range reaches its limit.

Regarding specific number ranges, further information may be found in SAP Notes or Knowledge Base articles. Use the number range object name as a search criterium.

If you think that the rating is too harsh, that is, there are plenty of numbers still available, then check the warning level of

that number range object in transaction SNRO or SNUM. Enter the number range object name and choose *Display* . Then check the value of *% Warning* . For example, a value of 10.0 % means "warn me if there are only 10 % of the possible numbers left", while here in this check, the respective *fill level* is displayed. In this example it would be 90 %. The warning level should nevertheless be set according to business requirements.

See also SAP Note 2292041 and SAP Help Portal Number range objects

Rating	Check	System ID
✔	System Recommendations (HANA)	WPH
✔	Maintenance Status of current SAP HANA Database Revision	WPH
✔	SAP HANA System Privilege DATA ADMIN	WPH
✔	SAP HANA Password Policy	WPH
!	SAP HANA Audit Trail	WPH
✔	SAP HANA SQL Trace Level	WPH
✔	SAP HANA Network Settings for Internal Services	WPH
✘	SAP HANA Network Settings for System Replication Communication (listeninterface)	WPH
✘	Activation Status and Validity of User SYSTEM	WPH
✔	System Recommendations (ABAP)	WP2
✘	Age of Support Packages	WP2
!	Default Passwords of Standard Users	WP2
✔	Control of the Automatic Login User SAP*	WP2
✔	Protection of Passwords in Database Connections	WP2
✔	ABAP Password Policy	WP2
✘	RFC Gateway Security	WP2
✔	Message Server Security	WP2
✘	Critical authorizations, which allow to do anything	WP2
✘	Critical authorizations, which should not be used in production	WP2
!	Critical authorizations, which should only see very limited use in production	WP2

10 Security

Critical security issues were found in your system. See the information in the following sections.

10.1 SAP HANA Database WPH

10.1.1 SAP HANA Audit Trail

Sources of information for the SAP HANA audit trail:
- SAP HANA Security Guide for SAP HANA Platform - SAP HANA Security Guide for SAP HANA Platform -> Audit Trails - SAP HANA Security Guide for SAP HANA Platform -> Best Practices and Recommendations for Creating Audit Policies - SAP HANA Administration Guide for SAP HANA Platform

Note: The activation of the SAP HANA audit trail may lead to extensive growth of table CS_AUDIT_LOG_ if the criteria for the logging are too widely set. If the growth is not monitored, it can lead to a business down situation if the table reaches the maximum record limit of SAP HANA.

10.1.1.1 Auditing Status

Auditing is disabled in the security settings of your SAP HANA database.

> **Recommendation:** Activate the SAP HANA audit trail and define appropriate audit policies.

10.1.1.2 Audit Policies

No customer-defined audit policies are enabled.

> **Recommendation:** Define audit policies according to your needs.

10.1.2 SAP HANA Network Settings for System Replication Communication (listeninterface)

Rating	File Name	Section	Key	Current Value	Comment
✘	global.ini	system_replication _communication	enable_ssl	off	TLS encrypted communication expected (when listeninterface = .global)
ℹ	global.ini	system_replication _communication	listeninterface	.global	TLS encrypted communication expected (when listeninterface = .global)

Rating	File Name	Section	Key	Current Value	Comment
	global.ini	system_replicat ion_hostname_resolution	10.60.2.1	lxbell705	
	global.ini	system_replicat ion_hostname_resolution	10.60.2.2	lxbell706	

With current parameter settings, the default (public) network route is used for system replication communication or the system replication communication is not strictly restricted to the hosts of your scenario. This can be used to attack your SAP HANA system.

> **Recommendation:** Immediate action is recommended. Implement one of the best practices outlined below:
> Enable TLS encryption for system replication communication to ensure that all communication is limited to hosts having the same system PKI. As of SAP HANA 1.0 SPS 10, a system PKI is automatically set up as part of the installation. It is ready for use without further configuration:
> 1. Set parameter *enable_ssl* to value ' *on* '. The parameter is in file *global.ini* , section *system_replication_communication* .
> 2. Encrypt the Internal Communication of SAP HANA by changing parameter *ssl* to value ' *systempki* '. This parameter is in file *global.ini* , section [*communication*].
> Both parameters are not case sensitive and must be set on all sites of your replication scenario. After making the change, you must restart your SAP HANA system.
> This is the simplest approach to secure system replication communication. It is recommended for all current SAP HANA revisions: SAP HANA 1.0 revision 122.15 (January 2018) or later and SAP HANA 2.0 revision 12.4 (February 2018) or 24 (March 2018) or 30 (April 2018) or any later revision of the respective Support Package).
> If your system is already configured with separate networks for public, internal, and system replication communication, you can also choose an alternative approach. With such a network topology, you can ensure that hosts listen to system replication communication only on the dedicated ports of the separate network and reject incoming requests on other interfaces:
> 1. Set parameter *listeninterface* in section *system_replication_communication* to ' *.internal* '.
> 2. In the *system_replication_hostname_resolution* section of the *global.ini* file, configure parameters that define a correct mapping of IP address to hostname for each host of your SR scenario. Select the appropriate name / value pairs based on your documentation of your network topology. Entries for hosts of neighboring sites must be included as a minimum.
> Note that some SAP HANA scenarios do not support the parameter setting *listeninterface* = *.internal* . If you choose this option, refer to the SAP HANA Security Guide on SAP Help Portal.

10.1.3 Activation Status and Validity of User SYSTEM

The activation status and validity dates (VALID FROM and VALID TO) of user SYSTEM have been checked in system table USERS.

Rating	Check
	User SYSTEM is currently active and valid.

Active standard users are an easy and widely used target for hacking attacks since they are available in every system. Furthermore, the user SYSTEM is like a super user with very powerful user authorizations that cannot be revoked.

> **Recommendation:** Review the current usage of user SYSTEM and set up and test a user and role concept, so that the use of user SYSTEM becomes obsolete.

> Deactivate the user account with the SQL statement:
> ALTER USER SYSTEM DEACTIVATE USER NOW.

> To prevent misuse of user SYSTEM, activate related audit policies in your SAP HANA system as described in the SAP HANA Administration Guide.

10.2 ABAP Stack of WP2

10.2.1 Age of Support Packages

The following table shows the current status, the final assembly date at SAP, and the implementation date of selected key software components that are installed in the system.

Software Component	Release	Support Package	Final assembly date	Age of final assembly date in months	Support Package import date	Age of SP import date in months	Rating
SAP_ABA	750	20	19.01.2021	45	14.01.2022	33	
SAP_BASIS	750	20	19.01.2021	45	14.01.2022	33	
SAP_GWFND	750	21	30.04.2021	41	14.01.2022	33	

SAP provides SAP Security Notes with high or very high priority for Support Packages shipped within the last 24 months. We identified key software components on your system that are outside of this timeframe.
In the case of SAP Solution Manager, the software component BBPCRM is not separately checked because the update is covered via software component ST.
For more information as well as exceptions, see https://support.sap.com/securitynotes --> “SAP Security Patch Day”.

> **Recommendation:** Run support package updates at least once a year. In addition, evaluate SAP Security Notes once a month at the time of the monthly SAP Security Patch Day. SAP strongly recommends always performing support package updates for the complete support package stack and not just for the software components listed above. See https://support.sap.com/en/my-support/software-downloads/support-package-stacks.html for further information.

10.2.2 Default Passwords of Standard Users

Standard users have default passwords.

> **Recommendation:** Run report **RSUSR003** to check for standard users having default passwords in some clients. Ensure that user **SAPCPIC** has a non-default password in all clients.
> User **EARLYWATCH** was used in client 066 only. This client should no longer exist, and therefore, this user should not exist either in any client.
> SAP Note 1749142 describes how to remove an obsolete client 066.
> Make sure that user **TMSADM** exists only in client 000 and that the standard password has been changed. SAP Note 1414256 describes a support tool for changing the password of user TMSADM in all systems of the transport domain.
> For more information, see "Protecting Special Users" either on SAP Help Portal or in the SAP NetWeaver AS ABAP Security Guide.

10.2.3 ABAP Password Policy

If password login is allowed for specific instances only, the password policy is checked only for these instances.

10.2.4 RFC Gateway Security

10.2.4.1 RFC Gateway Access Control Lists

Parameters: gw/sec_info gw/reg_info

Rating	Instance	Error Condition
	All instances	gw/reg_info and gw/sec_info are defined

reg_info

Rating	Instance	Error Condition	File does not exist (default)
	All instances	P TP=* HOST=* ACCESS=* CANCEL=*	

sec_info

Rating	Instance	Error Condition	File does not exist (default)
	All instances	P USER=* TP=* HOST=* USER-HOST=*	

Parameter: gw/sim_mode

Rating	Instance	Current Value	Recommended Value
✔	All instances	0	0

At least one of the following critical conditions is true:
- Profile parameters gw/sec_info is not set
- File secinfo does not exist
- File secinfo contains at least one trivial entry
- Profile parameter gw/sim_mode is set to 1

Additionally, gw/reg_info may be missing or also contain a trivial entry.

> **Recommendation:** The profile parameters gw/sec_info and gw/reg_info provide the file names of the corresponding access control lists. These access control lists are critical to controlling RFC access to your system, including connections to RFC servers. You should create and maintain both access control lists, which you can do using transaction SMGW.
> The files secinfo and reginfo, which are referenced by these profile parameters, should exist and should not contain trivial entries.
> The profile parameter gw/acl_mode should be set to 1 to enable secure default rules if any of these files do not exist.
> The profile parameter gw/sim_mode should be set to 0 to disable the simulation mode which would accept any connections.
> SAP recommends defining and properly maintaining these access control lists to prevent rogue servers from accessing the system. For more information, see the following SAP Notes:
> SAP Note 1305851 - Overview note: "reg_info" and "sec_info"
> SAP Note 1408081 - Basic settings for reg_info and sec_info
> For more information, see "Configuring Connections between SAP Gateway and External Programs Securely" on SAP Help Portal and the SAP Gateway wiki on the SAP Community Network.
> See also the white paper on SAP Security Recommendations: Securing Remote Function Calls (RFC) available at https://support.sap.com/content/dam/support/en_us/library/ssp/security-whitepapers/securing_remote-function-calls.pdf .

10.2.5 Users with Critical Authorizations

For more information about the following check results, see SAP Note 863362 .

> **Recommendation:** Depending on your environment, review your authorization concept and use the Profile Generator (transaction PFCG) to correct roles and authorizations. You can use the User Information System (transaction SUIM) to check the results. For each check, you can review the roles or profiles that include the authorization objects listed in the corresponding section.

10.2.5.1 Critical authorizations, which allow to do anything

10.2.5.1.1 Super User Accounts

Users with authorization profile SAP_ALL have full access to the system. There should be a minimum of such users. The number of users with this authorization profile is stated for each client.

Client	No. of Users Having This Authorization	No. of Valid Users	Rating
000	9	16	
001	6	6	
200	11	500	

Authorization profile: SAP_ALL

10.2.5.1.2 Users Authorized to Debug / Replace

This authorization provides access to data and functions, since any authorization check that is built in ABAP can be bypassed. In addition, you can change data during processing, which may lead to inconsistent results. The specified number of users for each client have the checked authorization.

Client	No. of Users Having This Authorization	No. of Valid Users	Rating
200	17	500	

Authorization objects: Object 1: S_DEVELOP with ACTVT=02 (change) and OBJTYPE=DEBUG

Note: If you do not want to disable development in your system, you have to exclude the authorization for

OBJTYPE=DEBUG with ACTVT=02 from roles and only allow any other object type for S_DEVELOP. This means that development and debugging with visualization is still possible.
You can achieve this by adding two authorizations to the object S_DEVELOP: one with all object types except for DEBUG and all activities, and another for the object type DEBUG only and all activities except for 02.

10.2.5.2 Critical authorizations, which should not be used in production

10.2.5.2.1 Users Authorized to Change or Display all Tables

Unauthorized access to sensitive data is possible if too many users have this authorization. The specified number of users for each client have the checked authorization.

Client	No. of Users Having This Authorization	No. of Valid Users	Rating
000	1	16	✔
200	74	500	✘

Authorization objects: Object 1: S_TCODE with TCD=SE16, TCD=SE16N, TCD=SE17, TCD=SM30, or TCD=SM31
Object 2: S_TABU_DIS with ACTVT = 03 or 02 and DICBERCLS = *

10.2.5.3 Critical authorizations, which should only see very limited use in production

10.2.5.3.1 Users Authorized to Start all Reports

This authorization allows critical functions and reports that do not contain their own authorization checks to be executed.
The specified number of users for each client have the checked authorization.

Client	No. of Users Having This Authorization	No. of Valid Users	Rating
200	87	500	!

AUTHORIZATION OBJECTS: Object 1: S_TCODE with TCD=SA38
Object 2: S_PROGRAM with P_ACTION=SUBMIT P_GROUP=*
or
Object 1: S_TCODE with TCD=SE38
Object 2: S_DEVELOP with OBJTYPE=PROG OBJNAME=* ACTVT=16

10.2.5.3.2 Users Authorized to Administer RFC Connections

If too many users have this authorization, two problems can occur:
- Unauthorized access to other systems
- Malfunction of interfaces if invalid connection data is entered

The specified number of users for each client have the checked authorization.

Client	No. of Users Having This Authorization	No. of Valid Users	Rating
000	1	16	✔
200	59	500	!

Authorization objects: Object 1: S_TCODE with TCD=SM59
Object 2: S_RFC_TT with ACTVT = 02 and RFC_SYSID = * and RFC_INSTNR = *

10.2.5.3.3 Users Authorized to Reset/Change User Passwords

The following users are allowed to change and reset the passwords of users. This is very risky because any of these users could change the password and log on themselves with another user. The only consequence is that the "real user" would no longer be able to log on because the password would have been changed. However, this normally results in the password being reset, because there is a chance that the "real user" might have forgotten the correct ... Text cut, see SAP Note 3210457

Client	No. of Users Having This Authorization	No. of Valid Users	Rating
000	1	16	✔
200	126	500	!

Authorization objects: Object 1: S_TCODE with TCD=SU01 or TCD=OIBB or TCD=OOUS or TCD=OPF0 or TCD=OPJ0

or TCD=OVZ5 Object 2: S_USER_GRP with ACTVT=05

11 Software Change and Transport Management of WP2

No critical software change management issues were found in your system.

11.1 SAP Netweaver Application Server ABAP of WP2

Rating	Check Performed
✔	Number of Changes
✔	Emergency Changes
✔	Failed Changes

11.1.1 Number of Changes

Performing changes is an important cost driver for the IT department. It is only acceptable to make a large number of software and configuration changes in exceptional situations, such as during go-live for an implementation project.

No changes have been reported for the ABAP stack in the last week.

11.1.2 Number of Transport Requests

The following diagram contains information about the number of transport requests per day that were imported into the SAP system in the last week.

Date	Workbench and Relocation Requests	Customizing Requests	Transport of Copies
10.09.2024	1	1	0
15.09.2024	14	3	0

11.1.3 Number of Transported Objects

The following diagram contains information about the number of objects per day that was imported into the SAP system in the last week.

Date	Objects in Workbench and Relocation Requests	Objects in Customizing Requests	Objects in Transport of Copies
10.09.2024	1	6	0
15.09.2024	369	7	0

11.1.4 Emergency Changes

We analyzed the number of emergency changes in system WP2 in the last week.

Rating	Item	Value	Explanation
✔	Transport requests created in production	0	Number of transport requests; created or released in production.
✔	Transport requests with short transition time	0	The duration between the export from the development system and the import into the production system was shorter than one day.
◆	Total number of transport requests	19	Total number of transport requests in production.

11.1.5 Failed Changes

In this check, we analyzed the number of failed changes in system WP2 during the last week.

Rating	Item	Value	Explanation
✔	Transport requests with import errors	0	Number of transport requests with import errors that were not resolved within one hour.
✔	Overtakers and bypassed transport requests	0	If an old object version overwrites a newer one we count this as a transport sequence error. We count both the overtaker transport and the bypassed transport. Each transport is only counted once.
◆	Total number of transport requests	19	Total number of transport requests that were imported or released in production within the last week.

12 Data Volume Management (DVM)

We found significant potential for data volume reduction on your system WP2.

The **Deletion and Data Archiving** section below highlights database objects that show potential for data reduction by data archiving or deletion. These database objects are proposed as a starting point for establishing a well-defined Data Volume Management process.
Alerts are created based on estimates of saving potential, starting with "easy-to-implement" objects that can be implemented by the IT department, without intensive consultations with the business owners. The entire system size can often be reduced considerably without touching upon business-data-related archiving concepts.
Keeping data volumes at the required minimum reduces the TCO, reduces maintenance effort, and prevents degradation of system performance.

For more information about Data Volume Management, see sap.service.com/dvm or join the collaboration platform for DVM: "Enterprise Support Value Map". Either register using the following menu path: SAP Service Market Place SAP Support Portal > alias ESACADEMY support.sap.com/esacademy > Value Maps > Join Now (register for DVM) or contact your local SAP Enterprise Support Advisory Center.
The ES Academy also offers Expert-Guided Implementation (EGI) training on DVM, which is helpful when using the DVM Work Center and Guided Self-Service in SAP Solution Manager.

12.1 Deletion and Data Archiving - Summary

> **Recommendation:** Execute a DVM Guided Self Service report that includes each of the objects listed below to get details of the applicable DVM methodology per object.

In this section, information and data regarding DVM is displayed. The data was collected on for client 200 of your system WP2.

Reduction Potential

Rating	Object	Rank	Complexity	Appl. Area	Document Type	Doc. Type Size [GB]	Saving Pot. [%]	Saving Pot. [GB]	Trend*
!	CDPOS	1	Low	BC	Change Document s	68,67	25,24	17,33	↘
✓	BALDAT	2	Low	BC	Applicatio n Logs	45,38	0,00	0,00	↘
✓	EDID4	6	Low	BC	Intermedia te Document s	11,28	0,00	0,00	→
!	CNS_RE CV_STATUS	16	Low	CA	CNS Change Pointers	8,43	44,43	3,75	→
✓	STXH	22	Low	BC	SAP Script Document	2,49	8,59	0,21	↓
	Sum of Document Types					136,25			
	Sum of Saving Potential							21,29	

Related document types are 47.04 % of total database size(289.63 GB).
Saving potential is 7.35 % of total database size(289.63 GB).
Five objects were analyzed regarding potential for data reduction. These objects are proposed as a starting point for establishing a well-defined Data Volume Management process. The overview table below displays these objects together with their potential for data reduction. For further details, see the "Proposed Objects" section.

The direction of the trend arrow reflects the growth/reduction of the table in relation to the previous month's measurement. Therefore, an arrow pointing vertically upward indicates a high growth rate and an arrow pointing vertically downward

reflects a reduction in growth (in both cases, the deviation exceeds 10% of the total size of the table).
An arrow that is at an angle to the top or bottom is related to a moderate growth/reduction rate (lower than 10% but higher than 3% of the total size of the table).
A horizontal arrow indicates no change or only a slight change in size (less than 3% of the total size of the table).
A GRAY icon indicates that trend calculation was not possible.

* In general, trend evaluation is performed by comparing table size on a monthly basis. Since it seems that scheduling of the jobs creating ST14 datasets is not set up for your system WP2 at a monthly interval, extrapolation was used here for trend calculation.

The saving potential [%] is determined based on the header table of the document type. The header table is not necessarily the one listed in the "Object" column.
The following rules apply for the saving potential:
- For Basis-related and cross-application-related objects, data older than 6 months is considered to have saving potential.
- For application-related objects, data older than 24 months is considered to have saving potential.

The rating for each object is calculated as follows:
- A YELLOW rating indicates saving potential of more than 1 GB for an object, representing at least 0.1% of the total database size.
- A GREEN rating indicates saving potential that is less than 1 GB, or the saving potential for this object represents less than 0.1% of the total database size.
- An UNDEFINED rating indicates that the saving potential could not be calculated for the object in question.

The overall rating for this section focusing on deletion and data archiving is calculated as follows:
- A YELLOW rating indicates a total saving potential for all analyzed objects of more than 5 GB, representing at least 1% of the total database size.
- A GREEN rating indicates a total saving potential that is less than 5 GB for all objects, or the total saving potential represents less than 1% of the total database size for all objects.
- An UNDEFINED rating indicates that the saving potential could not be calculated in general.
You can create a DVM self-service from SAP Solution Manager via the Data Volume Management Workcenter by calling the Service Documents application. Alternatively, you can do this via the SAP Engagement and Service Delivery Workcenter in your SAP Solution Manager. Before executing the self-service, you can check whether SAP has released any DVM information regarding the listed objects by using the content browser in the Data Volume Management Workcenter.
You can find information about which actions to take to reduce the data volume either in the Data Management Guide or in SAP Note 2388483 : How To: Data Management for Technical Tables.
You can access the Data Management Guide in your SAP Solution Manager system:
Data Volume Management in wiki.scn.sap.com > "Data Management Guide" in the "Useful Links" section.

12.1.1 Date of Analysis

The following table shows the date of the current analysis and the date of the previous analysis for your system WP2. You can also see which client of your system WP2 was analyzed.

Analysis	Analysis Date	Analyzed Client
Current Analysis	12.09.2024	200
Previous Analysis	05.09.2024	200

12.1.2 Distribution of Size by Application Area

The following pie chart shows how data from the top 30 tables is distributed across the top 10 application areas. From here, you can easily identify the applications that cause the largest volume of data in your system. You can focus your attention on dealing with these largest applications.
Note: Application areas that fall outside the top 10 are grouped together and shown collectively in one section of the pie chart.

Application Area	Size [GB]	Portion [%]
BC	141,29	48,78
AP	75,76	26,16
SCM	56,10	19,37
CA	12,54	4,33
FS	2,67	0,92
SV	0,79	0,27
BW	0,30	0,10
EPM	0,04	0,01
KM	0,04	0,01
OTHER	0,03	0,01
Sum of smaller Application Areas	0,05	0,02
Total Size of all Application Areas	289,63	100,00

12.1.3 Top 30 Tables (including Indexes) and Document Type Assignment

The following table lists the top 30 tables in your system WP2.
The "Size [GB]" column indicates the total size of a table and its associated indexes.

Based on SAP experience, the "Complexity" indicates how much effort might be needed to reduce the data volume for a particular object. Low complexity indicates a comparatively low effort for data volume reduction. In contrast, high complexity indicates that greater effort is required to reduce the data volume.

The "Trend" column specifies the trend of the table size compared with the last month, if available. If technically possible, the corresponding application areas and document types are also shown.
Note: The "Document Type" is used by SAP during the DVM Strategy session to perform a detailed analysis of the tables. This provides a deeper level of granularity than the analysis by application area. The table description is collected by our tools (that is, transaction ST14) depending on the logon language (default is English). 'N/A' could indicate that the description is not available in the relevant language.

Table Name	Size [GB]	Complexity	Appl. Area	Document Type	Trend*
CDPOS	54,91	Low	BC	Change Documents	↘
BALDAT	44,67	Low	BC	Application Logs	↘
/LIME/NLOG_QUAN	42,26	Medium	AP	LIM: Logistics Inventory Management Engine	↗
/LIME/LOG_HEAD	19,73	Medium	AP	LIM: Logistics Inventory Management Engine	→
CDPOS_UID	12,41	Low	BC	Change Documents	↓
EDID4	11,19	Low	BC	Intermediate Documents	→

Table Name	Size [GB]	Complexity	Appl. Area	Document Type	Trend*
/LIME/NLOG_TREE	9,83	Medium	AP	LIM: Logistics Inventory Management Engine	↗
/SCWM/WO_PPF	7,16	Medium	SCM	Print	↗
/SCDL/DB_STATUS	5,92	Medium	SCM	EWM Deliveries	↓
AUSP	5,55	High	CA	Characteristic Values (CL)	→
/SCDL/DB_ADDMEAS	5,20	Medium	SCM	EWM Deliveries	↓
/SCDL/DB_REFDOC	5,16	Medium	SCM	EWM Deliveries	↓
/SCDL/DB_DF	4,34	Medium	SCM	EWM Deliveries	↓
/SCDL/DB_DATE	3,98	Medium	SCM	EWM Deliveries	↓
/LIME/COLL_PN	3,40	Medium	AP	LIM: Logistics Inventory Management Engine	↗
CNS_RECV_STATUS	3,07	Low	CA	CNS Change Pointers	→
CNS_CP	2,70	Low	CA	CNS Change Pointers	→
FSBP_CNS_IMAGE	2,65	Low	FS	CNS Change Pointers	→
/SCWM/ORDIM_C	2,44	Medium	SCM	EWM Warehouse Tasks	↑
/SCWM/POHUITM	2,29	Medium	SCM	Warehouse Order Processing	→
/SCWM/MFSTELELOG	1,98	Low	SCM	Material Flow System	↑
STXH	1,81	Low	BC	SAP Script Document	↓
/SCWM/HU_SW01	1,62	Medium	SCM	Warehouse Order Processing	→
/SCWM/TU_DLV	1,58	Medium	SCM	Shipping and Receiving	→
/SCDL/DB_GROUP	1,54	Medium	SCM	Delivery Processing	↘
CDHDR	1,36	Low	BC	Change Documents	↑
/SCDL/DB_BPLOC	1,36	Medium	SCM	OER Event Messages	↓
/SCWM/ORDIM_L	1,35	Medium	SCM	EWM Warehouse Tasks	↑
SMIMCONT1	1,19	Medium	BC	BC BSP MIME Repository	→
/SCWM/DB_ITEMWT	1,01	Medium	SCM	EWM Warehouse Tasks	↑
Top30 tables are 90.81 % of total database size (289.63 GB)	263,00				

* In general, trend evaluation is performed by comparing table size on a monthly basis. Since it seems that scheduling of the jobs creating ST14 datasets is not set up for your system WP2 at a monthly interval, extrapolation was used here for trend calculation.

Note: The direction of the trend arrow reflects the growth/reduction of the table in relation to the previous month's measurement. Therefore, an arrow pointing vertically upward indicates a high growth rate and an arrow pointing vertically downward reflects a reduction in growth (in both cases, the deviation exceeds 10% of the total size of the table).
An arrow that is at an angle to the top or bottom is related to a moderate growth/reduction rate (lower than 10% but higher than 3% of the total size of the table).
A horizontal arrow indicates no change or only a slight change in size (less than 3% of the total size of the table).
A GRAY icon indicates that trend calculation was not possible.

12.1.4 Proposed Objects

12.1.4.1 Proposed Objects: Age of Records Distribution

The following chart shows the yearly distribution of data in your system WP2 for the "Proposed Objects" mentioned above.

12.1.4.2 Proposed Objects: Saving Potential

In the table below, the saving potential for the "Proposed Objects" is displayed based on the age of records.

Rating	Object	Document Type	2024	2023	2022	< 2022	Saving Pot. [%]	Saving Pot. [GB]
!	CDPOS	Change Documents	15.590.787	5.806.061	5.038.487	7.240.258	25,24	17,33
✔	BALDAT	Application Logs	12.438.811	0	0	0	0,00	0,00
✔	EDID4	Intermediat e Documents	942.499	0	0	0	0,00	0,00
!	CNS_REC V_STATUS	CNS Change Pointers	14.411.230	17.807.363	16.594.680	31.560.250	44,43	3,75
✔	STXH	SAP Script Document	30.185.879	430.203	348.839	2.813.174	8,59	0,21

Note: The records in the individual year columns and the saving potential [%] are determined based on the header table of the document type. The header table is not necessarily the one listed in the "Object" column. Consequently, the figures do not necessarily reflect the number of entries in the table listed in the "Object" column. The saving potential [GB] is calculated by applying the percentage savings to all the tables of the document type. For more details about the ... Text cut, see SAP Note 3210457

This section only provides information about saving potential. For a more detailed analysis, execute a DVM Guided Self Service report that includes each of the objects listed above to get details of the applicable DVM methodology per object. For more details about this, again please see the "Summary" section.

12.1.5 Additional Information

12.1.5.1 Archiving Statistic Information

The following table shows the overall archiving situation in client 200 of your system WP2. It lists all archiving objects that have been executed with additional information about the number of archived and deleted objects and the size of the archive files by status ('Archived and Deleted' or 'Archived only').
You can use this information to determine whether the overall archiving strategy is working as intended or whether additional measures are required. You can also determine the size of the archive files waiting to be deleted. The related archive files may have already been moved to the content server or file system.

Archiving Object	Compl. Arch. Runs	First Run	Last Run	No. of Arch. and Del. Objects	Size of Arch. and Del. File [MB]	Arch. Objects awaiting Deletion	Size of Arch. File awaiting Deletion [MB]
BC_XMB	209	23.02.2020	08.09.2024	80103	2696.41	56	8.60
DLV_INB	55	11.03.2021	03.09.2024	443794	1434.00	0	0.00
DLV_OUT	51	14.04.2021	05.09.2024	6024519	171514.19	20488	299.97
DLV_REQ	96	14.04.2021	09.09.2024	6464711	32234.38	0	0.00
IDOC	19	11.11.2021	23.04.2022	4087430	13310.55	0	0.00
WME_HU	38	04.03.2021	28.08.2024	15508140	14684.43	0	0.00
WME_TO	46	17.02.2021	22.08.2024	185199245	164262.13	0	0.00
WME_WAVE	31	08.07.2022	30.08.2024	197759	1495.28	0	0.00
WME_WO	38	03.03.2021	26.08.2024	84475633	34527.09	0	0.00

Note: If there are archiving objects awaiting deletion, check whether this works as designed and whether the deletion is expected to take place within the next few days. Archive files for which the delete jobs have not yet been scheduled may cause data to be archived redundantly.
If there are archiving objects for which the most recent archiving run is older than one year, check whether this works as designed or whether archiving has been discontinued unintentionally.

12.1.5.2 Overview of available DVM Service Documents

In the table below, you can find a list of available DVM service documents for your system WP2.

These documents relate to Guided Self Services (GSS) performed on system WP2. The documents can be accessed via the link in the table below or through the DVM Workcenter using the "Service Documents" application.

Session Rating	Service Document Creation Date	Link to Service Document	Service Type	Service Session Number
			No Service Sessions found!	

Note: A RED or YELLOW icon for the session rating indicates that DVM recommendations are provided in this document and action is required.
A GREEN icon indicates that no immediate action is required.
A GRAY icon indicates that no session rating was determined.

13 Remote Function Call for - WP2

Remote Function Call issues which require your attention have been found. See the recommendation in the following section.

13.1 qRFC Administration

13.1.1 qRFC Queues

13.1.1.1 qRFC Inbound Queues

13.1.1.1.1 qRFC Inbound queues in error status

Some qRFC queues with error statuses were detected in the qRFC Monitor. The table below lists the queues with the highest number of entries for each error status found.

> **Recommendation:** Analyze the errors according to SAP Note 378903. Monitor the qRFC inbound queues daily using transaction SMQ2.

Queue Name	Status	Date of first entry	Entries	Error Message
DLVSPE4CLNT2000180312589	SYSFAIL	16.08.2024	1	Fehler bei der Abbildung: Material 000000000000608263 ist nicht vorhanden
ZNAST_310006781876	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006781876',
ZNAST_310006782027	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782027',
ZNAST_310006782127	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782127',
ZNAST_310006782128	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782128',
ZNAST_310006782131	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782131',
ZNAST_310006782132	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782132',
ZNAST_310006782141	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782141',
ZNAST_310006782142	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782142',
ZNAST_310006782143	SYSFAIL	09.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006782143',
ZNAST_310006787067	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006787067',
ZNAST_310006788452	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788452',
ZNAST_310006788500	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788500',
ZNAST_310006788538	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788538',
ZNAST_310006788539	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788539',

Queue Name	Status	Date of first entry	Entries	Error Message
ZNAST_310006788540	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788540',
ZNAST_310006788545	SYSFAIL	09.09.2024	2	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788545',
ZNAST_310006788546	SYSFAIL	09.09.2024	2	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788546',
ZNAST_310006788584	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788584',
ZNAST_310006788638	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788638',
ZNAST_310006788653	SYSFAIL	09.09.2024	2	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788653',
ZNAST_310006788700	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788700',
ZNAST_310006788705	SYSFAIL	09.09.2024	2	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006788705',
ZNAST_310006795292	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006795292',
ZNAST_310006795314	SYSFAIL	11.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006795314',
ZNAST_310006795510	SYSFAIL	10.09.2024	1	Fehler bei RFC-Aufruf SD_EWM_NAST_SEN D kappl 'V2', docno '310006795510',

Rating	Check Result
✔	Recommended SAP HotNews Note is implemented.

14 Extended Warehouse Management Checks

SAP Note	Implementation Status	Error came into WP2 by	Rating	Hotnews?
2857030	Note obsolete, because SP is applied	SAP_AP 750 SP45	✔	✔

Potential issues that require your attention have been found in EWM. Take immediate action to ensure optimal system performance and stability.

14.2 EWM Queues older than 365 days saved in SMQ3

Rating	Check Result
✔	No queues older than 365 days saved in SMQ3

14.3 Failed and Unprocessed PPF actions in EWM

14.3.1 Unprocessed PPF actions in EWM older than 2 weeks

Rating	Check Result
✔	No EWM PPF actions related issues found

14.3.2 Failed PPF actions is EWM older than 2 weeks

Rating	Check Result
✔	No EWM PPF actions related issues found

14.4 Recommendation on latest Support Pack for EWM

Rating	Check Result
!	Your System is not on the latest support pack for EWM

> The current support package of your system for EWM 950 is more than five support packages behind the latest available package.
>
> **Recommendation:** Evaluate the relevance of the latest support package available. Upgrade the system to the latest support package if applicable. For detailed information, see SAP Service Marketplace at http://service.sap.com/swdc.
>
> Also refer to SAP Note "432027 - Strategy for using SAP Support Packages", which gives details on the importance of upgrading support packages: 432027 .

Software Component	Version	Patch Level	Latest Avail. Patch Level	Support Package	Component Description
SCMEWM	950	8	14	SAPK-95008INSCMEWM	Extended Warehouse Management

14.5 Important SAP Notes in Extended Warehouse Management

> It is identified that you have not implemented some of the important SAP Notes relevant for your Support Pack.

14.5.1 Missing Important EWM SAP Notes for Delivery Processing Inconsistencies

Rating	Check Result
!	Some of the recommended SAP Notes are missing

Recommendation: Evaluate the list of recommended SAP Notes for delivery processing related inconsistencies based on the EWM support pack installed in your system. Implementing these SAP Notes helps prevent inconsistencies in your system.

SAP Note	Implementation Status	Error came into WP2 by	Rating	Hotnews?	Description
3321269	not downloaded	SCMEWM 950 SP 00			Errors in QM are not captured during GR posting
3157937	not downloaded	SCMEWM 950 SP 00			Deletion of redundant document flow links for delivery items
3153491	not downloaded	SCMEWM 950 SP 00			Check Monitor Framework: new document flow checks for inbound and outbound process
3233459	not downloaded	SCMEWM 950 SP 00			Check Monitor Framework: Enhancement of the Document Flow check 2.
3030630	not downloaded	SCMEWM 950 SP 00			ODO split and batch leads to inconsistency in ERP (4)
3132011	not downloaded	SCMEWM 950 SP 00			Issue in Loading while processing Outbound delivery
3146978	not downloaded	SCMEWM 950 SP 0			Poor performance for warehouse task confirmation for PMR documents
3157640	not downloaded	SCMEWM 950 SP 00			CHM: Missing document flow link check issue for batch split items

14.5.2 Missing Important EWM SAP Notes for Warehouse Order Processing Inconsistencies

Rating	Check Result
!	Some of the recommended SAP Notes are missing

Recommendation: Evaluate the list of recommended SAP Notes for warehouse-order-processing-related inconsistencies based on the EWM support pack installed in your system. Implementing these SAP Notes helps prevent inconsistencies in your system.

SAP Note	Implementation Status	Error came into WP2 by	Rating	Hotnews?	Description
3077409	not downloaded	SCMEWM 950 SP 00			After packing multiple levels, Available Quantity gets wrong
3101776	not downloaded	SCMEWM 950 SP 00			inconsistent reserved quantity in HU
3127733	not downloaded	SCMEWM 950 SP 00			Wrong data in Available Quantity
3141978	not downloaded	SCMEWM 950 SP 00			Posting quantity too large when posting multiple stocks on the same bin

14.5.3 Missing Important EWM SAP Notes for PI Inconsistencies

Rating	Check Result
!	Some of the important SAP Notes recommended for your support pack for EWM Physical Inventory related inconsistencies have not been implemented

Recommendation: Evaluate the list of recommended SAP Notes for EWM Physical Inventory process-related inconsistencies that are relevant the EWM support pack installed in your system. Implementing these SAP Notes helps to prevent inconsistencies.

SAP Note	Implementation Status	Error came into WP2 by	Rating	Hotnews?	Description
3019602	not downloaded	SCMEWM 950 SP 00			posting from /SCWM/DIFF_ANALYZER fails with error message M7 001
3031220	not downloaded	SCM_BASIS 714 SP 00			WMIP* queue hangs due to exceeded capacity
3033426	not downloaded	SCMEWM 950 SP 00			'/SCWM/LC1 194 Enter a warehouse number' when counting split valuated product

14.6 Missing important SAP Notes for EWM correction functionality

Rating	Check Result
	SAP Notes for EWM correction functionality are missing

Your system is missing the important SAP Notes for EWM correction functionality below.

Recommendation: Please implement the recommended SAP Notes below. These SAP Notes have important reports for EWM corrections for inconsistency issues. They do not change productive code, and should be implemented to ensure that SAP Support can resolve inconsistencies when reported.

SAP Note	Implementation Status	Error came into WP2 by	Rating	Hotnews?	Description
3102365	not downloaded	SCMEWM 950 SP 00			CHM: Status correction check improvement for batch hierarchies
3076404	not downloaded	SCMEWM 950 SP 00			CHM: Status check proposes incorrect status values for complex hierarchies
3074854	not downloaded	SCMEWM 950 SP 00			Check for empty HUs in background
3072063	not downloaded	SCMEWM 950 SP 00			Access Key functionality integration with Check Monitor Framework 1. (technical prerequisites)
3050811	not downloaded	SCMEWM 950 SP 00			CHM: Missing Document Flow link check for missing GIR/GRR proposing positive quantity
3036415	not downloaded	SCMEWM 950 SP 00			CHM: LS/US links can not be deleted
3019693	not downloaded	SCMEWM 950 SP 00			Access Key functionality integration with Check Monitor Framework 2.
3001556	not downloaded	SCMEWM 950 SP 00			Check Monitor: New check for ODO subitems with inconsistent stock reference 2.

14.7 Missing SAP Notes to collect EWM Inconsistencies Statistics

Rating	Check Result
	SAP Notes to collect statistics on EWM inconsistencies are missing

The EWM Check Monitor now offers collecting statistical data about the inconsistencies. The SAP Note 3142402 contains the report /SCWM/NOTE_3142402, which generates the pre-requisite objects. The functionality itself is offered with the SAP Note 3066391

. After implementing the SAP Notes, you can get the overall information about occurrences and the different types of inconsistencies occurring in your system.

Recommendation: Implement the below SAP Notes, as collecting statistical data about the performed inconsistency corrections gives you an overview about the volume, type, and frequency of corrections within the inspected

timeframe. This will help you in identifying potential issues and help in planning the process for root cause analysis and permanent fix. For more details, refer to the SAP Notes 3142402 and 3066391 .

SAP Note	Implementation Status	Error came into WP2 by	Rating	Hotnews?	Description
3085447	not downloaded	SAP_BASIS 750 SP 00			Class Deletion Issue While De-implementing the SAP Note

14.8 Recommended Background Jobs are not set up in EWM

Rating	Check Result
✔	All/ at least 30% of the recommeded EWM Housekeeping jobs are set up in the system

14.9 Archiving is not set up for EWM Objects

Rating	Check Result
✔	Archiving set up for all/ atleast 15% of the recommended EWM objects

14.10 Overdue Outbound Deliveries created more than a year ago

Rating	Check Result
✔	No overdue outbound delivery order items found

14.11 Overdue Warehouse Tasks created more than a year ago

Rating	Check Result
✔	No overdue warehouse tasks found

14.12 Flexible Loading in EWM

Rating	Check Result
✔	Flexible loading is active

14.13 Checks for Rounding Residuals / Decimal Dust in EWM

14.13.1 Mixed Usage of Metric and Imperial Units of Measure in EWM

Rating	Check Result
✔	No Mixed Usage of Metric and Imperial Units of Measure found.

14.13.2 Small Leftover Quantities on Storage Bins in EWM

Rating	Check Result
✔	No tiny leftover stock found

14.14 EWM Workload

Weekly Workload

Transaction	Steps	Avg. Repsonse Time [ms]	Avg. DB Tine [ms]
/SCWM/ADHU	1702	327	132
/SCWM/FD	566	1064	593
/SCWM/IDN	6	37842	9599
/SCWM/MAT1	815	126	66
/SCWM/MON	88379	1290	455
/SCWM/PRDI	1112	476	216
/SCWM/PRDO	851	1118	568
/SCWM/RFUI (DIA)	313	86	49
/SCWM/RFUI (HTTP)	157	102	27
/SCWM/TO_CONF	3	1161	380
/SCWM/TU	7562	459	210
SPPFP	31	603	256

Daily Workload

Transaction	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
/SCWM/RFUI (DIA)	43 / 115 / 36	18 / 101 / 21	19 / 110 / 35	24 / 85 / 15	53 / 97 / 26		

Hourly Workload (/SCWM/RFUI)

Time	Steps	Avg. Repsonse Time [ms]	Avg. DB Time [ms]
06--07	4	199	150
07--08	15	52	22
08--09	13	88	47
09--10	22	54	22
10--11	8	75	34
11--12	48	57	23
12--13	16	109	65
13--14	34	83	46
14--15	43	90	57
15--16	36	101	60
16--17	23	104	63
17--18	26	84	47
18--19	15	113	73
19--20	10	142	106

15 SAP HANA Database WPH

We have checked your SAP HANA environment and found some issues that might have a negative impact on your overall system stability and performance. Review the report carefully and implement our recommendations.

Rating	Check
!	SAP HANA Stability and Alerts
!	SAP HANA Database Configuration
!	SAP HANA Resource Consumption
!	SAP HANA Workload and Performance
!	Size and Growth
!	Administration

15.1 Overview

The tables below provide an overview of your current SAP HANA database configuration.

DB Version / Start Time

Current SAP HANA DB Version	Build Branch	Start Time
2.00.059.04	fa/hana2sp05	14.05.2023 01:17:33

Technical Instances

Host	Database Name	System ID	Instance	Active	Daemon	Start Time	Time Zone	Nameserver Role	Indexserver Role
lxbell705	WPH	WPH	50	yes	yes	2023-05-14 01:17:20.896	CEST	MASTER	MASTER

Hardware Settings - General Data

Host	Physical Hostname	Manufacturer	Model
lxbell705	lxbell705	VMware, Inc.	VMware Virtual Platform

Hardware Settings - CPU and Memory Data

Host	CPU Type	CPU Frequency	CPU Cores	Threads	Sockets	NUMA Nodes	Physical Memory [GB]	Allocation Limit [GB]	Swap Space [GB]
lxbell705	Intel(R) Xeon(R) Platinum 8260M CPU @ 2.40GHz	2.394	96	96	48	1	491,8	472,5	22,0

Operating System Details

Host	Operating System PPMS Name	Operating System Version	Operating System Kernel	NOFILES Limit	OPEN_FILE Limit
lxbell705	LINUX_X86_64	SUSE Linux Enterprise Server 15 SP1	4.12.14-197.64-default	1.048.576	51.535.025

HANA Feature Usage

Usage	Installed / used	Additional data	SAP Note
Multitenant Database Containers (MDC)	Yes	System ID: WPH	2101244
Dynamic Tiering	No		2140959
Enterprise Performance Management Add-On (EPM MDS)	No		2456225
Embedded liveCache	No		2593571
Streaming Server	No		
Advanced Function Libraries	No		
XS Advanced	No		
Embedded Statisticsserver active	Yes		2147247
System Replication	Yes		1999880
Smart Data Access (SDA)	No		2180119
Smart Data Integration (SDI)	No		2400022
Smart Data Streaming (SDS)	No		2367236
Persistent Memory	No		2700084
Fast Restart Option	No		2700084
Data Aging	No		2416490
Extension Node	No		2741690
Workload Classes	Yes		2222250
Native Storage Extension (NSE)	No		2775588
Multi Dimensional Expressions (MDX)	No		
Multi Dimensional Services (MDS)	No		2670064

System Replication Overview

Host	Site Name	Secondary Host	Secondary Site Name	Replication Mode	Full Sync	Operation Mode
lxbell705	WPHPrimary	lxbell706	WPHSecondary	SYNCMEM	DISABLED	logreplay

HANA Update Information

Date	Version
25.01.2021	2.00.046.00.1581325702
15.01.2022	2.00.056.00.1624618329
14.05.2023	2.00.059.04.1655794895

15.2 SAP HANA Stability and Alerts

15.2.1 SAP HANA Alerts

	SAP HANA alerts have been issued for the monitored timeframe.

SAP HANA collects system information periodically and issues alerts of different priority levels according to predefined thresholds. These alerts can be used to monitor the performance and stability of the SAP HANA database. Possible alert priorities are:
1 – Information
2 – Low
3 – Medium
4 – High
5 – Statistics Server Alert

The following "Alerts" table shows SAP HANA alerts that reached at least medium priority during the monitored timeframe. It also shows how often an alert was created and the highest priority for this particular alert.

The "Recommendations" table lists recommendations for the alerts found and refers to SAP KBA Notes if available. Further details and recommendations for SAP HANA alerts are available in the relevant sections of the report.

Alerts

Alert ID	Alert	No. of Occurrences	Highest Rating
20	Determines the growth rate of non-partitioned columns tables.	25	4

Recommendations

Alert ID	General Recommendation	KBA
20	Consider partitioning the table. For details please refer to the chapter "Size and Growth".	1910140

Recommendation: Monitor SAP HANA alerts in the system closely to get an overview of the SAP HANA system status. React to warnings and problems visible in the alerts in due time. If you require support, create a case using the Get Support application in SAP for Me (KBA 1296527). Within case creation, select Product: Customer Project-Based Solution, and enter the component HAN-DB*.
For details, refer to the SAP HANA Administration Guide and to the SAP Note 2445867 How-To: Interpreting and Resolving SAP HANA Alerts .

15.2.2 SAP HANA Service Restarts

	No critical issues with SAP HANA service restarts were detected.

We did not find critical issues with SAP HANA service restarts.

15.2.3 SAP HANA DB Availability

The SAP HANA DB availability was based on the availability of the index server as logged in the daemon trace file.
No critical problems occurred regarding the availability of SAP HANA services.

15.3 SAP HANA Database Configuration

15.3.1 Parameter Recommendation

	Check parameter settings

Some parameters are not set as recommended, or there are parameters deviating from default values.
This table highlights the parameters that were checked with regard to their impact on system performance and stability.

Important SAP HANA Parameters

Location	Parameter	Layername	Current Value	Recommended Value	Rating	SAP Note
global.ini [communication]	sslsessioncachemode			off		2960895
global.ini [communication]	tcp_backlog	DATABASE	2048	<restore default>		2382421
global.ini [execution]	load_factor_job_wait_pct			0		2222250
global.ini [execution]	load_factor_sys_wait_pct			0		2222250
global.ini [memorymanager]	gc_unused_memory_threshold_abs	DEFAULT	0	113408		2169283
global.ini [memorymanager]	gc_unused_memory_threshold_rel	DEFAULT	-1	25		2169283
global.ini [memorymanager]	impli_enable_reset			true		1999997
global.ini [memorymanager]	small_block_gc			100		1999998

Location	Parameter	Layername	Current Value	Recommended Value	Rating	SAP Note
global.ini [resource_tracking]	service_thread_sampling_monitor_enabled	DATABASE	true	<restore default>		2114710
global.ini [system_replication]	logshipping_max_retention_size	DEFAULT	1048576	<between 0 and 32666>		2526877
global.ini [system_replication]	logshipping_snapshot_logsize_threshold	DEFAULT	3221225472	3221225472000		2600030
indexserver.ini [hex]	enable_interpreter_cache	DATABASE	false	<restore default>		2808956
indexserver.ini [joins]	use_top_postcondition_optimization			false		3262334
indexserver.ini [lobhandling]	garbage_collect_interval_s	SYSTEM	43200	<restore default>		2600030
indexserver.ini [memorymanager]	huge_alignment_cache_target	SYSTEM	10240	<restore default>		2953186
indexserver.ini [memorymanager]	huge_alignment_gc	SYSTEM	false	<restore default>		2953186
indexserver.ini [mergedog]	max_cpuload_for_parallel_merge			80		2057046
indexserver.ini [mergedog]	smart_merge_decision_func	DEFAULT	(MMS<1000 or DMS>1000 or DRC>0.1*MRC or DMR>0.1*MRC)	(DMS>1000 or DRC>0.1*MRC or DMR>0.1*MRC)		2057046
indexserver.ini [search]	non_eq_itab_enabled	SYSTEM	false	<restore default>		2600030
indexserver.ini [search]	qo_small_enough_exact_estimation	DATABASE	0.005	<restore default>		2756967
indexserver.ini [search]	qo_small_enough_rough_estimation	DATABASE	0.0000005	<restore default>		2756967
indexserver.ini [session]	itab_initial_buffer_size			1126400		1999997
indexserver.ini [sql]	hex_min_key_parts	DATABASE	5	<restore default>		2570371
indexserver.ini [sql]	plan_cache_eager_eviction_mode	DATABASE	off	<restore default>		2124112
indexserver.ini [table_consistency_check]	columncheck_parallel_threshold			4000000000		2116157
indexserver.ini [threads]	default_stack_size_kb			2048		1999997
indexserver.ini [threads]	worker_stack_size_kb			2048		1999997
indexserver.ini [transaction]	aggressive_gc_interval			300		2169283
indexserver.ini [unifiedtable]	ut_delta_rollover_switch_values	DATABASE	3	<restore default>		2940750

Recommendation: Set the SAP HANA parameters to the recommended value in the table.

Note: The recommendation "<restore default>" is assigned if a custom parameter value is equal to the SAP HANA default and therefore not explicitly required. In that case the default should be restored. Use the SQL command "ALTER SYSTEM ALTER CONFIGURATION ('<filename>', '<layername>') UNSET ('<section>', '<parameter name>')". See SAP Note 2186744 for details.

Be aware that for a proper tenant DB parameter setting, the parameters configured on the system DB side must also be double-checked. Otherwise, critical parameters can be set in the system DB that appear as default values on the tenant side. Default values are only reported by the parameter check if an explicit recommendation exists, therefore, critical settings can be missed by focusing only on the tenant DB parameter check.

The table "SAP HANA Parameters deviating from default" lists parameters deviating from default. These parameters do not belong to the set of recommended parameters, they represent parameters that are not set to DEFAULT value.
In the list below, there might be parameters that needed to be changed, but also parameters that were supposed to be set back to their default values (as for special settings only in certain SAP HANA revisions) but were forgotten. The purpose of this output is only to report those parameters to bring them to your attention so you can check them.

SAP HANA Parameters deviating from default

Location	Parameter	Layername	Current Value
global.ini [memorymanager]	allocationlimit	SYSTEM	90%
global.ini [persistence]	logreplay_savepoint_interval_s	SYSTEM	900
global.ini [persistence]	non_trans_cch_block_size	SYSTEM	134217728
indexserver.ini [sql]	hex_enable_remote_table_access	DATABASE	false
indexserver.ini [sql]	nested_trigger_check_in_ddl_time	DATABASE	true

15.3.2 SAP HANA Workload Management

	SAP HANA workload parameters need to be adjusted.

Workload management in SAP HANA allows you to balance and manage all workload types for optimal throughput and response times. The available workload management parameters limit resource consumption (e.g. CPU, threads, memory) for certain operations. The recommended values depend on available memory resources and on the number of CPU threads of the database server (also referred to as number of logical CPUs). For general information, refer to SAP Note 2222250 (FAQ: SAP HANA Workload Management).

If the current value deviates from the default, we check whether the current value is within the interval specified by the minimum and maximum formula.

We were not able to determine the complete SAP HANA landscape. The recommendations below are only valid if you have one tenant.

Location	Parameter	Layername	Current Value	Recommended Value	Rating
global.ini [execution]	max_concurrency	SYSTEM	16	<check restore default>	
global.ini [execution]	max_concurrency_hint	SYSTEM	4	<check restore default>	
global.ini [persistence]	max_gc_parallelity	DEFAULT	0	48	
indexserver.ini [indexing]	parallel_merge_threads	DEFAULT	2	<between 5 and 10>	

Note for <check restore default>: Starting with HANA 2.0 SPS 3 the mentioned parameters might not be needed anymore (in case of a Non-MDC scenario). We cannot detect automatically if several tenants belong to your MDC scenario, therefore setting of the parameters might still be required.

Some workload parameters are not set correctly.

> **Recommendation:** We generally recommend setting the minimum value for initial setup. However, depending on the overall load situation, customer-specific settings may lead to better results and need to be evaluated.

15.3.3 Disk Configuration

	There are no disk configuration issues.

Disk ID	Device ID	File system	Host	Path	Usage
1	781277	nfs	lxbell705	/usr/sap/WPH/HDB50/backup/log/	CATALOG_BACKUP
2	476545	nfs	lxbell705	/hana/data/WPH/	DATA
3	781277	nfs	lxbell705	/usr/sap/WPH/HDB50/backup/data/	DATA_BACKUP
4	974498	xfs	lxbell705	/hana/log/WPH/	LOG
5	743706	nfs	lxbell705	/mnt/backup/WPH/HDB50/backup/log/	LOG_BACKUP

Disk ID	Device ID	File system	Host	Path	Usage
6	781277	nfs	lxbell705	/usr/sap/WPH/HDB50/lxbell705/	TRACE

There are no disk configuration issues. Data and log data is stored on separate physical devices.

15.4 Size and Growth

Monitoring the size and growth of the HANA database is crucial for system stability and performance. In terms of stability, the growth on disk is shown. In terms of performance, the size of row and column tables as well as the size of delta areas in column tables are analyzed.

15.4.1 Disk Usage

	Percentage of free disk space < 20%

The table below shows the disk occupancy with respect to the partitions and their usage types. If the percentage of free disk space falls below 10%, an intermediate action has to be performed. Otherwise, there is a risk of standstill in the SAP HANA database.

Disk Space

Host	Available Disk Space [GB]	Used Disk Space [GB]	Percentage of free Disk Space	Usage Types	File system	Rating
lxbell705	4.096,00	3.370,86	17,7	DATA	nfs	
lxbell705	1.559,55	1.065,45	31,7	LOG_BACKUP	nfs	
lxbell705	50,00	35,31	29,4	CATALOG_BACKUP+DATA_BACKUP+TRACE	nfs	
lxbell705	39,88	8,26	79,3	LOG	xfs	

For one or more volumes, the usage exceeds 80% of the available capacity.

> **Recommendation:** Ensure that you are providing sufficient disk resources to your SAP HANA system. Delete/archive unnecessary files or increase disk capacity if required.

DATA When the disk space for data volumes runs full, the database is suspended. The database stops and can no longer be operated. A disk-full event must be resolved before the database can resume. Space on the data volumes has to be freed up or the disk space has to be expanded.
Check whether the database or additional components caused the high disk usage. Move or delete any files that are not needed, or add additional disk space.

The graph shows the history of disk space usage.

15.4.2 Database Growth

The graph shows the database size and growth based on the size of data volumes.
Total Size: Amount of data allocated by SAP HANA database on data volumes.
Used Size: Amount of used data by SAP HANA database on data volumes.

To access the database growth chart in SAP EarlyWatch Alert Workspace, click here .

15.4.3 Tables and Indexes

The table below displays the number of column and row tables together with their indexes.

Tables and Indexes

Objects	Number
Column Tables	34.183
Indexes of Column Tables	36.523
Row Tables	913
Indexes of Row Tables	805

15.4.4 Size of Database Schemas

The following table lists the size of schemas in the SAP HANA database.

Size of HANA schemas

Host	Schema name	Size in MB	Store type
lxbell705	SAPABAP1	249.529	Column store
lxbell705	_SYS_STATISTICS	964	Column store
lxbell705	_SYS_REPO	544	Column store
lxbell705	_SYS_RT	4	Column store
lxbell705	_SYS_BI	2	Column store
lxbell705	_SYS_TASK	2	Column store
lxbell705	_SYS_XS	2	Column store
lxbell705	SAP_XS_LM	1	Column store
lxbell705	SAP_XS_LM_PE	1	Column store

Host	Schema name	Size in MB	Store type
lxbell705	SAPABAP1	1.457	Row store
lxbell705	SYS	234	Row store
lxbell705	_SYS_STATISTICS	4	Row store

15.4.5 SAP HANA Row Store

15.4.5.1 Row Store Size

	The allocated row store size is below the technical limit.

The table below shows the size of the SAP HANA row store. The row store contains mainly SAP Basis and application statistics tables. The rating indicates whether the technical size limit will be reached in the near future.

The size of the row store generally has a direct impact on the start-up time of the SAP HANA database. This is relevant for system start-up and for recovery. We recommend that you keep the row store at an optimum size by performing housekeeping for large Basis tables (SAP Note 2388483) and, where feasible, moving large application tables from row store to column store.

Row Store Size (MB)

Host	Port	Allocated Size (MB)	Rating
lxbell705	35040	2.432	✔

15.4.5.2 Row Store Fragmentation

	The fragmentation of the row store is not critical.

The following table shows the allocated size and free page ratio (fragmentation) of the row store. The term 'fragmentation' refers to unused space in the SAP HANA row store that cannot be used for technical reasons. High fragmentation can cause performance issues and longer backup times. Row store reorganization is generally recommended if the allocated row store size is larger than 10 GB and the free page ratio is greater than 30%.

Row Store Size and Fragmentation

Host	Port	Allocated Size [MB]	Free Size [MB]	Free Page Ratio [%]	Row Store Reorganization Recommended
lxbell705	35040	2.432	886	36	No

15.4.5.3 Largest Row Store Tables

The table lists the largest tables according to total disk size. The size of the memory and the number and type of LoBs are also shown. The LOBs are marked with either "H" (Hybrid) or "M" (Memory) and the number of the existing LoB columns.

Schema Name	Table Name	Total Disk Size (MB)	Size in Memory (MB)	Max Size in Memory (MB)	Nr. of Records	LOB Size (MB)	LOB Details
SAPABAP1	SWNCMONI	689	621	689	220.923	0	0
SAPABAP1	TST03	531	8	10	57.372	521	H1
SAPABAP1	DDNTF	518	83	99	320.332	419	H1
SAPABAP1	ARFCSDATA	185	166	185	92.733	0	0
SAPABAP1	SXMSCLUR	146	4	5	11.167	141	H1
SYS	CS_COLUMNS_	131	105	131	390.423	0	0
SAPABAP1	TBTCP	122	110	122	339.103	0	0
SAPABAP1	TBTCO	77	65	77	192.802	0	0
SAPABAP1	FPLAYOUTT	73	0	0	709	73	H2
SAPABAP1	ENHHEADER	60	0	0	1.960	60	H1

For large SAP Basis tables, remove obsolete data regularly according to SAP Note 2388483 .

15.4.6 SAP HANA Column Store

15.4.6.1 Largest Column Tables (Size)

The table lists the largest tables according to total disk size. The size of the memory and the number and type of LoBs are also shown. The LOBs are marked with either "H" (Hybrid) or "M" (Memory) and the number of the existing LoB columns.

Schema Name	Table Name	Nr. of Partitions	Total Disk Size (MB)	Size in Memory (MB)	Max. Size in Memory (MB)	LOB Size (MB)	LOB Details
SAPABAP1	FSBP_CNS_IMAGE	1	1.271.876	1.923	2.737	1.269.225	H1
SAPABAP1	CDPOS	5	54.918	46.898	56.790	0	0
SAPABAP1	/LIME/NLOG_QUAN	1	38.859	41.626	43.470	0	0
SAPABAP1	BALDAT	5	38.548	31.800	38.714	0	0
SAPABAP1	/LIME/LOG_HEAD	1	18.724	15.405	20.547	0	0
SAPABAP1	CDPOS_UID	1	12.277	6.405	12.921	0	0
SAPABAP1	EDID4	1	11.174	11.026	11.305	0	0
SAPABAP1	/LIME/NLOG_TREE	1	9.382	9.699	10.170	0	0
SAPABAP1	/SCWM/WO_PPF	1	7.255	7.317	7.316	0	0
SAPABAP1	/SCDL/DB_STATUS	1	6.156	6.374	6.357	0	0

For large SAP Basis tables, remove obsolete data regularly according to SAP Note 2388483 .

15.4.6.2 Largest Non-partitioned Column Tables (Records)

●●●	The number of records in column-based table partitions is not critical.

The table below shows the largest non-partitioned column tables in terms of the number of records.

Largest Non-partitioned Column Tables According To Records

Schema Name	Table Name	Records (Total)	Weekly Record Growth [%]	Rating
SAPABAP1	/LIME/NLOG_QUAN	390.693.332	0,57	✔
SAPABAP1	CDPOS_UID	261.455.967	5,05	✔
SAPABAP1	/LIME/LOG_HEAD	230.523.704	0,64	✔
SAPABAP1	/SCDL/DB_STATUS	162.008.603	1,52	✔
SAPABAP1	AUSP	114.491.118	0,03	✔
SAPABAP1	/LIME/NLOG_TREE	109.358.659	0,66	✔
SAPABAP1	/SCDL/DB_ADDMEAS	107.610.297	-0,75	✔
SAPABAP1	/SCWM/WO_PPF	93.798.077	0,66	✔
SAPABAP1	CNS_RECV_STATUS	80.578.798	0,51	✔
SAPABAP1	CNS_CP	80.578.798	0,51	✔

The table partitions can handle the number of the records.

15.4.6.3 Largest Column Table Partitions (Records)

●●●	The number of records in column-based table partitions is not critical.

The table below lists the largest column table partitions in the productive schema in terms of number of entries.

Largest Partitioned Column Tables According To Records

Schema Name	Table Name	Partition ID	Records (Total)	Weekly Record Growth [%]	Rating
SAPABAP1	CDPOS	1	197.947.407	2,26	✔
SAPABAP1	CDPOS	3	195.144.475	2,34	✔
SAPABAP1	CDPOS	2	193.411.423	2,34	✔
SAPABAP1	CDPOS	4	182.944.270	2,48	✔
SAPABAP1	CDPOS	5	177.498.287	2,52	✔
SAPABAP1	BALDAT	5	17.131.357	13,28	✔
SAPABAP1	BALDAT	4	17.127.148	13,71	✔
SAPABAP1	BALDAT	3	17.122.326	13,43	✔
SAPABAP1	BALDAT	1	17.117.738	13,51	✔
SAPABAP1	BALDAT	2	17.117.403	13,54	✔

The table partitions can handle the number of the records.

15.5 SAP HANA Resource Consumption

The following table shows an overview of the resource consumption of the SAP HANA instances in the monitored timeframe.

HANA Instances Overview

HANA Instance	Role	CPU Usage	Memory Usage of HANA server	Memory Usage of SAP HANA Instance	Memory Allocation of Tables	Memory Consumption Indexserver
lxbell705_WPH_50	MASTER	✔	✔	✔	!	!

Some of the SAP HANA hardware resources are not sufficient for the current workload. This may lead to performance and stability issues. Details of resource consumption issues are listed in the sections below.

15.5.1 Memory Utilization Overview for SAP HANA Instances

The following table shows the memory usage of the SAP HANA database. The table displays weekly average values for the SAP HANA memory areas:

'Memory usage of the HANA database' corresponds to the memory used by the entire SAP HANA database (comparable to 'DB used memory' in SAP HANA studio).

'Global allocation limit' is the limit for the overall memory usage of the SAP HANA instance defined by the global_allocation_limit parameter.

'Row store size' shows the average size of row store tables in SAP HANA memory.

'Column store size' shows the average size of column store tables in SAP HANA memory.

The main SAP HANA workload is handled by the SAP HANA index server. The weekly average of the hourly maximum values of the **'Memory usage of the index server'** and the **'Effective allocation limit'** of the index server are listed.

More detailed information about memory shortage on an SAP HANA instance is provided in the sections below.

Avg. memory usage by SAP HANA Instances

HANA instance	Memory usage of SAP HANA [GB]	Global allocation limit [GB]	Row store size [GB]	Column store size [GB]	Memory usage of indexserver [GB]	Effective allocation limit of indexserver [GB]
lxbell705_WPH_50	374	472	3	248	377	446

15.5.2 SAP HANA Instance lxbell705_WPH_50

15.5.2.1 CPU Usage of SAP HANA Server

	No CPU bottlenecks were detected.

To access the CPU usage charts in SAP EarlyWatch Alert Workspace, click here .

The graphics below show the average and maximum CPU consumption per hour.
The data is obtained from the statistics tables of the SAP HANA database.
If the average CPU consumption exceeds 75%, a YELLOW rating is assigned. If it exceeds the threshold of 90%, a RED rating is assigned.

We did not find any critical issues in this area.

15.5.2.2 Memory Usage of SAP HANA Server

	No memory bottlenecks were detected.

To access the memory usage chart in SAP EarlyWatch Alert Workspace, click here .

The following graph shows the physical memory usage during the monitored timeframe. The average and maximum memory used by SAP HANA (and possibly other processes) is compared with the available physical memory of the SAP HANA server.

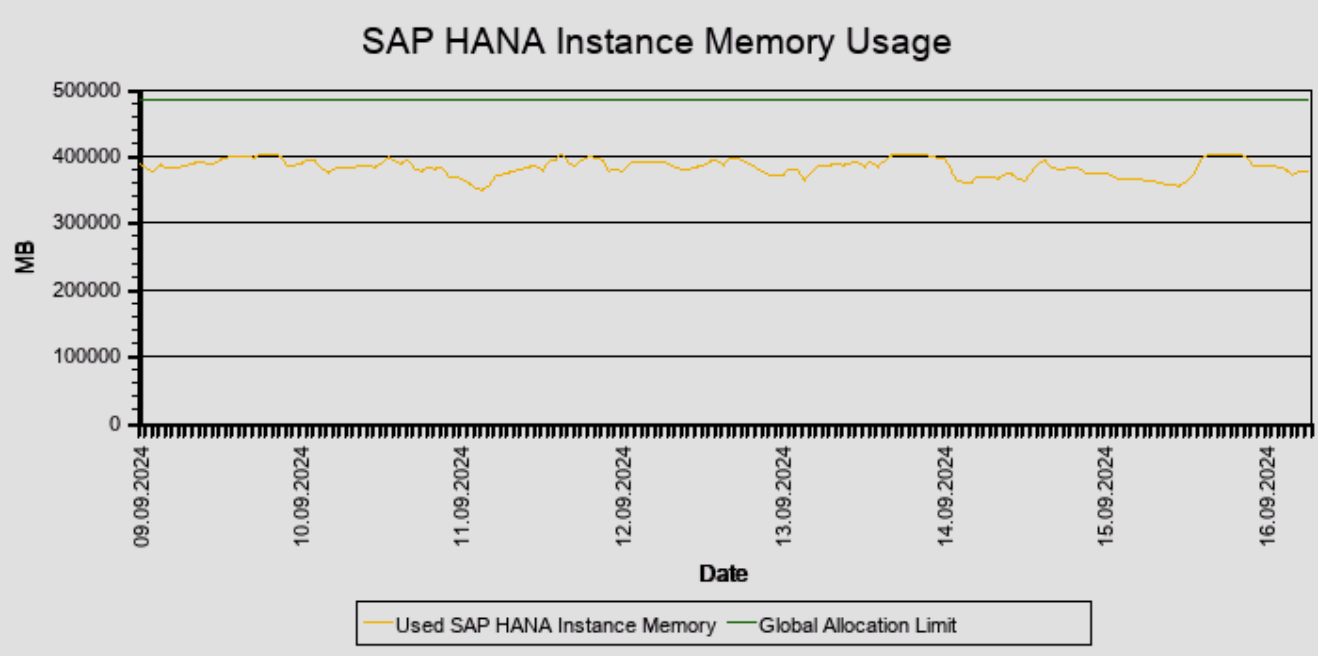
No critical issues were detected in this area.

15.5.2.3 Memory Usage of SAP HANA Instance

●●●	The memory consumption of the SAP HANA instance is not critical.

To access the memory usage chart in SAP EarlyWatch Alert Workspace, click here .

The following graph shows the memory usage of the SAP HANA database instance during the monitored timeframe. The memory used by SAP HANA on the SAP HANA host is compared with the global allocation limit of the SAP HANA instance.
If the "Used SAP HANA Instance Memory" approaches the "Global Allocation Limit", data has to be unloaded from SAP HANA memory. This may affect the overall performance and stability of the SAP HANA database.
The SAP HANA memory usage should not exceed 90% of the "Global Allocation Limit".



The memory consumption of the SAP HANA instance is not critical.

15.5.2.4 Memory Allocation of Tables

●●●	The memory usage of tables exceeds 50% of the global allocation limit of the SAP HANA instance.

This graphic shows the average memory consumption for storing row and column tables, and the memory available for

temporary calculations and other operations.

From a SAP HANA sizing perspective, it is recommended that the memory usage for SAP HANA tables remains below 50% of the global allocation limit.

If the memory usage for SAP HANA tables reaches 70% of the global allocation limit, the remaining memory resources for temporary calculations may be too small.

The memory remaining for working operations may become critical.

> **Recommendation:** Monitor the SAP HANA memory consumption closely. For more information about SAP HANA memory consumption and monitoring, see the SAP HANA Administration Guide, chapter "Monitoring SAP HANA systems" at http://help.sap.com/hana/SAP_HANA_Administration_Guide_en.pdf .

15.5.2.5 Memory Consumption of Indexserver

	The memory consumption of the index server is critical.

To access the memory usage chart in SAP EarlyWatch Alert Workspace, click here .

The index server is the most critical component with regard to SAP HANA memory consumption and must be monitored regularly. If the memory consumption of the index server approaches the effective allocation limit, table unloads or even out-of-memory dumps may occur.
The following graph shows the memory consumption of the index server in relation to its effective allocation limit.

The memory consumption of the index server was high.

This is due either to the large amount/size of loaded tables or to query processing in the SAP HANA database consuming too much memory.

> **Recommendation:** Analyze the reason for high memory consumption of the index server and plan measures to reduce the memory consumption of the SAP HANA database.

15.5.2.5.1 SAP HANA Heap Consumption

In the table below, the largest heap allocators are shown for the two periods with highest memory consumption during the previous week. The heap allocator sizes are average values per hour.

Date	Time	Category	Component	Size (MB)
09.09.2024	20	Pool/ColumnStore/Main/Dictionary/RoDict	Column Store Tables	151376
09.09.2024	20	Pool/ColumnStore/Main/Index/Single	Column Store Tables	35042
09.09.2024	20	Pool/ColumnStore/Main/Uncompressed	Column Store Tables	34266
09.09.2024	20	Pool/Statistics	Monitoring & Statistical Data	26597
09.09.2024	20	Pool/PersistenceManager/PersistentSpace/ DefaultLPA/DataPage	System	19149
09.09.2024	20	AllocateOnlyAllocator-unlimited/FLA-UL<24592,1>/ MemoryMapLevel3Nodes	System	18247
09.09.2024	20	Pool/RowEngine/QueryExecution/SearchAlloc	System	11297
10.09.2024	15	Pool/ColumnStore/Main/Dictionary/RoDict	Column Store Tables	157191
10.09.2024	15	Pool/ColumnStore/Main/Uncompressed	Column Store Tables	31403
10.09.2024	15	Pool/ColumnStore/Main/Index/Single	Column Store Tables	30760
10.09.2024	15	Pool/Statistics	Monitoring & Statistical Data	26294
10.09.2024	15	AllocateOnlyAllocator-unlimited/FLA-UL<24592,1>/ MemoryMapLevel3Nodes	System	18247
10.09.2024	15	Pool/PersistenceManager/PersistentSpace/ DefaultLPA/DataPage	System	11493
10.09.2024	15	Pool/RowEngine/QueryExecution/SearchAlloc	System	10535

We observed a memory bottleneck in the previous week, which might be caused by temporary large heap allocators belonging to different memory areas. SAP Note 1999997 describes an overview of the heap allocators, as well as possible actions.

15.5.2.6 Main Memory Areas of SAP HANA

The following graph shows the top 5 consumers of SAP HANA memory. Additional allocators are summed up in the "Others" category. Refer to SAP Note 1999997 - FAQ: SAP HANA Memory for a more detailed explanation of SAP HANA memory allocation.

To access the memory usage chart in SAP EarlyWatch Alert Workspace, click here .

15.6 SAP HANA Workload and Performance

15.6.1 SAP HANA Workload

The table shows the number of SQL requests executed per second and per node (maximum 23 nodes) in your SAP HANA system in the monitored timeframe.

15.6.2 SAP HANA Response Times

The following graph shows the execution times of the SAP HANA system in the monitored timeframe aggregated from all SAP HANA nodes. The displayed "Execution Time" is the hourly average execution time obtained by the historized SQL Plan Cache.

Since the "Execution Time" in the SQL Plan Cache does not contain all response time parts, we also show in the graph below the "Sum Execution Time", which is the sum of the "Execution Time" plus preparation time and table load time. For

more information, see SAP Note 2000002 .

The following graph shows the response time distribution of the SAP HANA system. The data is collected from the history data of the SQL Plan Cache.

Explanation of the SAP HANA response time shares:
- Preparation time – time share for plan preparation
- Open time – time share for cursor open and select
- Fetch time – time share for cursor fetch
- Lock wait time - lock wait time share for the plan
- Table load time – time share for loading tables during plan preparation (available as of SAP HANA rev. 50)

15.6.3 SAP HANA Column Unloads

	Column unloads were detected during the time period analyzed.

The following graph shows column unloads in the SAP HANA system during the monitored timeframe. It displays data from a maximum of 10 hosts.

Column unloads with reason "Low Memory" indicate that there was not sufficient SAP HANA memory available for working operations.
This can be due to a number of different reasons: Either the memory for the working space is too small or one or more expensive memory operations were occupying the complete SAP HANA memory.
The SAP HANA memory remaining for working operations is currently sufficient, but may become critical.

> **Recommendation:** Monitor the SAP HANA memory consumption closely and identify and optimize applications with high memory consumption.

To access the long-term history of memory consumption in SAP EarlyWatch Alert Workspace, click here .

15.6.4 Delta Merges

15.6.4.1 Column Tables with Largest Delta Stores

	The delta size of one or more column store tables exceeds 5 GB or records in Delta Store are not merged within 14 days.

The separation into main and delta storage allows high compression and high write performance at the same time. Write operations are performed on the delta store and changes are transferred from the delta store to the main store asynchronously during delta merge.
The column store automatically performs a delta merge according to several technical limits that are defined by parameters.
If applications require more direct control over the merge process, the smart merge function can be used for certain tables (for example, BW prevents delta merges during data loading for performance reasons).
The following table indicates that automatic delta merge was disabled and smart merge was not appropriately configured for some tables.

> **Recommendation:** Ensure that delta merges are enabled for all tables either by automatic merge or by application-triggered smart merge. In critical cases, trigger forced merges for the tables mentioned. For details, see Section 2 of the SAP HANA Administration Guide (http://help.sap.com/hana/hana_admin_en.pdf).

Largest Column Tables in terms of Delta size

Schema Name	Table Name	Partition ID	Memorysize in Main Store [MB]	Memorysize in Delta Store [MB]	Records in Delta Store	Sum of Records	Days since last Merge	Auto Merge On
SAPABAP1	/LIME/NLOG_QUAN	0	39.128,0	2.497,3	7.578.074	390.692.092	24	TRUE
SAPABAP1	CDPOS_UID	0	5.720,8	683,4	1.950.210	261.451.234	2	TRUE
SAPABAP1	CDPOS	1	10.419,0	614,9	1.854.980	197.937.758	3	TRUE

Schema Name	Table Name	Partition ID	Memorysize in Main Store [MB]	Memorysize in Delta Store [MB]	Records in Delta Store	Sum of Records	Days since last Merge	Auto Merge On
SAPABAP1	/LIME/LOG_HEAD	0	14.926,8	478,4	1.108.526	230.522.547	6	TRUE
SAPABAP1	CDPOS	2	10.248,6	339,1	1.103.622	193.402.974	2	TRUE
SAPABAP1	CDPOS	3	10.345,8	312,6	1.039.491	195.133.816	2	TRUE
SAPABAP1	EDID4	0	1.307,3	272,1	594.927	73.130.379	2	TRUE
SAPABAP1	CDPOS	4	6.647,2	252,7	832.820	182.934.280	2	TRUE
SAPABAP1	BALDAT	2	8.762,7	207,7	405.538	17.032.731	1	TRUE
SAPABAP1	/SCDL/DB_REFDOC	0	5.026,4	177,7	719.355	58.206.561	3	TRUE

15.6.4.2 Delta Merge Statistics

The SAP HANA database column store uses efficient compression algorithms to keep relevant application data in memory. Write operations on the compressed data are costly since they require the storage structure to be reorganized and the compression to be recalculated. Therefore, write operations in the column store do not directly modify the compressed data structure in the "main storage".
Instead, all changes are first written into a separate data structure called "delta storage" and synchronized with the main storage at a later point in time. This synchronization operation is called a delta merge.
Performance issues may occur in SAP HANA if there is a large amount of data in the delta storage, because read times from delta storage are considerably slower than reads from main storage.
In addition, the merge operation on a large data volume may cause bottleneck situations, since the data to be merged is held in memory twice during the merge operation.
The following graph shows the number of successful and failed delta merges in the monitored timeframe.

The following graph shows the delta merge volume from all merge types and the average delta merge time per record in the monitored timeframe:

Note: High merge duration can be a result of a high number of records to be merged or of a high-load situation in the system.

15.6.4.3 Delta Merge Errors

The following table provides an overview of the delta merge errors that occurred in the monitored timeframe. The column "Message Type" shows the level of importance of the entry.

Delta Merge Errors

Date	Host	Port	Error code	Error range	Merge type	Number of errors	Message Type
12.09.2024	lxbell705	35040	2484	2048	MERGE (AUTO)	32	Error
12.09.2024	lxbell705	35040	2486	2048	MERGE (AUTO)	141	Information
12.09.2024	lxbell705	35040	2486	2048	MERGE (CRITICAL)	1	Information
13.09.2024	lxbell705	35040	2484	2048	MERGE (AUTO)	25	Error
13.09.2024	lxbell705	35040	2486	2048	MERGE (AUTO)	233	Information
14.09.2024	lxbell705	35040	2484	2048	MERGE (AUTO)	25	Error
14.09.2024	lxbell705	35040	2486	2048	MERGE (AUTO)	191	Information
15.09.2024	lxbell705	35040	2484	2048	MERGE (AUTO)	6	Error
15.09.2024	lxbell705	35040	2486	2048	MERGE (AUTO)	136	Information
15.09.2024	lxbell705	35040	2486	2048	MERGE (CRITICAL)	3	Information
16.09.2024	lxbell705	35040	2484	2048	MERGE (AUTO)	4	Error
16.09.2024	lxbell705	35040	2486	2048	MERGE (AUTO)	41	Information

The following table lists descriptions and general recommendations for delta merge errors. If necessary, additional support for error handling can be requested via creating a case using the Get Support application in SAP for Me (KBA 1296527). Within case creation, select Product: Customer Project-Based Solution, and enter the component HAN-DB.

Critical Merge Errors

Error	Description	Recommended action
2484	Memory required to optimize table exceeds heap limit (for failed compression optimization operations, TYPE=SPARSE, SUCCESS=FALSE	See the detailed recommendation below.

Recommendation for error 2484: No further action is required if this occurs occasionally.
If it occurs frequently:
A) Analyze change operations on the table and consider table partitioning to minimize the size of the delta storage. If no knowledge about the application is available, hash partitioning with a size of 500 million records is a good initial choice.
B) Analyze change operations on the table and consider adjusting the auto_merge_decision_func parameter
C) Increase delta storage
D) Review sizing

Errors only for Information

Error	Description	Recommended action
2486	All rows in delta were not optimizable	Check why merge operation was started although no row can be processed.

15.7 Administration

15.7.1 Diagnosis Files

	The number and size of diagnosis files is uncritical.

During operation, the SAP HANA database service writes messages and information to log files in its trace directory. The system administrator should check these files regularly and react to error messages accordingly. A large number of files may be generated, which can take up a lot of disk space and impair performance. The following table shows the number of files contained in the trace directory.

Diagnosis Files

Server	Measured Time Period	Type	Number of Files	Total Size in MB
lxbell705	Weekly	Log	1	349,62
lxbell705	Weekly	Trace	23	228,25
lxbell705	Unlimited	TOTAL	45	730,49

We did not detect any issues with the number or size of these files.

Nevertheless, we recommend that you check the content of the trace folder in the SAP HANA database installation directory on a regular basis and delete any files that are no longer required.

15.7.2 Backup and Recovery

	No issues for operating or administration in terms of backup/recovery have been detected.

15.7.2.1 Log Backup

Date	Weekday	Successful Log Backups	Unsuccessful Log Backups
09.09.2024	Monday	259	0
10.09.2024	Tuesday	416	0
11.09.2024	Wednesday	413	0
12.09.2024	Thursday	309	0
13.09.2024	Friday	271	0
14.09.2024	Saturday	265	0
15.09.2024	Sunday	195	0

15.7.2.2 Data Backup

Date	Weekday	Successful Data Backups	Unsuccessful Data Backups
09.09.2024	Monday	1	0
10.09.2024	Tuesday	1	0
11.09.2024	Wednesday	1	0
12.09.2024	Thursday	1	0
13.09.2024	Friday	1	0
14.09.2024	Saturday	1	0
15.09.2024	Sunday	1	0

15.7.2.3 Number of Log Segments

This graph shows the number of log segments residing on your log volume.

We found no issues related to log segments.

15.7.3 Global Consistency Check Run

	Only a lightweight consistency check is scheduled.

The tables below show your setup of the consistency check runs. We differentiate between consistency check runs executed on all levels (CHECK_TABLE_CONSISTENCY('CHECK',NULL,NULL)) and consistency check runs executed on table level (CHECK_TABLE_CONSISTENCY('CHECK',<SCHEMA_NAME>,<TABLE_NAME>)) or executed by the statistics server.

Consistency Check Runs on all Levels with Action 'CHECK'

Number of successful Executions	Last Start Date
0	

Consistency Check Runs on Table Level with Action 'CHECK'

Number of checked Tables	Number of not verified Tables	Last Start Date
0	9805	

Table Consistency Check by Statisticsserver

Action	Time since last Run
check_delta_log, check_variable_part_sanity, check_data_container, check_variable_part_double_reference_global, check_partitioning, check_replication, check_table_container	5 Hours

A lightweight consistency check was scheduled by the statistics server or with the global consistency check on table level but only 50 - 80% of the tables were checked.

> **Recommendation:** Set up the consistency check according to SAP's recommendation. Further information can be found in SAP Note 2116157 and in the SAP HANA Admin Guide -> Managing Tables -> Table and Catalog Consistency Check. Please note that the consistency check should be performed at times when there is a low load on your system.

15.7.4 License Information

	Your license is permanent and valid.

The following table shows information about the validity of your license. The license should be permanent and valid.

License Information

System ID	Installation Number	Expiration Date	Permanent	Valid	Product Name	Product Limit
WPH	0020256234		TRUE	TRUE	SAP-HANA	800

15.7.5 Statisticsserver and Monitoring

	No issues with the statistics server were detected.

The table below shows KPIs relevant for monitoring stability with the embedded statistics server.

KPI	Current value	Rating
Status of the embedded Statisticsserver	Okay	✔
Alerts in the Statisticsserver are not scheduled in the expected timeframe.	0	✔
Number of tables not located on the master server	0	✔
Number of disabled alert collectors	0	✔
Number of disabled statistic collectors	0	✔
Collector_Global_Table_Persistence_S tatistics idle	Idle	✔
Number of collectors with retention times < 42 days	0	✔
High number of unprocessed e-Mails	53	✔
Status of Collector HOST_CS_UNLOADS	Inactive	✔
Number of relevant inactive actions	0	✔
Number of actions with unknown state	0	✔
Number of Statisticsserver worker threads	5	✔
Historic thread samples save interval (s)	600	✔
History of M_RECORD_LOCKS collected	no	✔

15.8 Important SAP Notes for SAP HANA

	Important information is available in the SAP Notes below.

The following tables list important SAP Notes for SAP HANA.

SAP Notes for SAP HANA

SAP Note	Description
1514967	SAP HANA: Central Note
2380229	SAP HANA Platform 2.0 - Central Note
2091951	Best Practice: SAP HANA Database Backup & Restore
2021789	SAP HANA Revision and Maintenance Strategy
2000003	FAQ: SAP HANA
2600030	Parameter Recommendations in SAP HANA Environments
1911180	HANA EarlyWatch Alerts (EWA) Issues
1592925	SAP HANA Database service connections
1642148	FAQ: SAP HANA Database Backup & Recovery
1664432	DBA Cockpit: SAP HANA database as remote database
1681092	Multiple SAP HANA databases on one appliance
1661202	Support for multiple applications on SAP HANA
1650394	SAP HANA DB: Partitioning and Distribution of Large Tables
1953429	SAP HANA and SAP NetWeaver AS ABAP on one Server
1761546	SAP ERP powered by SAP HANA - Optimizations
1872170	Suite on HANA and S/4 HANA sizing report
1794297	Secondary Indexes for the business suite on HANA

SAP Notes for operating system

SAP Note	Description
2684254	SAP HANA DB: Recommended OS settings for SLES 15 / SLES for SAP Applications 15

16 Problematic SQL Statements in WPH

At least one SQL statement causes unnecessary high load on the system.

In the following table(s), SQL statement(s) are shown for which a recommendation is provided in the next section. Details can be found in the section listed.

Missing index causes expensive SQL statement

Statement String	Statement Hash	Section	Rating
SELECT * FROM "/SCDL/DB_DF" WHERE "MANDT" = ? AND (("D ...	f3ea255aa116236f296a759b c93145b8	Statements on Top Scanned Table/SQL Statement f3ea255aa116236f296a759b c93145b8/Thread Distribution/High Number of Scanned Records	

Single-Column Indexes to be created

Table	Column
/SCDL/DB_DF	ITEMIDTO

Recommendation : Consider creating a single column index for the specified table fields.

Details on the selectivity of each field can be found in the corresponding SQL statement chapter; just follow the links above.

For more information on how to create an index, please see SAP Note 3386070 - How and when to create an index in SAP HANA?

Expensive SQL statement causing unnecessary load

Statement String	Statement Hash	Section	Rating
SELECT "GUID" , "GUID_PARENT" , "OVERFLOW" , "TYPE" , "T ...	2d1ea9a365efd64d1504ba5 dc255b0db	Further Analysis/SQL Statement 2d1ea9a365efd64d1504ba5 dc255b0db/Known Issue	

17 SAP HANA SQL Statements in WPH

This section provides an overview of the "most expensive SQL statements". When possible, a recommendation is provided.

A more detailed analysis of the SQL statements (including the possibility to choose different time windows) is supported by the "Self-Service SQL Statement Tuning" (see SAP Note 1601951). For general information on dealing with expensive SQL statements in SAP HANA, see SAP Note 2000002 .

17.1 Data Quality

A download-based SQL statement analysis can be performed.

The following table provides information about the data in the SDCC download. For details, see SAP Note 2344673 and its successor note SAP Note 3347789 .

Observation	Comment	Rating
Version of ST-PI function module: 40	This is the most recent version	

17.2 Top Statements (Elapsed Time)

This section shows the top non-internal statements according to "Total Elapsed Time". The "Total Elapsed Time" is the sum of the "Total Execution Time" and the "Total Preparation Time" from the SQL PLAN CACHE. It has a direct impact on the response time of the application calling the statement.

See the following table for details of the selection:

Database Start	14.05.2023 -- 01:17:33
Data Collection	16.09.2024 -- 06:26:17
Analysis Type	Analysis of Plan Cache
Data Source	HOST_SQL_PLAN_CACHE
Begin of Time Interval	08.09.2024 -- 23:07:52
End of Time Interval	16.09.2024 -- 00:07:51

The selected statements - identified by their "Statement Hash" - are listed in the following table. Further details of these statements can be found in the subsections.

Statement Hash	Total Elapsed Time [s]	Number of Executions	Time / Execution [us]	Records / Execution	Time / Record [us]
b124eba8255584b6f6149b99886224c3	35.571,5	11.453.063	3.105,8	39,3	79,0
55fe0c5b0661924dd6d8b680bb042de6	29.508,1	5.952.869	4.957,0	7,7	642,6
30095d6239a2c1a9825bd628ba565750	18.262,4	212.612	85.895,6	29.309,3	2,9
ce0da9d3cc3ec2773b6eb6e201b214a4	17.556,5	4.784.351	3.669,6	1,0	3.686,8
b5aff1eb7999eccd27c8b1d7add2f72c	13.423,1	9.020	1.488.148,3	3.397,1	438,1

17.2.1 SQL Statement b124eba8255584b6f6149b99886224c3

UPSERT "BALDAT" ("_DATAAGING", "CLUSTR", "CLUSTD", "MANDANT", "RELID", "LOG_HANDLE", "BLOCK", "SRTF2") VALUES (?, ?,?, ?, ?, ?, ?, ?) WITH PRIMARY KEY

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	1,45
Contribution to Total Execution Time [%]	6,59
Maximal CPU Consumption per Hour [%] (11.09.2024 between 15:00 and 16:00)	0,22

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Thread Samples)
SAP HANA SQL Statements in WPH -> Top Statements (CPU Peak Hour)

17.2.1.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	35.571	3.106	0	89.656.099
PREPARATION	0	0		
LOCK DURATION	0	0		

17.2.1.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.2.1.3 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,69	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,47	medium correlation

17.2.1.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
BALDAT	SAPABAP1	COLUMN	HASH	85.609.842	lxbell705

17.2.1.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAP_COLLECTOR_PERFMON_RSDOOS_MSC	LSBAL_DB_INTERNALU02	131	13.02.2015	✓	BC-SRV-BAL	Basis Application Log
WP2	Z_EWM_BFG_REPROCESS_QUEUES	LSBAL_DB_INTERNALU02	131	13.02.2015	✓	BC-SRV-BAL	Basis Application Log

17.2.2 SQL Statement 55fe0c5b0661924dd6d8b680bb042de6

INSERT
INTO "BALDAT" VALUES(? , ? , ? , ? , ? , ? , ? , ?)

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,43
Contribution to Total Execution Time [%]	5,46
Maximal CPU Consumption per Hour [%] (13.09.2024 between 08:00 and 09:00)	0,07

17.2.2.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	29.508	4.957	0	98.029.658
PREPARATION	0	0		
LOCK DURATION	0	0		

17.2.2.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.2.2.3 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
BALDAT	SAPABAP1	COLUMN	HASH	85.609.842	lxbell705

17.2.2.4 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Report	Line	Last Changed on:	SAP Coding
WP2	/IGZ/L_XLOGU02	145	11.01.2019	

17.2.3 SQL Statement 30095d6239a2c1a9825bd628ba5657500

SELECT
"CREATED_ON" , "CHGTYPE"
FROM
"V_CNS_CP_RECV_ST"
WHERE
"MANDT" = ? AND "APPL_ID" = ? AND "EXPOBJTYPE" = ? AND "EXPOBJKEY" = ?

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	2,31
Contribution to Total Execution Time [%]	3,38
Maximal CPU Consumption per Hour [%] (14.09.2024 between 13:00 and 14:00)	0,18

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Thread Samples)

17.2.3.1 Analysis of Where Clause

Table	Field	Operator
?	APPL_ID	=
?	EXPOBJKEY	=
?	EXPOBJTYPE	=
?	MANDT	=

17.2.3.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	18.262	85.894	2.122	4.418.166
PREPARATION	0	1		
LOCK DURATION	0	0		

17.2.3.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.2.3.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
CNS_CP	SAPABAP1	COLUMN	Table not partitioned	80.578.798	lxbell705
CNS_RECV_STATUS	SAPABAP1	COLUMN	Table not partitioned	80.578.798	lxbell705

17.2.3.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

WP2	BP	CL_CNS_CHANGE_POINTER=========CM00J	10	22.10.2012		CA-GTF-TS-CNS	Change Pointer Service

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description

17.2.4 SQL Statement ce0da9d3cc3ec2773b6eb6e201b214a4

SELECT
*
FROM
"/SCWM/SERH" "/SCWM/SERH"
WHERE
"MANDT" = ? AND "LGNUM" = ? AND "MATID" = ? FOR UPDATE

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,12
Contribution to Total Execution Time [%]	3,25
Maximal CPU Consumption per Hour [%] (09.09.2024 between 20:00 and 21:00)	0,04

17.2.4.1 Analysis of Where Clause

Table	Field	Operator
/SCWM/SERH	LGNUM	=
/SCWM/SERH	MANDT	=
/SCWM/SERH	MATID	=

17.2.4.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	17.556	3.670	0	47.934.490
PREPARATION	0	0		
LOCK DURATION	16.371	3.422		

17.2.4.2.1 Locking Situations

A significant portion of the execution time for this statement is caused by a locking situation. See SAP Note 1999998 for advice on how to perform a lock analysis.

17.2.4.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.2.4.4 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,56	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,29	weak correlation

17.2.4.5 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCWM/SERH	SAPABAP1	COLUMN	Table not partitioned	3.037	lxbell705

17.2.4.6 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	/SCWM/MON	Z5CL_EWM MP_BLOCKQUEUE========CM00F	109	02.08.2022		SCM-EWM	Extended Warehouse Management
WP2	/SCWM/RFUI	Z5CL_EWM MP_BLOCKQUEUE========CM00F	109	02.08.2022		SCM-EWM	Extended Warehouse Management
WP2	SAPMHTTP	Z5CL_EWM MP_BLOCKQUEUE========CM00F	109	02.08.2022		SCM-EWM	Extended Warehouse Management

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAPMSSY1	Z5CL_EWM MP_BLOCKQUEUE=== ======CM00F	109	02.08.2022		SCM-EWM	Extended Warehouse Management
WP2	Z_EWM_200 9_POST_GI	Z5CL_EWM MP_BLOCKQUEUE=== ======CM00F	109	02.08.2022		SCM-EWM	Extended Warehouse Management
WP2	Z_EWM_650 0_VERTEIL UNGLIEFERUNGEN	Z5CL_EWM MP_BLOCKQUEUE=== ======CM00F	109	02.08.2022		SCM-EWM	Extended Warehouse Management

17.2.5 SQL Statement b5aff1eb7999eccd27c8b1d7add2f72c

SELECT DISTINCT
"MANDT" , "GUID_PN" , "ID" , "TARGET" , "GUID_PARENT" , "GUID_STOCK" , "VSI" , "UNIT" , "QUAN" , "LOG_TYPE" , "IDX_STOCK" , "TYPE_PARENT" , "IDX_PARENT" , "TS_LIME" , "LVL" , "LFT" , "HIST_STOCK" , "HIST_STOCK_IND"
FROM
"/LIME/NLOG_QUAN"
WHERE
"MANDT" = ? AND "GUID_PN" IN (?)

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,04
Contribution to Total Execution Time [%]	2,35
Maximal CPU Consumption per Hour [%] (14.09.2024 between 15:00 and 16:00)	0,02

17.2.5.1 Analysis of Where Clause

Table	Field	Operator
/LIME/NLOG_QUAN	GUID_PN	IN
/LIME/NLOG_QUAN	MANDT	=

17.2.5.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	12.700	1.408.008	288	85.488.466
PREPARATION	723	80.140		
LOCK DURATION	0	0		

17.2.5.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

WP2	/SCWM/PRDO	/LIME/LQUERYPNI	1.106	18.05.2018	
WP2	Z_EWM_2009_POST_GI	/LIME/LQUERYPNI	1.106	18.05.2018	✓

17.3 Statements on Top Scanned Table

This section shows the top non-internal statements according to "Total Elapsed Time". The "Total Elapsed Time" is the sum of the "Total Execution Time" and the "Total Preparation Time" from the SQL PLAN CACHE. It has a direct impact on the response time of the application calling the statement.

Only SQL Statement accessing the "top scanned table" are shown. The "top scanned table" is the table that contains the column with the highest number of "SCANNED_RECORDS" in M_CS_ALL_COLUMN_STATISTICS (see the following table). IN many cases, creating an index on that column might improve the accesses.

Schema	Table	Column
SAPABAP1	/SCDL/DB_DF	ITEMIDTO

See the following table for details of the selection:

Database Start	14.05.2023 -- 01:17:33
Data Collection	16.09.2024 -- 06:26:17
Analysis Type	Analysis of Plan Cache
Data Source	HOST_SQL_PLAN_CACHE
Begin of Time Interval	08.09.2024 -- 23:07:52
End of Time Interval	16.09.2024 -- 00:07:51

The selected statements - identified by their "Statement Hash" - are listed in the following table. Further details of these statements can be found in the subsections.

Statement Hash	Total Elapsed Time [s]	Number of Executions	Time / Execution [us]	Records / Execution	Time / Record [us]
beff5ca0f96ddc589b7cbb90812a1cf6	857,9	35.779	23.978,9	6.378,2	3,8
d5dcb7bc30b8edd72c9bdeb2a605c8e0	352,0	190.746	1.845,5	65,3	28,3
f3ea255aa116236f296a759bc93145b8	60,5	578	104.640,6	29,6	3.534,1
[redacted]	33,1	24.574	1.347,3	6,3	213,4
af1f6ee070b88b36c6c4da6afd8dc57d	30,6	63.437	482,0	20,8	23,2

17.2.5.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/LIME/NLOG_QUAN	SAPABAP1	COLUMN	Table not partitioned	390.693.296	lxbell705

17.2.5.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report		Line	Last Changed on:	SAP Coding
WP2	/SCWM/MON	/LIME/LQUERYPNI		1.106	18.05.2018	

17.3.1 SQL Statement beff5ca0f96ddc589b7cbb90812a1cf6

SELECT DISTINCT

*

FROM

"/SCDL/DB_DF"

WHERE

"MANDT" = ? AND (("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? ... Text cut, see SAP Note 3210457

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,08
Maximal CPU Consumption per Hour [%] (09.09.2024 between 06:00 and 07:00)	0,06

17.3.1.1 Analysis of Where Clause

17.3.2 SQL Statement d5dcb7bc30b8edd72c9bdeb2a605c8c0

SELECT
*
FROM
"/SCDL/DB_DF"
WHERE
"MANDT" = ? AND (("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? AND "ITEMID" = ?) OR ("DOCID" = ? ... Text cut, see SAP Note 3210457

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
/SCDL/DB_DF	DOCID	=	0	24.790
/SCDL/DB_DF	ITEMID	=	923.878.295	25.282
/SCDL/DB_DF	MANDT	=	1.797.044	0

17.3.1.2 Time Consumption

Statement Impact

The following table gives an overview of the time consumption of the analyzed SQL statement.

Indicator	Value
Contribution to Total CPU Load [%]	0,02
Maximal CPU Consumption per Hour [%] (09.09.2024 between 12:00 and 13:00)	0,01

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	857	23.952	319	459.735
PREPARATION	1	27		
LOCK DURATION	0	0		

17.3.2.1 Analysis of Where Clause

17.3.1.3 Statement History (Thread Sample 'Running')

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
/SCDL/DB_DF	DOCID	=	0	24.790
/SCDL/DB_DF	ITEMID	=	923.878.295	25.282
/SCDL/DB_DF	MANDT	=	1.797.044	0

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.3.2.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	351	1.841	813	148.962
PREPARATION	1	4		
LOCK DURATION	0	0		

17.3.2.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.3.1.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCDL/DB_DF	SAPABAP1	COLUMN	Table not partitioned	35.209.093	lxbell705

17.3.1.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	/SCWM/RFUI	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing

17.3.2.4 Tables

17.3.3 SQL Statement f3ea255aa116236f296a759bc93145b8

SELECT

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCDL/DB_DF	SAPABAP1	COLUMN	Table not partitioned	35.209.093	lxbell705

FROM "/SCDL/DB_DF" WHERE "MANDT" = ? AND (("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOC

17.3.2.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Report	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAPMSSY1	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing
WP2	Z_BC_BFG_ARC_DLV	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing
WP2	Z_EWM_200	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing
WP2	/SCWM/REFUI_CONFPROC ESS_QUEUES	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing
WP2	/SCWM/MON	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,03
Maximal CPU Consumption per Hour [%] (09.09.2024 between 20:00 and 21:00)	0,06

17.3.3.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
/SCDL/DB_DF	DOCCATTO	=	106.693.308	18.048
/SCDL/DB_DF	DOCIDTO	=	0	42.213
/SCDL/DB_DF	ITEMIDTO	=	556.466.053.936.317	0
/SCDL/DB_DF	MANDT	=	1.797.044	0

17.3.3.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	57	99.226	4.654	707.484
PREPARATION	3	5.414		
LOCK DURATION	0	0		

17.3.3.3 Thread Distribution

Thread State	Area	Samples
Running	SQL	9

Thread Type (Thread Method) when THREAD_STATE = "Running"	Samples
JobWorker (HEX job running hex::cs::TableScanScheduleOp)	4
SqlExecutor (ExecutePrepared)	3
JobWorker (PrepareStatement)	2

The following table shows the "thread distribution" in terms of "thread detail" and for all thread samples.

Thread Type	Thread Method	Thread Detail	Samples
JobWorker	HEX job running hex::cs::TableScanSchedule Op	operatorId=5, pipeline=4	4
SqlExecutor	ExecutePrepared	SELECT * FROM "/SCDL/DB_DF" WHERE "MANDT" = ? AND (("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "	3

Thread Type	Thread Method	Thread Detail	Samples
JobWorker	PrepareStatement	SELECT * FROM "/SCDL/DB_DF" WHERE "MANDT" = ? AND (("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "ITEMIDTO" = ? AND "DOCCATTO" = ?) OR ("DOCIDTO" = ? AND "	2

Note: Table and column scan-related thread methods contribute significantly to the load caused by this SQL statement. It might be possible to accelerate the table scan (and by doing so, the execution time of this statement) either by changing the application in order to use existing indexes of this table or by changing the current index design (see SAP Note 2000002).

> **Recommendation:** Consider creating a single column index for a column in the where clause not yet supported by an index.
> If more than one column meets this condition, choose the most selective field. In many cases, this will be the field with the highest value for SCANNED_RECORD_COUNT (obtained from M_CS_ALL_COLUMN_STATISTICS), in particular when specified with "=".

> See the following table with the fields specified with the where clause not yet supported by a single column index.

Table	Field	Operator	SCANNED_RECORD_COUNT
/SCDL/DB_DF	ITEMIDTO	=	556.466.053.936.317

17.3.3.4 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.3.3.5 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCDL/DB_DF	SAPABAP1	COLUMN	Table not partitioned	35.209.093	lxbell705

17.3.3.6 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the

information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	/SCWM/MON	/SCDL/CL_DL_DF_DB_SRV=========CM004	182	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing
WP2	Z_EWM_2009_POST_GI	/SCDL/CL_DL_DF_DB_SRV=========CM004	182	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing

17.3.4 SQL Statement b5133f08c8be71fd35b990c9ef0bb7a9

SELECT
*
FROM
"/SCDL/DB_DF"
WHERE
"MANDT" = ? AND (("DOCID" = ? AND "ITEMID" = ? AND "DOCCATTO" = ?) OR ("DOCID" = ? AND "ITEMID" = ? AND "DOCCATTO" = ?) OR ("DOCID" = ? AND "ITEMID" = ? AND "DOCCATTO" = ?) OR ("DOCID" = ? AND "ITEMID" = ? AND "DOCCATTO" = ?) OR ("DOCID" = ? AND "ITEMID" = ? AND "DOCCATTO" = ?) OR ("DOCID" = ? AND ... Text cut, see SAP Note 3210457

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,02
Maximal CPU Consumption per Hour [%] (09.09.2024 between 19:00 and 20:00)	0,01

17.3.4.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
/SCDL/DB_DF	DOCCATTO	=	106.693.308	18.048
/SCDL/DB_DF	DOCID	=	0	24.790
/SCDL/DB_DF	ITEMID	=	923.878.295	25.282
/SCDL/DB_DF	MANDT	=	1.797.044	0

17.3.4.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	31	1.257	905	22.828
PREPARATION	2	90		
LOCK DURATION	0	0		

17.3.4.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.3.4.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCDL/DB_DF	SAPABAP1	COLUMN	Table not partitioned	35.209.093	lxbell705

17.3.4.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAPMHTTP	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing
WP2	Z_BC_BEG_ARC_DLV_OUT_PRE_WRI	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing
WP2	/SCWM/MON	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing
WP2	Z_EWM_2009_POST_GI	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022	✓	SCM-EWM-DLP	Delivery Processing
WP2	/SCWM/RFUI	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing

17.3.5 SQL Statement af1f6ee070b88b36c6c4da6afd8dc57d

```
SELECT DISTINCT
*
FROM
"/SCDL/DB_DF"
WHERE
"MANDT" = ? AND "DOCID" = ? AND "ITEMID" = ?
```

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,01
Maximal CPU Consumption per Hour [%] (13.09.2024 between 22:00 and 23:00)	0,01

17.3.5.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
/SCDL/DB_DF	DOCID	=	0	24.790
/SCDL/DB_DF	ITEMID	=	923.878.295	25.282
/SCDL/DB_DF	MANDT	=	1.797.044	0

17.3.5.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	31	481	106	15.916
PREPARATION	0	1		
LOCK DURATION	0	0		

17.3.5.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.3.5.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCDL/DB_DF	SAPABAP1	COLUMN	Table not partitioned	35.209.093	lxbell705

17.3.5.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

17.4 Top Statements (Total Memory)

This section shows the top statements according to memory consumption, as obtained from the SQL PLAN CACHE. It considers the product of the number of executions and the average memory consumption per execution.
See the following table for details of the selection:

SID	Transaction / Jobname	Report	Line	Last Changed on	SAP Wording	Application Component	Description
WP2	SAPMSSY1	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing
WP2	/SCWM/RFUI	/SCDL/CL_DL_DF_DB_SRV=========CM004	115	12.01.2022		SCM-EWM-DLP	Delivery Processing
Database Start				14.05.2023 -- 01:17:33			
Data Collection				16.09.2024 -- 06:26:17			
Analysis Type				Analysis of Plan Cache			
Data Source				M_SQL_PLAN_CACHE			

The selected statements - identified by their "Statement Hash" - are listed in the following table. Further details of these statements can be found in the subsections.

Statement Hash	Number of Executions	Time / Execution [us]	Records / Execution	Executionsx Avg Memx Avg Time[GBx s]	Memory / Execution [MB]
d6fd6678833f9a2e25e7b53239c50e9a	35.474.695	78.569,7	0,0	536.278	197,0
aac3d58c91d463b1467916eb2845c65c	47.095	3.604.222,4	5,2	80.733	487,0
f816711c913d152181a1e2d3d3d1dc43	141.454	2.431.790,6	512,2	65.799	195,9
a99311b79cb2fb8706e979cda20edb44	707.236	478.216,7	0,4	64.966	196,7
aab74ea061af6cfac83b872529670eac	707.236	331.031,3	0,0	44.969	196,7

17.4.1 SQL Statement d6fd6678833f9a2e25e7b53239c50e9a

call _SYS_STATISTICS.STATISTICS_SCHEDULABLEWRAPPER('Timer', ?, ?, ?, ?)
Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,18
Contribution to Total Execution Time [%]	5,22
Maximal CPU Consumption per Hour [%] (09.09.2024 between 00:00 and 01:00)	0,04
Maximal Memory Consumption [%]	0,30

17.4.1.1 Known Issue

Information about this statement (as identified by its STATEMENT_HASH) can be found in the following SAP Note:

> **Recommendation:** Check the mentioned SAP Note(s) for the recommendation concerning the statement and apply the recommendation if applicable.

STATEMENT_HASH	SAP Note	Type	Object
d6fd6678833f9a2e25e7b53239c50e9a	2000002	CALL	STATISTICS_SCHEDULABLEWRAPPER

17.4.1.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	2.787.119	78.566	0	4.884.477.081
PREPARATION	117	3		

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
LOCK DURATION	0	0		

17.4.1.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.4.1.4 Internal SQL Statement

This SQL statement was executed from an internal database connection.

17.4.2 SQL Statement aac3d58c91d463b1467916eb2845c65c

SELECT

C.HOST,LPAD(C.PORT, 5) PORT, IFNULL(LPAD(C.CONN_ID, 7), '') CONN_ID, IFNULL(LPAD(C.THREAD_ID, 9), '') THREAD_ID, IFNULL(LPAD(C.TRANSACTION_ID, 8), '') TRANS_ID, IFNULL(LPAD(C.UPD_TRANS_ID, 9), '') UPD_TID, IFNULL(LPAD(C.CLIENT_PID, 10), '') CLIENT_PID, C.CLIENT_HOST, C.TRANSACTION_START, IFNULL(LPAD(TO_DECIMAL(C.TRANSACTION_ACTIVE_DAYS, 10, 2), 8), '') ACT_DAYS, C.THREAD_TYPE, C.THREAD_STATE, C.CALLER, C.WAITING_FOR, C.APPLICATION_SOURCE, C.STATEMENT_HASH, CASE WHEN MAX_THREAD_DETAIL_LENGTH = -1 THEN THREAD_DETAIL WHEN THREAD_DETAIL_FROM_POS <= 15 THEN SUBSTR(THREAD_DETAIL, 1, MAX_THREAD_DETAIL_LENGTH) ELSE SUBSTR(SUBSTR(THREAD_DETAIL, 1, LOCATE(THREAD_DETAIL, CHAR(32))) || '...' || SUBSTR(THREAD_DETAIL, THREAD_DETAIL_FROM_POS - 1), 1, MAX_THREAD_DETAIL_LENGTH) END THREAD_DETAIL, IFNULL(LPAD(TO_DECIMAL(C.USED_MEMORY_SIZE / 1024/ 1024, 10, 2), 9), '') MEMORY_MB, C.THREAD_METHOD, C.TRANSACTION_STATE ... Text cut, see SAP Note 3210457

FROM

(SELECT '%' HOST, '%' PORT, -1 CONN_ID, -1 THREAD_ID, '%' THREAD_STATE, -1 TRANSACTION_ID, -1 UPDATE_TRANSACTION_ID, -1 CLIENT_PID, 'X' ONLY_ACTIVE_THREADS, 'X' ONLY_ACTIVE_TRANSACTIONS, ' ' ONLY_ACTIVE_UPDATE_TRANSACTIONS, ' ' ONLY_ACTIVE_SQL_STATEMENTS, ' ' ONLY_MVCC_BLOCKER, 80 MAX_THREAD_DETAIL_LENGTH, 'TRANSACTION_TIME' ORDER_BY

FROM

DUMMY) BI, (SELECT IFNULL(C.HOST, IFNULL(TH.HOST, T.HOST)) HOST, IFNULL(C.PORT, IFNULL(TH.PORT, T.PORT)) PORT, C.CONNECTION_ID CONN_ID, TH.THREAD_ID, IFNULL(TH.THREAD_STATE, '') THREAD_STATE, IFNULL(TH.THREAD_METHOD, '') THREAD_METHOD, IFNULL(TH.THREAD_TYPE, '') THREAD_TYPE, REPLACE(LTRIM(IFNULL(TH.THREAD_DETAIL, IFNULL(S.STATEMENT_STRING, ''))), CHAR(9), CHAR(32)) THREAD_DETAIL, LOCATE(LTRIM(UPPER(IFNULL(TH.THREAD_DETAIL, IFNULL(S.STATEMENT_STRING, '')))),

'FROM ')THREAD_DETAIL_FROM_POS, T.TRANSACTION_ID, IFNULL(T.TRANSACTION_STATUS, '') TRANSACTION_STATE, IFNULL(T.TRANSACTION_TYPE, '') TRANSACTION_TYPE, T.UPDATE_TRANSACTION_ID UPD_TRANS_ID, IFNULL(TH.CALLER, '') CALLER, CASE WHEN BT.LOCK_OWNER_UPDATE_TRANSACTION_ID IS NOT NULL THEN 'UPD_TID: ' || BT.LOCK_OWNER_UPDATE_TRANSACTION_ID || CHAR(32) ELSE '' END || CASE WHEN TH.CALLING IS NOT NULL AND TH.CALLING != '' THEN 'CALLING: ' || TH.CALLING || ... Text cut, see SAP Note 3210457

FROM

M_CONNECTIONS C FULL OUTER JOIN M_SERVICE_THREADS TH ON TH.CONNECTION_ID = C.CONNECTION_ID AND TH.HOST = C.HOST AND TH.PORT = C.PORT FULL OUTER JOIN M_TRANSACTIONS T ON T.TRANSACTION_ID = C.TRANSACTION_ID LEFT OUTER JOIN M_PREPARED_STATEMENTS S ON C.CURRENT_STATEMENT_ID = S.STATEMENT_ID FULL OUTER JOIN M_SQL_PLAN_CACHE SC ON S.PLAN_ID = SC.PLAN_ID FULL OUTER JOIN M_BLOCKED_TRANSACTIONS BT ON T.UPDATE_TRANSACTION_ID = BT.BLOCKED_UPDATE_TRANSACTION_ID LEFT OUTER JOIN (SELECT HOST, PORT, NUM_VERSIONS, TABLE_ID, MIN_SNAPSHOT_TS, MIN_READ_TID, MIN_WRITE_TID

FROM

(SELECT HOST, PORT, MAX(MAP(NAME, 'NUM_VERSIONS', VALUE, 0)) NUM_VERSIONS, MAX(MAP(NAME, 'TABLE_ID_OF_MAX_NUM_VERSIONS', VALUE, 0)) TABLE_ID, MAX(MAP(NAME, 'MIN_SNAPSHOT_TS', TO_NUMBER(VALUE), 0)) MIN_SNAPSHOT_TS, MAX(MAP(NAME, 'MIN_READ_TID', TO_NUMBER(VALUE), 0)) MIN_READ_TID, MAX(MAP(NAME, 'MIN_WRITE_TID', TO_NUMBER(VALUE), 0)) MIN_WRITE_TID

FROM

M_MVCC_TABLES GROUP BY HOST, PORT)

WHERE

TABLE_ID != 0) MT ON MT.MIN_SNAPSHOT_TS = T.MIN_MVCC_SNAPSHOT_TIMESTAMP LEFT OUTER JOIN TABLES TA ON TA.TABLE_OID = MT.T

ABLE_ID) C

WHERE

C.HOST LIKE BI.HOST AND TO_CHAR(C.PORT) LIKE BI.PORT AND (BI.CONN_ID=-1 OR BI.CONN_ID=C.CONN_ID) AND (BI.THREAD_ID=-1 OR BI.THREAD_ID=C.THREAD_ID) AND C.THREAD_STATE LIKE BI.THREAD_STATE AND (BI.ONLY_ACTIVE_THREADS=' ' OR C.THREAD_STATE NOT IN ('Inactive', '')) AND (BI.TRANSACTION_ID=-1 OR BI.TRANSACTION_ID=C.TRANSACTION_ID) AND (BI.CLIENT_PID=-1 OR BI.CLIENT_PID=C.CLIENT_PID) AND (BI.UPDATE_TRANSACTION_ID=-1 OR BI.UPDATE_TRANSACTION_ID = C.UPD_TRANS_ID) AND (BI.ONLY_ACTIVE_UPDATE_TRANSACTIONS=' ' OR C.UPD_TRANS_ID > 0) AND (BI.ONLY_ACTIVE_TRANSACTIONS=' ' OR C.TRANSACTION_STATE='ACTIVE') AND(BI.ONLY_ACTIVE_SQL_STATEMENTS=' ' OR C.STATEMENT_STRING IS NOT NULL) AND (BI.ONLY_MVCC_BLOCKER=' ' OR C.MIN_SNAPSHOT_TS

IS NOT NULL)

ORDER BY

MAP(BI.ORDER_BY, 'CONNECTION', C.CONN_ID, 'THREAD', C.THREAD_ID, 'TRANSACTION', C.TRANSACTION_ID, 'UPDATE_TRANSACTION',C.UPD_TRANS_ID), MAP(BI.ORDER_BY, 'TRANSACTION_TIME', C.TRANSACTION_START), C.CONN_ID, C.THREAD_ID, C.TRANSACTION_ID

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,11
Maximal CPU Consumption per Hour [%] (11.09.2024 between 21:00 and 22:00)	0,02
Maximal Memory Consumption [%] (10.09.2024 -- 17:23:55)	0,13

17.4.2.1 Analysis of Where Clause

Table	Field	Operator	Supported by Single Column Index	Compression	Distinct Values	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
?	CLIENT_PID	=					
?	CONN_ID	=					
?	HOST	LIKE					
?	MIN_SNAPSHOT_TS	=					
?	NOT	IN					

Table	Field	Operator	Supported by Single Column Index	Compression	Distinct Values	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
?	ONLY_ACTIVE_SQL_STATEMENTS	=					
?	ONLY_ACTIVE_THREADS	=					
?	ONLY_ACTIVE_TRANSACTIONS	=					
?	ONLY_ACTIVE_UPDATE_TRANSACTIONS	=					
?	ONLY_MVCC_BLOCKER	=					
?	PORT)	LIKE					
?	TABLE_ID	!=					
?	THREAD_ID	=					
?	THREAD_STATE	LIKE					
?	TRANSACTION_ID	=					
?	TRANSACTION_STATE	=					
?	UPDATE_TRANSACTION_ID	=					
?	UPD_TRANS_ID	>					
TABLES	TABLE_OID	=					

17.4.2.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	164.537	3.493.723	241.678	12.493.668
PREPARATION	5.204	110.499		
LOCK DURATION	0	0		

17.4.2.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.4.2.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
P_INDEXES_	SYS	ROW	Table not partitioned	37.710	lxbell705
RS_TABLES_	SYS	ROW	Table not partitioned	1.358	lxbell705
P_PROCEDURES_	SYS	ROW	Table not partitioned	1.032	lxbell705
P_PRINCIPALS_	SYS	ROW	Table not partitioned	104	lxbell705
P_SCHEMAS_	SYS	ROW	Table not partitioned	40	lxbell705

17.4.2.5 Origin of SQL Statement

APPLICATION_NAME	APPLICATION_SOURCE	PASSPORT_ACTION
HANA_Monitor		

17.4.3 SQL Statement f816711c913d152181a1e2d3d3d1dc43

/* procedure: "_SYS_STATISTICS"."COLLECTOR_HOST_SERVICE_THREAD_CALLSTACKS" line: 10 col: 2 (at pos 841) */ insert into _SYS_STATISTICS.HOST_SERVICE_THREAD_CALLSTACKS_BASE (snapshot_id, server_timestamp,FRAME_LEVEL,FRAME_NAME,HOST,IS_ACTIVE,PORT,SERVICE_NAME,THREAD_ID)select __typed_Longdate__($1) AS "SNAPSHOT_ID", current_timestamp,STC.frame_level,STC.frame_name,STC.host,STC.is_active,STC.port,STC.service_name,STC.thread_id

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5057_SERVICE_THREAD_CALLSTACKS STC join _SYS_STATISTICS.SOURCE_COLLECTOR_5057_SERVICE_T

HREADS ST on STC.host = ST.host and STC.port=ST.port and STC.thread_id = ST.thread_id

WHERE

ST.connection_id != current_connection and STC.is_active = 'TRUE'

ORDER BY

STC.thread_id, STC.frame_level

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,70
Contribution to Total Execution Time [%]	0,64
Maximal CPU Consumption per Hour [%] (10.09.2024 between 17:00 and 18:00)	0,13
Maximal Memory Consumption [%]	0,07

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (CPU Peak Hour)

17.4.3.1 Known Issue

Information about this statement (as identified by its STATEMENT_HASH) can be found in the following SAP Note:

> **Recommendation:** Check the mentioned SAP Note(s) for the recommendation concerning the statement and apply the recommendation if applicable.

STATEMENT_HASH	SAP Note	Type	Object
f816711c913d152181a1e2d3d3d1dc43	2000002	INSERT	HOST_SERVICE_THREAD_CALLSTACKS_BASE

17.4.3.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	343.857	2.430.878	97.936	94.507.697
PREPARATION	129	913		
LOCK DURATION	0	0		

17.4.3.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.4.3.4 Root Statement

The following table shows details on the "ROOT STATEMENT", which is responsible for the observed SQL statement.

ROOT_STATEMENT_HASH	ROOT_STATEMENT_TEXT	Samples
d6fd6678833f9a2e25e7b53239c50e9a	call _SYS_STATISTICS.STATISTICS_SCHEDULABLEWRAPPER('Timer', ?, ?, ?, ?)	652

17.4.3.5 Internal SQL Statement

This SQL statement was executed from an internal database connection.

17.4.4 SQL Statement a99311b79cb2fb8706e979cda20edb44

/* procedure: "_SYS_STATISTICS"."COLLECTOR_HOST_BLOCKED_TRANSACTIONS" line: 10 col: 2 (at pos 831) */
insert into _SYS_STATISTICS.HOST_BLOCKED_TRANSACTIONS_BASE (snapshot_id,
server_timestamp,BLOCKED_TIME,BLOCKED_TRANSACTION_ID,BLOCKED_UPDATE_TRANS
ACTION_ID,HOST,LOCK_MODE,LOCK_OWNER_TRANSACTION_ID,LOCK_OWNER_UPDATE_TRAN
SACTION_ID,LOCK_TYPE,PORT,WAITING_OBJECT_NAME,WAITING_OBJECT_TYPE,WAITING
_RECORD_ID,WAITING_SCHEMA_NAME,WAITING_TABLE_NAME,LOCK_OWNER_CONNECTION_I
D,LOCK_OWNER_TRANSACTION_STATUS,BLOCKED_TRANSACTION_STATUS,LOCK_OWNER_HOS
T,LOCK_OWNER_PID,LOCK_OWNER_LAST_ACTION,LOCK_OWNER_USER_NAME,BLOCKED_CONN
ECTION_ID,BLOCKED_STATEMENT_STRING,LOCK_OWNER_STATEMENT_STRING,BLOCKED_AP
PLICATION,BLOCKED_APPLICATION_USER,BLOCKED_APPLICATION_SOURCE,LOCK_OWNER_
APPLICATION,LOCK_OWNER_APPLICATION_USER,LOCK_OWNER_APPLICATION_SOURCE,BLO
CKED_STATEMENT_HASH,LOCK_OWNER_STATEMENT_HASH)select __typed_Longdate__($1) AS "SNAPSHOT_ID",
current_timestamp,b.blocked_time,b.blocked_transaction_id,b.blocked_update_transaction_id,b.host,
b.lock_mode,b.lock_owner_transaction_id,b.lock_owner_update_transaction_id,b.lock_type,b.port,b.waiting_object_name,
b.waiting_object_type,b.waiting_record_id,b.waiting_schema_name,b.waiting_table_name,t.connection_id,t.transaction_s
tatus,tb.transaction_status,c.client_host,c.client_pid,c.last_action,c.user_name,b_pstmt.connection_id,b_pstmt.state
ment_string,l_pstmt.statement_string,b_application.application,b_application_user.applicationuser,b_application_sour
ce.applicationsource,l_application.application,l_application_user.applicationuser,l_application_source.applicationso
urce,b_pstmt.statement_hash,l_pstmt.statement_hash

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_BLOCKED_TRANSACTIONS b LEFT OUTER JOIN
_SYS_STATISTICS.SOURCE_COLLECTOR_5020_TRANSACTIONS t on b.lock_owner_update_transaction_id =
t.update_transaction_id and b.lock_owner_connection_id = t.connection_id and t.transaction_type not in ('EXTERNAL
TRANSACTION','SUBTRANSACTION') LEFT OUTER JOIN
_SYS_STATISTICS.SOURCE_COLLECTOR_5020_CONNECTIONS c on (t.connection_id,t.host,t.port) =
(c.connection_id,c.host,c.port) LEFT OUTER JOIN _SYS_STATISTICS.SOURCE_COLLECTOR_5020_TRANSACTIONS
tb on b.blocked_update_transaction_id = tb.update_transaction_id and b.blocked_connection_id = tb.connection_id and
tb.transaction_type not in ('EXTERNAL TRANSACTION','SUBTRANSACTION') LEFT OUTER
JOIN_SYS_STATISTICS.SOURCE_COLLECTOR_5020_CONNECTIONS cb on (tb.connection_id,tb.host,tb.port) =
(cb.connection_id,cb.host,cb.port) LEFT OUTER JOIN
_SYS_STATISTICS.SOURCE_COLLECTOR_5020_ACTIVE_STATEMENTS b_pstmt ON cb.current_statement_id =
b_pstmt.statement_id LEFT OUTER JOIN _SYS_STATISTICS.SOURCE_COLLECTOR_5020_ACTIVE_STATEMENTS
l_pstmt ON c.current_statement_id = l_pstmt.statement_id LEFT OUTER JOIN (SELECT ... Text cut, see SAP Note
3210457

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_SESSION_CONTEXT

WHERE

KEY = 'APPLICATION') b_application ON cb.HOST = b_application.HOST AND cb.PORT = b_application.PORT AND
cb.CONNECTION_ID = b_application.CONNECTION_ID LEFT OUTER JOIN (SELECT VALUE APPLICATIONUSER,
HOST, PORT, CONNECTION_ID

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_SESSION_CONTEXT

WHERE

KEY = 'APPLICATIONUSER') b_application_user ON cb.HOST = b_application_user.HOST AND cb.PORT =
b_application_user.PORTAND cb.CONNECTION_ID = b_application_user.CONNECTION_ID LEFT OUTER JOIN
(SELECT VALUE APPLICATIONSOURCE, HOST, PORT, CONNECTION_ID

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_SESSION_CONTEXT

WHERE

KEY = 'APPLICATIONSOURCE') b_application_source ON cb.HOST = b_application_source.HOST AND cb.PORT = b_application_source.PORT AND cb.CONNECTION_ID = b_application_source.CONNECTION_ID LEFT OUTER JOIN (SELECT VALUE APPLICATION, HOST, PORT, CONNECTION_ID

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_SESSION_CONTEXT

WHERE

KEY = 'APPLICATION') l_application ON c.HOST = l_application.HOST AND c.PORT = l_application.PORT AND c.CONNECTION_ID = l_application.CONNECTION_ID LEFT OUTER JOIN (SELECT VALUE APPLICATIONUSER, HOST, PORT, CONNECTION_ID

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_SESSION_CONTEXT

WHERE

KEY = 'APPLICATIONUSER') l_application_user ON c.HOST = l_application_user.HOST AND c.PORT = l_application_user.PORT AND c.CONNECTION_ID = l_application_user.CONNECTION_ID LEFT OUTER JOIN (SELECT VALUE APPLICATIONSOURCE, HOST, PORT, CONNECTION_ID

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5020_SESSION_CONTEXT

WHERE

KEY = 'APPLICATIONSOURCE') l_application_source ON c.HOST = l_application_source.HOST AND c.PORT = l_application_source.PORT AND c.CONNECTION_ID = l_application_source.CONNECTION_ID

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,36
Contribution to Total Execution Time [%]	0,63
Maximal CPU Consumption per Hour [%] (09.09.2024 between 23:00 and 24:00)	0,03
Maximal Memory Consumption [%]	0,07

17.4.4.1 Known Issue

Information about this statement (as identified by its STATEMENT_HASH) can be found in the following SAP Note:

> **Recommendation:** Check the mentioned SAP Note(s) for the recommendation concerning the statement and apply the recommendation if applicable.

STATEMENT_HASH	SAP Note	Type	Object
a99311b79cb2fb8706e979cda20edb44	2000002	INSERT	ALERT_BLOCKED_TRANSACTIONS

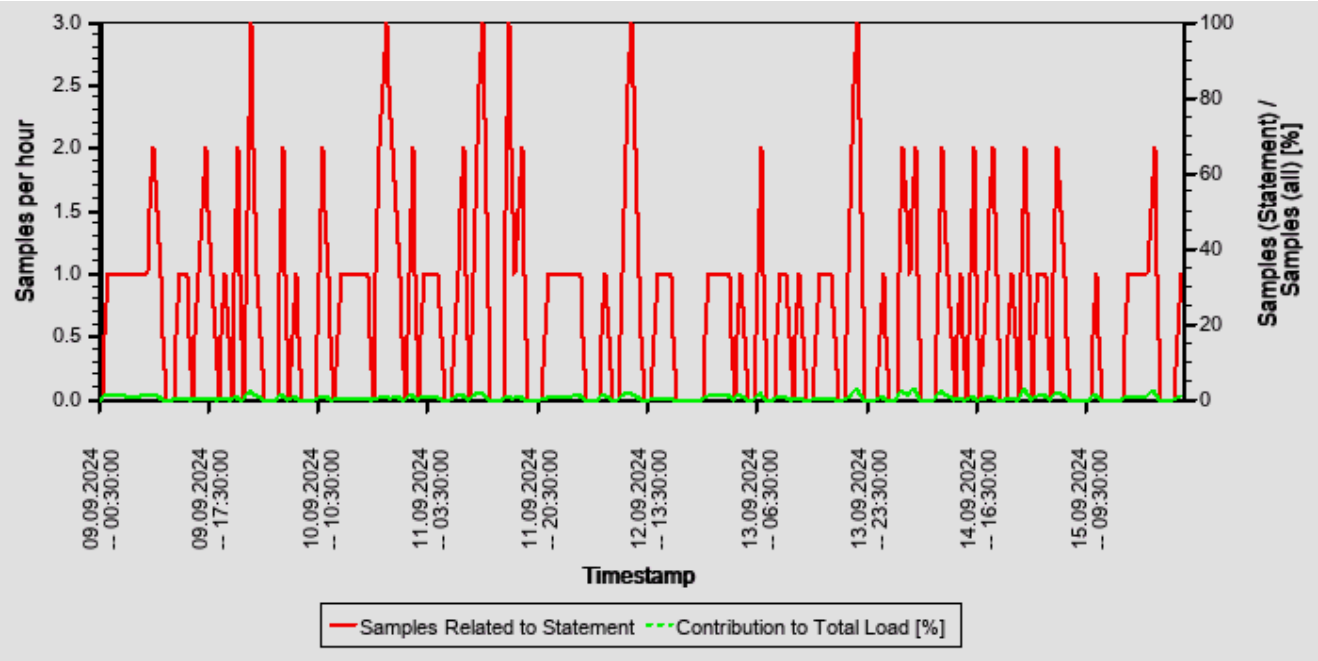
17.4.4.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	338.144	478.121	1.824	39.665.644
PREPARATION	68	96		
LOCK DURATION	0	0		

17.4.4.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.



17.4.4.4 Root Statement

The following table shows details on the "ROOT STATEMENT", which is responsible for the observed SQL statement.

ROOT_STATEMENT_HASH	ROOT_STATEMENT_TEXT	Samples
d6fd6678833f9a2e25e7b53239c50e9a	call _SYS_STATISTICS.STATISTICS_SCHEDULABLEWRAPPER('Timer', ?, ?, ?, ?)	126

17.4.4.5 Internal SQL Statement

This SQL statement was executed from an internal database connection.

17.4.5 SQL Statement aab74ea061af6cfac83b872529670eac

```
/* procedure: "_SYS_STATISTICS"."COLLECTOR_HOST_LONG_RUNNING_STATEMENTS" line: 10 col: 2 (at pos 837) */ insert into _SYS_STATISTICS.HOST_LONG_RUNNING_STATEMENTS_BASE (snapshot_id, server_timestamp,APPLICATION_NAME,APPLICATION_SOURCE,APPLICATION_USER_NAME,CONNECTION_ID,DURATION,HOST,PORT,STATEMENT_HASH,THREAD_DETAIL,THREAD_ID,USER_NAME,AUTO_COMMIT,CLIENT_HOST,CLIENT_IP,CLIENT_PID,CONNECTION_START_TIME,TRANSACTION_ID,UPDATE_TRANSACTION_ID,LAST_EXECUTED_TIME,START_MVCC_TIMESTAMP,STATEMENT_ID)select __typed_Longdate__($1) AS "SNAPSHOT_ID", current_timestamp,
T1.APPLICATION_NAME,T1.APPLICATION_SOURCE,T1.APPLICATION_USER_NAME,T1.CONNECTION_ID,T1.DURATION, T1.HOST,T1.PORT,T1.STATEMENT_HASH,T1.THREAD_DETAIL,T1.THREAD_ID,T1.USER_NAME,
T2.AUTO_COMMIT,T2.CLIENT_HOST,T2.CLIENT_IP,T2.CLIENT_PID,T2.START_TIME,T2.TRANSACTION_ID,
T3.UPDATE_TRANSACTION_ID, T4.LAST_EXECUTED_TIME, T4.START_MVCC_TIMESTAMP, T4.STATEMENT_ID
FROM
SYS.M_SERVICE_THREADS T1 join SYS.M_CONNECTIONS T2 on T1.CONNECTION_ID = T2.CONNECTION_ID and T1.HOST = T2.HOST and T1.PORT = T2.PORT join SYS.M_TRANSACTIONS T3 on T1.CONNECTION_ID = T3.CONNECTION_ID and T1.HOST = T3.HOST and T1.PORT = T3.PORT and T2.TRANSACTION_ID = T3.TRANSACTION_ID join SYS.M_ACTIVE_STATEMENTS T4 on T1.CONNECTION_ID = T4.CONN
ECTION_ID and T1.HOST = T4.HOST and T1.PORT = T4.PORT
WHERE
T1.THREAD_TYPE = 'SqlExecutor' and upper(substring(t1.thread_detail, 1, 6)) != 'BACKUP' and T2.CONNECTION_ID >=0 and T4.LAST_EXECUTED_TIME IS NOT NULL and T4.STATEMENT_STATUS = 'ACTIVE' and SECONDS_BETWEEN(T4.LAST_EXECUTED_TIME, CU
RRENT_TIMESTAMP) > 1800
```

ORDER BY

T4.START_MVCC_TIMESTAMP

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,30
Maximal CPU Consumption per Hour [%] (10.09.2024 between 20:00 and 21:00)	0,03
Maximal Memory Consumption [%]	0,07

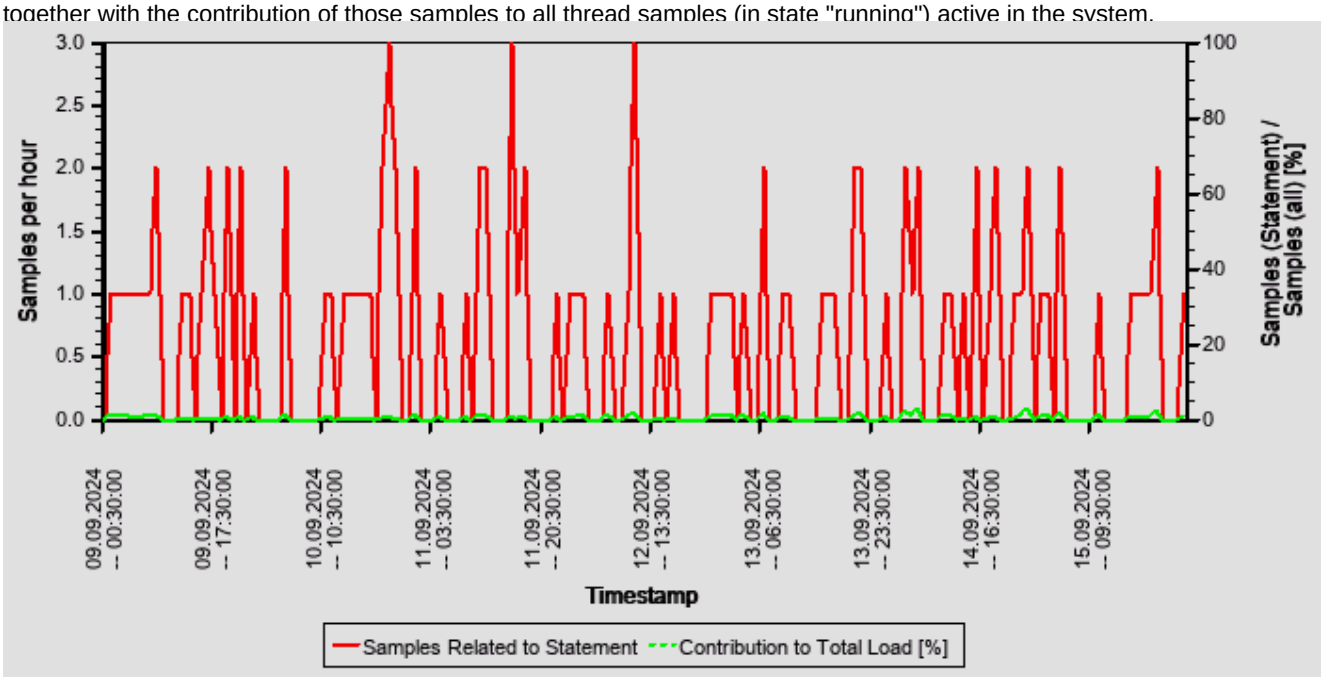
17.4.5.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	234.094	330.999	5.365	38.917.544
PREPARATION	23	32		
LOCK DURATION	0	0		

17.4.5.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.



17.4.5.3 Root Statement

The following table shows details on the "ROOT STATEMENT", which is responsible for the observed SQL statement.

ROOT_STATEMENT_HASH	ROOT_STATEMENT_TEXT	Samples
d6fd6678833f9a2e25e7b53239c50e9a	call _SYS_STATISTICS.STATISTICS_SCHEDULABLEWRAPPER('Timer', ?, ?, ?, ?)	107

17.4.5.4 Origin of SQL Statement

APPLICATION_NAME	APPLICATION_SOURCE	PASSPORT_ACTION
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 02:37:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 02:40:37 000 Mon	

APPLICATION_NAME	APPLICATION_SOURCE	PASSPORT_ACTION
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 02:52:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 03:07:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 03:09:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 03:11:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 03:13:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 04:07:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 04:08:37 000 Mon	
Embedded Statistics Server	running ID (5028, deletion: no) for 16.09.2024 04:17:37 000 Mon	

17.4.5.5 Internal SQL Statement

This SQL statement was executed from an internal database connection.

17.5 Top Statement (Maximal Memory in Trace)

This section shows the top statements according to the maximal memory usage as of observed in the expensive statement trace, i.e. M_EXPENSIVE_STATEMENTS.

See the following table for details of the selection:

Database Start	14.05.2023 -- 01:17:33
Data Collection	16.09.2024 -- 06:26:17
Analysis Type	Analysis of Expensive Statement Trace
Data Source	M_EXPENSIVE_STATEMENTS
First Day	09.09.2024
Last Day	15.09.2024

The selected statements - identified by their "Statement Hash" - are listed in the following table. Further details of these statements can be found in the subsections.

Statement Hash	Time / Execution [us]	Records / Execution	Time / Record [us]	Maximum Memory [MB]
74f8a959af57fe7f3eaaad00fca9230f	18.935.874,5	59,0	321.102,5	11.982,0
f17674d22d3bbfff2b61161db115b24a	12.810.636,3	1.614,7	7.933,6	7.223,0
0219b26d38c0d52836eea07367f8e49d	23.954.104,0	449.913,7	53,2	3.710,0
49baafece96fac94fe7ed8293f34011f	4.181.924,9	19,3	216.519,8	2.850,0
bd0ca74084bd36f1f78516e7bf683c00	18.138.358,0	13.854.399,0	1,3	1.280,0

17.5.1 SQL Statement 74f8a959af57fe7f3eaaad00fca9230f

```
SELECT
"APPL_ID" , RTRIM ( SUBSTRING ( "CREATED_ON" , 2 , 4 ) ) "Z_CREATED_ON_YEAR" , RTRIM ( SUBSTRING ( "CREATED_ON" , 6 , 2) ) "Z_CREATED_ON_MONTH" , COUNT(*) "_ENTRY_CNT"
FROM
"CNS_CP"
WHERE
"MANDT" = ?
GROUP BY
"APPL_ID" , RTRIM ( SUBSTRING ( "CREATED_ON" , 2 , 4 ) ) , RTRIM ( SUBSTRING ( "CREATED_ON" , 6 , 2 ) )
ORDER BY
"_ENTRY_CNT" DESC
```

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,01
Maximal CPU Consumption per Hour [%] (12.09.2024 between 13:00 and 14:00)	0,03
Maximal Memory Consumption [%] (12.09.2024 -- 13:09:52)	2,63

17.5.1.1 Analysis of Where Clause

Table	Field	Operator
CNS_CP	MANDT	=

17.5.1.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	1.315	18.789.604	10.731.713	29.693.310
PREPARATION	10	146.271		
LOCK DURATION	0	0		

17.5.1.3 Memory Consumption

The following table provides an overview of the memory consumption of the analyzed SQL statement as obtained from the monitoring view M_SQL_PLAN_STATISTICS (or – if not yet available – M_SQL_PLAN_CACHE), that is, without taking a specific time interval into account.

Activity	Average Memory [MB]	Minimal Memory [MB]	Maximal Memory [MB]
EXECUTION_MEMORY_SIZE	9.971,9	8.108,8	11.982,3

17.5.1.3.1 High Memory Consumption

The memory consumption of this statement is relatively high when compared with the minimum "effective allocation limit" of the index server(s) as obtained from M_SERVICE_MEMORY. See the following table for details. Note that the excessive memory consumption of a single statement might impact the stability of the whole SAP HANA system. See SAP Note 1999997 for details and for an option to restrict the maximum memory allocated by a single statement.

(Minimal) Effective Allocation Limit [GB]	445,6
Maximal Statement Size / Effective Allocation Limit [%]	2,6
Average Statement Size / Effective Allocation Limit [%]	2,2

17.5.1.4 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.5.2 SQL Statement f17674d22d3bbfff2b61161db115b24a

```
SELECT
"MANDANT" , "OBJECTCLAS" , RTRIM ( SUBSTRING ( "UDATE" , 1 , 4 ) ) "Z_UDATE_YEAR" , RTRIM ( SUBSTRING ( "OBJECTID" , 4 , 2 ) ) "Z_OBJECTID_TYPE" , RTRIM ( SUBSTRING ( "OBJECTID" , 4 , 1 ) ) "Z_OBJECTID_PLNTY" , COUNT(*) "_ENTRY_CNT"
FROM
"CDHDR"
WHERE
"MANDANT" = ?
GROUP BY
"MANDANT" , "OBJECTCLAS" , RTRIM ( SUBSTRING ( "UDATE" , 1 , 4 ) ) , RTRIM ( SUBSTRING ( "OBJECTID" , 4 , 2 ) ) , RTRIM
( SUBSTRING ( "OBJECTID" , 4 , 1 ) )
ORDER BY
"_ENTRY_CNT" DESC
```

Statement Impact

Indicator	Value
Maximal Memory Consumption [%] (12.09.2024 -- 13:09:28)	1,58

17.5.2.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
CDHDR	MANDANT	=	3.247	17

17.5.1.5 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
CNS_CP	SAPABAP1	COLUMN	Table not partitioned	80.578.798	lxbell705

17.5.2.2 Time Consumption

17.5.1.6 Origin of SQL Statement

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL_EXECUTION	896	12.800.425	6.109.487	23.244.041
PREPARATION	1	10.212		
LOCK_DURATION	0	0		

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WPS	TAANA_ANALYSIS	LARCHI_ANAF02	955	12.01.2022		BC-CCM-TAN	Transaction TAANA for Table Analysis

17.5.2.3 Memory Consumption

The following table provides an overview of the memory consumption of the analyzed SQL statement as obtained from the monitoring view M_SQL_PLAN_STATISTICS (or – if not yet available – M_SQL_PLAN_CACHE), that is, without taking a specific time interval into account.

Activity	Average Memory [MB]	Minimal Memory [MB]	Maximal Memory [MB]
EXECUTION_MEMORY_SIZE	6.222,9	4.994,1	7.592,4

17.5.2.3.1 High Memory Consumption

The memory consumption of this statement is relatively high when compared with the minimum "effective allocation limit" of the index server(s) as obtained from M_SERVICE_MEMORY. See the following table for details. Note that the excessive memory consumption of a single statement might impact the stability of the whole SAP HANA system. See SAP Note 1999997 for details and for an option to restrict the maximum memory allocated by a single statement.

(Minimal) Effective Allocation Limit [GB]	445,6
Maximal Statement Size / Effective Allocation Limit [%]	1,7
Average Statement Size / Effective Allocation Limit [%]	1,4

17.5.2.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
CDHDR	SAPABAP1	COLUMN	Table not partitioned	34.106.391	lxbell705

17.5.2.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	TAANA ANALYSIS	LARCH_ANAF02	955	12.01.2022	✓	BC-CCM-TAN	Transaction TAANA for Table Analysis

17.5.3 SQL Statement 0219b26d38c0d52836eea07367f8e49d

SELECT
*
FROM
/* Entity name: YEWMMON_RELMON_CDS_DLVITM */ "YDDL_REL_DLVITM" "YEWMMON_RELMON_CDS_DLVITM"
WHERE
"MANDT" = ? AND "LGNUM" = ?

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,03
Maximal CPU Consumption per Hour [%] (12.09.2024 between 16:00 and 17:00)	0,11
Maximal Memory Consumption [%] (09.09.2024 -- 14:55:33)	0,81

17.5.3.1 Analysis of Where Clause

Table	Field	Operator
?	LGNUM	=
?	MANDT	=

17.5.3.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	66	22.079.061	18.478.898	24.512.898
PREPARATION	6	1.875.043		
LOCK DURATION	0	0		

17.5.3.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.5.3.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
/SCDL/DB_DATE	SAPABAP1	COLUMN	Table not partitioned	80.163.918	lxbell705
/SCDL/DB_BPLOC	SAPABAP1	COLUMN	Table not partitioned	29.228.386	lxbell705
/SCDL/DB_PROCI_O	SAPABAP1	COLUMN	Table not partitioned	9.640.078	lxbell705
/SCDL/DB_PROCH_O	SAPABAP1	COLUMN	Table not partitioned	800.617	lxbell705
/SAPAPO/MATKEY	SAPABAP1	COLUMN	Table not partitioned	6.512	lxbell705

17.5.3.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	/SCWM/MON	YCL_EWMM ON_RELEA SE_MON_DATA===CM 014	39	02.08.2022		SCM-EWM	Extended Warehouse Management

17.5.4 SQL Statement 49baafece96fac94fe7ed8293f34011f

SELECT

"MANDT" , "TDOBJECT" , RTRIM (SUBSTRING ("TDFDATE" , 1 , 4)) "Z_TDFDATE_YEAR" , COUNT(*) "_ENTRY_CNT"

FROM

"STXH"

WHERE

"MANDT" = ? GROUP BY "MANDT" , "TDOBJECT" , RTRIM (SUBSTRING ("TDFDATE" , 1 , 4))

ORDER BY

"_ENTRY_CNT" DESC

Statement Impact

17.5.5 SQL Statement bd0ca74084bd36f1f78516e7bf683c00

SELECT
"AUSP" . "OBJEK" , "AUSP" . "ATWRT" , "AUSP" . "ATFLV" , "CABN" . "ATNAM"
FROM
"AUSP" INNER JOIN "CABN" ON "AUSP" . "MANDT" = "CABN" . "MANDT" AND "AUSP" . "ATINN" = "CABN" . "ATINN"
WHERE
"AUSP" . "MANDT" = ? AND ("CABN" . "ATNAM" = ? OR "CABN" . "ATNAM" = ?)

Indicator	Value
Maximal Memory Consumption [%] (12.09.2024 -- 13:09:47)	0,62

17.5.4.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
AUSP	MANDT	=	1.288.412	0
CABN	ATNAM	=	1	0

17.5.4.2 Time Consumption

17.5.5.1 Analysis of Where Clause

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	292	4.172.203	121.752.306	2.894.030 6.998.189
PREPARATION	1	9.722	13.943.441.575	0
LOCK DURATION	0	0		

17.5.5.2 Time Consumption

17.5.4.3 Tables

The following table gives an overview of the time consumption of the analyzed SQL statement.

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
AUSP	SAPABAP1	COLUMN	Table not partitioned	114.490.939	lxbell705
CABN	SAPABAP1	COLUMN	Table not partitioned	69	lxbell705

17.5.4.4 Origin of SQL Statement

17.5.5.3 Tables

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	TAANA ANALYSIS	LARCH_ANAF02	955	12.01.2022		BC-CCM-TAN	Transaction TAANA for Table Analysis

17.5.5.4 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	YCL_EWM_PI_RF_INVENTORY_M=====CM005	55	02.08.2022		SCM-EWM	Extended Warehouse Management

17.6 Top Statements (Thread Samples)

This section shows the top statements according to the number of observed "threads" ("Number of Samples") in the SERVICE THREAD SAMPLES. A statement might occupy a high number of threads if (a) it has a long execution time, (b) it is executed very often, or (c) it has a highly parallelized execution. In any case, it shows statements with a high resource consumption on the SAP HANA database.

See the following table for details of the selection:

Database Start	14.05.2023 -- 01:17:33
Data Collection	16.09.2024 -- 06:26:17

Analysis Type	Analysis of Thread Samples
Data Source	HOST_SERVICE_THREAD_SAMPLES
First Day	09.09.2024
Last Day	15.09.2024

The selected statements - identified by their "Statement Hash" - are listed in the following table. Further details of these statements can be found in the subsections.

Statement Hash	Time / Execution [us]	Records / Execution	Time / Record [us]	Number of Samples
30095d6239a2c1a9825bd628ba565750	85.895,6	29.309,3	2,9	816
66f92ec0a8949d79e180d34dc7bab986	58,7	1,0	60,6	534
b124eba8255584b6f6149b99886224c3	3.105,8	39,3	79,0	514
2d0c39ef5929d7130eff44e5262ba337	595,5	1,0	595,5	295
705200140e1831259799f8daf89bd70b	251,0	1,5	168,3	281

17.6.1 SQL Statement 30095d6239a2c1a9825bd628ba565750

SELECT
"CREATED_ON" , "CHGTYPE"
FROM
"V_CNS_CP_RECV_ST"
WHERE
"MANDT" = ? AND "APPL_ID" = ? AND "EXPOBJTYPE" = ? AND "EXPOBJKEY" = ?

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	2,31
Contribution to Total Execution Time [%]	3,38
Maximal CPU Consumption per Hour [%] (14.09.2024 between 13:00 and 14:00)	0,18

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Elapsed Time)

17.6.1.1 Analysis of Where Clause

Table	Field	Operator
?	APPL_ID	=
?	EXPOBJKEY	=
?	EXPOBJTYPE	=
?	MANDT	=

17.6.1.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	85.894	2.122	4.418.166
PREPARATION	1		
LOCK DURATION	0		

17.6.2 SQL Statement 66f92ec0a8949d79e180d34dc7bab986

17.6.1.3 Statement History (Thread Sample 'Running')

SELECT
"ACCNT"
FROM
"USR02"
WHERE
"MANDT" = ? AND "BNAME" = ? LIMIT 1

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	1,51
Contribution to Total Execution Time [%]	1,26
Maximal CPU Consumption per Hour [%] (11.09.2024 between 15:00 and 16:00)	0,16

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (CPU Peak Hour)

17.6.2.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
USR02	BNAME	=	805.522	0
USR02	MANDT	=	4.161.277	0

17.6.2.2 Time Consumption

17.6.1.4 Tables

The following table gives an overview of the time consumption of the analyzed SQL statement.

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Activity	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	59	0	215.779
PREPARATION	0		
LOCK DURATION	0		

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
CNS_CR	SAPABAP1	COLUMN	Table not partitioned	80.578.798	lxbell705
CNS_RECV_STATUS	SAPABAP1	COLUMN	Table not partitioned	80.578.798	lxbell705

17.6.1.5 Origin of SQL Statement

17.6.2.3 Statement History (Thread Sample 'Running')

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	BP	CL_CNS_CHANGE_POINTER=========CM00J	10	22.10.2012		CA-GTF-TS-CNS	Change Pointer Service
		Confidential		SAP HANA SQL Statements in WPH			108/128

17.6.2.4 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,85	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,51	strong correlation

17.6.2.5 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
USR02	SAPABAP1	COLUMN	Table not partitioned	681	lxbell705

17.6.2.6 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	/XITING/RB_SU53_COLLECTOR_200	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	<BGRFC WATCHDOG	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	/XITING/XT_USR07_COLLECT	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	TSCWMMON	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	EWMMFS_200_6500_20240906_081528	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	/ZAUTO_ABAP_PROCESSING_20240906_075648	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAPMHTTP	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAPMSSY1	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAP_COLLECTOR_PERFMON_RSDOOS_MSC	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAP_COLLECTOR_PERFMON_RSHOSTDB	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAP_COLLECTOR_PERFMON_RSICFDMN	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAP_COLLECTOR_PERFMON_SWNCCOLL	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_BC_BFG_OPAL_FAILOVER	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_EWM_2009_ANZAHLGEBINDE_FILIALE	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_EWM_6500_YEWMGI_PICK_FULL_PALL	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_EWM_6500_YEWMSR_CREATE_REQUEST	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_EWM_BFG_REPROCESS_QUEUES	CL_SWNC_AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting

17.6.3 SQL Statement b124eba8255584b6f6149b99886224c3

UPSERT "BALDAT" ("_DATAAGING", "CLUSTR", "CLUSTD", "MANDANT", "RELID", "LOG_HANDLE", "BLOCK", "SRTF2") VALUES (?, ?,?, ?, ?, ?, ?, ?) WITH PRIMARY KEY

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	1,45
Contribution to Total Execution Time [%]	6,59
Maximal CPU Consumption per Hour [%] (11.09.2024 between 15:00 and 16:00)	0,22

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Elapsed Time)
SAP HANA SQL Statements in WPH -> Top Statements (CPU Peak Hour)

17.6.3.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	3.106	0	89.656.099
PREPARATION	0		
LOCK DURATION	0		

17.6.3.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.6.3.3 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,69	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,47	medium correlation

17.6.3.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
BALDAT	SAPABAP1	COLUMN	HASH	85.609.842	lxbell705

17.6.3.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAP_COLLECTOR_PERFMON_RSDOOS_MSC	LSBAL_DB_INTERNALU02	131	13.02.2015	✓	BC-SRV-BAL	Basis Application Log
WP2	Z_EWM_BFG_REPROCESS_QUEUES	LSBAL_DB_INTERNALU02	131	13.02.2015	✓	BC-SRV-BAL	Basis Application Log

17.6.4 SQL Statement 2d0c39ef5929d7130eff44e5262ba337

INSERT

INTO "BALHDR" VALUES(? , ?, ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? ... Text cut, see SAP Note 3210457

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,83
Contribution to Total Execution Time [%]	1,89
Maximal CPU Consumption per Hour [%] (11.09.2024 between 18:00 and 19:00)	0,10

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (CPU Peak Hour)

17.6.4.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	596	0	2.730.509
PREPARATION	0		
LOCK DURATION	0		

17.6.4.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.6.4.3 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,75	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,40	medium correlation

17.6.4.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
BALHDR	SAPABAP1	COLUMN	Table not partitioned	16.475.184	lxbell705

17.6.4.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Report	Line	Last Changed on:	SAP Coding
WP2	/IGZ/L_XLOGU02	148	11.01.2019	

17.6.5 SQL Statement 705200140e1831259799f8daf89bd70b

```
SELECT DISTINCT
"MANDT" , "QNAME" , MIN( "QCOUNT" ) "FQCOUNT" , COUNT(*) "QDEEP"
FROM
"TRFCQIN"
WHERE
"MANDT" = ? AND "QNAME" LIKE ?
```

GROUP BY

"MANDT" , "QNAME"

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,80
Contribution to Total Execution Time [%]	1,56
Maximal CPU Consumption per Hour [%] (12.09.2024 between 13:00 and 14:00)	0,18

17.6.5.1 Analysis of Where Clause

Table	Field	Operator	Supported by Single Column Index
TRFCQIN	MANDT	=	
TRFCQIN	QNAME	LIKE	

17.6.5.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	251	0	1.166.946
PREPARATION	0		
LOCK DURATION	0		

17.6.5.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.6.5.4 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

17.7 Top Statements (CPU Peak Hour)

This section shows the top statements according to the number of observed "threads" ("Number of Samples") in the SERVICE_THREAD_SAMPLES. A statement might occupy a high number of threads if (a) it has a long execution time, (b) it is executed very often, or (c) it has a highly parallelized execution. In any case, it shows statements with a high resource consumption on the SAP HANA database.

For this section, the hour with the highest number of thread samples in thread state" "Running" is determined, that is, the "CPU peak hour". The top statements observed in this hour are listed and analyzed.

Hour of Maximal CPU Consumptiion

From	To
11.09.2024 - 16:00:00	11.09.2024 - 17:00:00

See the following table for details of the selection.

Database Start	14.05.2023 -- 01:17:38
Data Collection	16.09.2024 -- 06:26:17
Analysis Type	Analysis of Thread Samples
Data Source	HOST_SERVICE_THREAD_SAMPLES
First Day	09.09.2024
Last Day	15.09.2024

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the "executed statements". Statements identified by their "Statement Hash" are listed in the following table. Further details of these statements can be found in the subsections.

SID	Transaction / Jobname	Report	Line	Last Execution	SAP Coding	Application Component	Description
Statement Hash	Time / Execution [us]	Records / Execution		Time / Record [us]		Number if Samples in CPU Peak Hour	
WP2	/SCWM/MON	LIRFCU34	47	22.10.2012	✓	BC-MID-RFC	RFC
b124eba8255584b6f6149b99886224c3	3.105,8		39,3		79,0		11
WP2	/SCWM/RFUI	LIRFCU34	47	22.10.2012	✓	BC-MID-RFC	RFC
66f92cc0a8949d79e18145b988d224c8	58,7		1,0		60,6		10
WP2	/SCWM/TU	LIRFCU34	47	22.10.2012	✓	BC-MID-RFC	RFC
8d9a048b67de07b248d34dc7bab986	178,7		1,0		178,7		5
WP2	MASS	LIRFCU34	47	22.10.2012		BC-MID-RFC	RFC
2d0c39ef5929d7130eff1ea2ed1b6c4769	595,5		1,0		595,5		5
f816711c913d152181a44e5262ba337	3.034.093,6		521,0		5.824,1		4
1e2d3d3d1dc43							
WP2	SAPMHTTP	LIRFCU34	47	22.10.2012		BC-MID-RFC	RFC

17.7.1 SQL Statement b124eba8255584b6f6149b99886224c3

UPSERT "BALDAT" ("_DATAAGING", "CLUSTR", "CLUSTD", "MANDANT", "RELID", "LOG_HANDLE", "BLOCK", "SRTF2") VALUES (?, ?,?, ?, ?, ?, ?, ?) WITH PRIMARY KEY

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	1,45
Contribution to Total Execution Time [%]	6,59
Maximal CPU Consumption per Hour [%] (11.09.2024 between 15:00 and 16:00)	0,22

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Elapsed Time)
SAP HANA SQL Statements in WPH -> Top Statements (Thread Samples)

17.7.1.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	35.571	3.106	0	89.656.099
PREPARATION	0	0		
LOCK DURATION	0	0		

17.6.5.5 Tables

In the following the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
TFECOIN	SAPABAP1	ROW	Table not partitioned	62	lxbell705

17.6.5.6 Origin of SQL Statement

Distribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL Statement	0,72	strong correlation
WP2 /SCWM/RFC_PREPROCESS_QUEU LIRFCU34 47 22.10.2012		BC-MID-RFC RFC
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,47	medium correlation

17.7.1.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.7.1.3 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,69	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,47	medium correlation

17.7.1.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
BALDAT	SAPABAP1	COLUMN	HASH	85.609.842	lxbell705

17.7.1.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAP_COLLECTOR_PERFMON_RS DOOS_MSC	LSBAL_DB_ INTERNALU02	131	13.02.2015	✓	BC-SRV-BAL	Basis Application Log

SID	Transaction / Jobaname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	Z_EWM_BF G_REPROC ESS_QUEUES	LSBAL_DB_ INTERNALU02	131	13.02.2015	✓	BC-SRV-BAL	Basis Application Log

17.7.2 SQL Statement 66f92ec0a8949d79e180d34dc7bab986

SELECT
"ACCNT"
FROM
"USR02"
WHERE
"MANDT" = ? AND "BNAME" = ? LIMIT 1

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	1,51
Contribution to Total Execution Time [%]	1,26
Maximal CPU Consumption per Hour [%] (11.09.2024 between 15:00 and 16:00)	0,16

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Thread Samples)

17.7.2.1 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
USR02	BNAME	=	805.522	0
USR02	MANDT	=	4.161.277	0

17.7.2.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	6.802	59	0	215.779
PREPARATION	1	0		
LOCK DURATION	0	0		

17.7.2.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.7.2.4 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,85	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,51	strong correlation

17.7.2.5 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
USR02	SAPABAP1	COLUMN	Table not partitioned	681	lxbell705

17.7.2.6 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Object Name	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAPTOOLBAR... RRMOENSRSHGSTDB	CL_SWNC_ AGG_USER	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	/SCWM/RFUI... SAPLSCMB_... _CHDOG ... COLLECTOR_200 MON_RSICFDMN	CL_SWNC_ AGG_USER WORKLOAD	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	/SCWM/MON	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	EWMMFS_200_6500_ ...	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	SAPLCOLLECTOR_PE RFMON_SWNCCOLL DR_SAMDT	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	EWMMFS_200_6500_ 20240916G075648	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022		BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_BC_SBG_ OPAL_FAILOVER	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MON	CCMS Monitoring & Alerting
WP2	Z_EWM_200 9_ANZAHLG EBINDE_FILIALE	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MO N	CCMS Monitoring & Alerting
WP2	Z_EWM_650 0_YEWMGI_ PICK_FULL_PALL	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MO N	CCMS Monitoring & Alerting
WP2	Z_EWM_6500_YEW MSR_CREATE_REQ UEST	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MO N	CCMS Monitoring & Alerting
WP2	Z_EWM_BF G_REPROC ESS_QUEUES	CL_SWNC_ AGG_USER WORKLOAD ======CM002	22	12.01.2022	✓	BC-CCM-MO N	CCMS Monitoring & Alerting

17.7.3 SQL Statement 8d9a048b67de07b2481ea2ed1b6c4769

UPDATE"TRFCQSTATE" SET "ARFCSTATE" = ? , "ARFCFNAM" = ? , "ARFCRETURN" = ? , "ARFCUZEIT" = ? , "ARFCDATUM" = ? , "ARFCUSER" =
? , "ARFCRETRYS" = ? , "ARFCTCODE" = ? , "ARFCRHOST" = ? , "ARFCMSG" = ? , "ARFCRESERV" = ? , "HASH" = ?
WHERE
"ARFCIPID" = ? AND "ARFCPID" = ? AND "ARFCTIME" = ? AND "ARFCTIDCNT" = ? AND "ARFCDEST" = ? AND "ARFCLUWCNT" = ?

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,26
Maximal CPU Consumption per Hour [%] (10.09.2024 between 14:00 and 15:00)	0,07

17.7.3.1 Analysis of Where Clause

Table	Field	Operator	Supported by Single Column Index
TRFCQSTATE	ARFCDEST	=	
TRFCQSTATE	ARFCIPID	=	
TRFCQSTATE	ARFCLUWCNT	=	
TRFCQSTATE	ARFCPID	=	
TRFCQSTATE	ARFCTIDCNT	=	
TRFCQSTATE	ARFCTIME	=	

17.7.3.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	2.133	179	0	310.875
PREPARATION	0	0		
LOCK DURATION	20	2		

17.7.3.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.7.3.4 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,55	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,32	medium correlation

17.7.3.5 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
TRFCQSTATE	SAPABAP1	ROW	Table not partitioned	183	lxbell705

17.7.3.6 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Transaction / Jobname	Report	Line	Last Changed on:	SAP Coding	Application Component	Description
WP2	SAP_COLLECTOR_PERFMON_RSDOOS_MSC	LIRFCU08	213	12.01.2022	✓	BC-MID-RFC	RFC
WP2	Z_EWM_6500_YEWMGI_PICK_FULL_PALL	LIRFCU08	213	12.01.2022		BC-MID-RFC	RFC
WP2	Z_EWM_BFG_REPROCESS_QUEUES	LIRFCU08	213	12.01.2022	✓	BC-MID-RFC	RFC
WP2	/SCWM/RFUI	LIRFCU08	213	12.01.2022	✓	BC-MID-RFC	RFC
WP2	EWMMFS_200_6500_20240725_081528	LIRFCU08	213	12.01.2022	✓	BC-MID-RFC	RFC
WP2	SAPMHTTP	LIRFCU08	213	12.01.2022	✓	BC-MID-RFC	RFC
WP2	SAPMSSY1	LIRFCU08	213	12.01.2022		BC-MID-RFC	RFC

17.7.4 SQL Statement 2d0c39ef5929d7130eff44e5262ba337

INSERT INTO "BALHDR" VALUES(? , ?, ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? , ? ... Text cut, see SAP Note 3210457

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,83
Contribution to Total Execution Time [%]	1,89
Maximal CPU Consumption per Hour [%] (11.09.2024 between 18:00 and 19:00)	0,10

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Thread Samples)

17.7.4.1 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	10.197	596	0	2.730.509
PREPARATION	0	0		
LOCK DURATION	0	0		

17.7.4.2 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.7.4.3 Correlation with Index Server Resource Consumption

The distribution of thread samples with the status "Running" correlates strongly with the overall CPU or memory consumption of the system. Such a correlation indicates that this statement might be responsible for peaks in the memory or CPU consumption.

Distiribution	Correlation Coefficient	Comment
CPU consumption index server(s) - Threads (running) from this SQL statement	0,75	strong correlation
Memory consumption index server(s) - Threads (running) from this SQL Statement	0,40	medium correlation

17.7.4.4 Tables

In the following, the tables involved in the SQL statement are listed (maximum of 20), sorted by the number of records.

Table Name	Schema Name	Table Type	Partition Type	Number of Records	Host
BALHDR	SAPABAP1	COLUMN	Table not partitioned	16.475.184	lxbell705

17.7.4.5 Origin of SQL Statement

The following table shows details of the applications responsible for the statement. This information is based on the information provided by SAP HANA in the "application source" connected to the statement in the "thread samples" or the list of "prepared" or "active" statements, and is not necessarily complete.

SID	Report	Line	Last Changed on:	SAP Coding
WP2	/IGZ/L_XLOGU02	148	11.01.2019	

17.7.5 SQL Statement f816711c913d152181a1e2d3d3d1dc43

/* procedure: "_SYS_STATISTICS"."COLLECTOR_HOST_SERVICE_THREAD_CALLSTACKS" line: 10 col: 2 (at pos 841) */ insert into _SYS_STATISTICS.HOST_SERVICE_THREAD_CALLSTACKS_BASE (snapshot_id, server_timestamp,FRAME_LEVEL,FRAME_NAME,HOST,IS_ACTIVE,PORT,SERVICE_NAME,THREAD_ID)select __typed_Longdate__($1) AS "SNAPSHOT_ID", current_timestamp,STC.frame_level,STC.frame_name,STC.host,STC.is_active,STC.port,STC.service_name,STC.thread_id

FROM

_SYS_STATISTICS.SOURCE_COLLECTOR_5057_SERVICE_THREAD_CALLSTACKS STC join _SYS_STATISTICS.SOURCE_COLLECTOR_5057_SERVICE_T

HREADS ST on STC.host = ST.host and STC.port=ST.port and STC.thread_id = ST.thread_id

WHERE

ST.connection_id != current_connection and STC.is_active = 'TRUE'

ORDER BY

STC.thread_id, STC.frame_level

Statement Impact

Indicator	Value
Contribution to Total CPU Load [%]	0,70
Contribution to Total Execution Time [%]	0,93
Maximal CPU Consumption per Hour [%] (10.09.2024 between 17:00 and 18:00)	0,13
Maximal Memory Consumption [%]	0,07

Note: The statement as identified by its statement hash can also be found in other sections of this report:

Other Sections Dealing with this Statement
SAP HANA SQL Statements in WPH -> Top Statements (Total Memory)

17.7.5.1 Known Issue

Information about this statement (as identified by its STATEMENT_HASH) can be found in the following SAP Note:

> **Recommendation:** Check the mentioned SAP Note(s) for the recommendation concerning the statement and apply the recommendation if applicable.

STATEMENT_HASH	SAP Note	Type	Object
f816711c913d152181a1e2d3d3d1dc43	2000002	INSERT	HOST_SERVICE_THREAD_CALLSTACKS_BASE

17.7.5.2 Time Consumption

The following table gives an overview of the time consumption of the analyzed SQL statement.

Activity	Total Time [s]	Average Time [us]	Minimal Time [us]	Maximal Time [us]
TOTAL EXECUTION	5.018	3.033.683	883.771	14.720.417
PREPARATION	1	411		
LOCK DURATION	0	0		

17.7.5.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.7.5.4 Root Statement

The following table shows details on the "ROOT STATEMENT", which is responsible for the observed SQL statement.

ROOT_STATEMENT_HASH	ROOT_STATEMENT_TEXT	Samples
d6fd6678833f9a2e25e7b53239c50e9a	call _SYS_STATISTICS.STATISTICS_SCHEDULABLEWRAPPER('Timer', ?, ?, ?, ?)	652

17.7.5.5 Internal SQL Statement

This SQL statement was executed from an internal database connection.

17.8 Further Analysis

The following SQL statements are analyzed in addition to the "Top Statements" from the previous sections as they have been found to show optimization potential.

Statement Hash	Statement Text
2d1ea9a365efd64d1504ba5dc255b0db	SELECT "GUID" , "GUID_PARENT" , "OVERFLOW" , "TYPE" , "T ...

17.8.1 SQL Statement 2d1ea9a365efd64d1504ba5dc255b0db

SELECT

"GUID" , "GUID_PARENT" , "OVERFLOW" , "TYPE" , "TYPE_PARENT" , "IDX" , "IDX_PARENT" , "OVERFLOW" , "LFT" , "RGT" , "LVL"

FROM

"/LIME/NTREE"

WHERE

"MANDT" = ? AND (("LFT" > ? AND "LFT" <= ? AND "LVL" > ?) OR ("LFT" > ? AND "LFT" <= ? AND "LVL" > ?) OR ("LFT" >? AND "LFT" <= ? AND "LVL" > ?) OR ("LFT" > ? AND "LFT" <= ? AND "LVL" > ?) OR ("LFT" > ? AND "LFT" <= ? AND "LVL" > ?) OR ("LFT" > ? AND ... Text cut, see SAP Note 3210457

17.8.1.1 Known Issue

Information about this statement (as identified by its STATEMENT_HASH) can be found in the following SAP Note:

> **Recommendation:** Check the mentioned SAP Note(s) for the recommendation concerning the statement and apply this recommendation.

STATEMENT_HASH	SAP Note	Type	Object
2d1ea9a365efd64d1504ba5dc255b0db	2000002	SELECT	/LIME/NTREE

17.8.1.2 Analysis of Where Clause

Table	Field	Operator	SCANNED RECORD COUNT	INDEX LOOKUP COUNT
/LIME/NTREE	LFT	<=		
/LIME/NTREE	LFT	>		
/LIME/NTREE	LVL	>		
/LIME/NTREE	MANDT	=		

17.8.1.3 Statement History (Thread Sample 'Running')

The following graph shows the number of observed thread samples (in state "running") related to this SQL statement together with the contribution of those samples to all thread samples (in state "running") active in the system.

17.8.1.4 Tables

In the following, the tables involved in the SQL statement are listed.

Table Name
/LIME/NTREE

17.8.1.5 Origin of SQL Statement

In the following, information about the origin of the SQL statement is provided. The "APPLICATION SOURCE" is obtained from the session variable APPLICATIONSOURCE, which contains information about the source calling SAP HANA. The usage is up to the application. If SAP HANA was called by ABAP coding, it has the format <ABAP program name>:<line number>. Therefore, the value for APPLICATIONSOURCE is split at “:” and only the first part is considered here as it contains the name of the ... Text cut, see SAP Note 3210457

Note that the "ABAP program name" refers to the generated code that can (but doesn't have to) be identical to the name of the non-generated code where the source code can be found.

APPLICATION_SOURCE
/LIME/SAPLQUERY

18 Trend Analysis

This section contains the trend analysis for key performance indicators (KPIs).
Diagrams are built weekly once the EarlyWatch Alert service is activated.
In this section, a "week" is from Monday to Sunday. The date displayed is the Sunday of the week.

18.1 System Activity

The following diagrams show the system activity over time.

The "Transaction Activity" diagram below depicts transaction activity in the system over time.

- Total Activity: Transaction steps performed each week (in thousands)
- Dialog Activity: Transaction steps performed in dialog task each week (in thousands)
- Peak Activity: Transaction steps (in thousands) during the peak hour; this peak hour is calculated as the hour with the maximum dialog activity in the ST03 time profile divided by 5 working days per week.

(Peak Activity is absent if "Activity Data" is taken from ST03 data directly).

The "User Activity" diagram below shows the user activity on the system over time.

- Total Users: Total users that logged on in one week.

- Active Users: Users who performed more than 400 transaction steps in one week.

18.2 System Operation

The following diagram or table shows important KPIs for system operation.

18.3 Hardware Capacity

The following diagram or table shows the maximum CPU load from the database server and the highest CPU load among all application servers.

Report time frame: Service data was collected starting at 16.09.2024 04:34:36. This took 115 minutes.

You can see sample SAP EarlyWatch Alert reports on SAP Support Portal at SAP EarlyWatch Alert -> Sample Reports.

For general information about SAP EarlyWatch Alert, see SAP Note 1257308 .

About System And Solution Manager

System No. Of Target System	850248550
Solution Manager System	SPA
Solution Manager Version	SOLUTION MANAGER 7.2
Service Tool	720 SP25
Service Content Update On	02.09.2024