Data Management for SAP Business Suite and SAP S/4HANA

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Agenda

Data Management for SAP Business Solutions - Overview

SAP Data Aging
  • Overview
  • Roadmap

Data Archiving - Overview

Information Lifecycle Management (ILM)
  • Overview
  • Innovations
Data Management for SAP Business Solutions – Overview
SAP Business Solutions in Scope

- SAP Business Suite
  - Suite on anyDB
  - Suite on HANA

- SAP S/4 HANA
  - On-Premise Edition
  - Cloud Edition
## Data Management for SAP Business Solutions in Scope

<table>
<thead>
<tr>
<th>Data Temperature</th>
<th>Solution / Feature</th>
<th>Storage Technology</th>
<th>Business Suite</th>
<th>S/4HANA</th>
<th>Business Value</th>
<th>Possible Actions</th>
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<tbody>
<tr>
<td></td>
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<td>any DB</td>
<td>HANA</td>
<td>On-Premise Edition</td>
<td>Cloud Edition</td>
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<td>Data Aging</td>
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<tr>
<td>Hot / Current</td>
<td></td>
<td>SAP HANA in-Memory</td>
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<td>✔️</td>
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<td>Optimizing the HANA data footprint</td>
<td>Write, Read, Update, Delete</td>
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<td></td>
<td>Hot / Current</td>
<td>Hot data is frequently accessed and has higher performance requirements.</td>
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<td>Active/ operationally-relevant data stored within HANA memory.</td>
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<td>SAP HANA on disc</td>
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<td>Optimizing the HANA data footprint</td>
<td>Write, Read, Delete</td>
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<td>Cold / Historical</td>
<td>Data which is closed/cleared and is moved to cold partitions on disk</td>
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<td>Archived Data</td>
<td>Separates WORM, disk or DB file-based storage</td>
<td>✔️</td>
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<td>✔️</td>
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<td>(ADK) + SAP ILM RM</td>
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<td>HANA Enabler &amp; Data Volume Management</td>
<td>Write, Read, Destruction function available using SAP ILM</td>
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</tbody>
</table>

- ✔️ Generally available
- ❌ Not available
- ❌ Different solution approach
- 1 Available for selected basis objects only
- 2 In e.g. SAP S/4HANA Finance only partially available
Data Aging - Overview
Data Aging for SAP Business Suite on HANA and SAP S/4HANA

Data Aging is a business data management concept for reducing the HANA memory footprint

• Only operationally relevant (“hot” or “current”) data is loaded into HANA main memory

• Other (“cold” or “historical”) data remains primarily stored on disk, not affecting current data performance, yet historical data remains accessible via SQL on request
Data Aging is a business data management concept for reducing the HANA memory footprint

- only operationally relevant ("hot") data is loaded into HANA main memory
- other ("cold") data remains primarily stored on disk, not affecting hot data performance, yet cold data remains accessible via SQL on request

+ SQL !

- Reduced memory footprint
- Shorter load time
- Faster processing
- No delta merge for untouched partitions
Data Management Evolution
Archiving, SAP ILM, and Data Aging in S/4HANA

Way forward >>
Partitioning by Application-Defined Temperature

Additional generic Aging column for horizontal partitioning

- Insert Aging value (temperature) during aging run
  - To move closed objects from HOT to COLD
  - To support partition pruning
  - Same value for all records of object
  - ABAP Data type: DATA_TEMPERATURE (DATS)

- COLD partitions
  - Many of them
  - Mapped to page-loadable columns (aka paged attributes)
  - No uniqueness enforcement by DB
  - SQL accessible
Over the last couple of years SAP has been evaluating how to optimize the overall data management for SAP Business Suite on HANA. Moving forward, our data management strategy will be based on two corner stones:

- For SAP Business Suite on HANA and SAP S/4HANA our proven and well-established standard **Data Archiving** is the basis for data management. Customers can finally delete data using information destruction by **SAP Information Lifecycle Management**.

- Additionally **Data Aging** helps customers optimize storage costs of technical business objects such as IDOCs and application logs. Data Aging is the standard data management approach for newly developed HANA-based applications like SAP S/4HANA Finance.
Data Aging - Demo
Data Aging - Roadmap
Roadmap for SAP Data Aging

Framework
• Parallelization
• Enhancement Concept

Aging Objects
• IDocs
• Application Logs
• Change Documents
• Workflow
• FI Document

Current Innovations

Framework
• Cloud Qualities for S/4HANA
• Proposal for partition Ranges
• Support for Aging Rules

Aging Objects
• Basis
• Application

Planned innovations

Future direction

• Cut data volume
• Big Data Readiness
• Reduce system complexity and cost
• Cloud Readiness
## Released Data Aging Objects

<table>
<thead>
<tr>
<th>Application Log</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDocs</td>
<td>NetWeaver 7.40 SPS 08</td>
</tr>
<tr>
<td>Change Docs</td>
<td>NetWeaver 7.40 SPS 12</td>
</tr>
<tr>
<td>Workflow</td>
<td>NetWeaver 7.40 SPS 12</td>
</tr>
<tr>
<td>FI Document</td>
<td>SAP Simple Finance add-on 1.0</td>
</tr>
</tbody>
</table>

1 Basis — available SAP Business Suite on HANA and SAP S/4HANA

2 Application — SAP S/4HANA only
Fiori Apps for Data Aging

Monitor Database Table Growth

- Visualize top N tables on different table growth criteria and time intervals:
  - Number of records for tables and partitions
  - Growth rate for tables in percentage
- Identify critical tables which are not covered by data aging objects

Monitor Data Aging Objects

- Representation of the records in hot and cold
- Activate inactive data aging objects

Manage Data Aging Groups

- Monitor and track the data aging jobs i.e., data distribution across partitions are optimal
- Avoid partition table overflows, be alerted in case of error situations
Roadmap for SAP Data Aging

Framework
- Parallelization
- Enhancement Concept

Aging Objects
- IDocs
- Application Logs
- Change Documents
- Workflow
- FI Document

Current Innovations

Framework
- Cloud Qualities for S/4HANA
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Aging Objects
- New Aging Objects

Planned innovations

Future direction

- Big Data Readiness
- Cloud Readiness
- Cut data volume
- Reduce system complexity and cost
New Aging Objects Planned

MM – Material Document
MM – Purchase Order

SD – Sales Order
SD – Billing Document

PP – Production Order

LE – Delivery

FI – Unified Journal Entry

2 Application – SAP S/4HANA only
Roadmap for SAP Data Aging

Framework
- Parallelization
- Enhancement Concept

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Aging Objects
- Basis
- Application

Planned innovations

Future direction

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Big Data Readiness
Cut data volume
Reduce system complexity and cost
Cloud Readiness
Key trends driving future innovation areas

**Big data trends continue:**
- Streamlined information management processes through improved automation and usability
- Enabling next-generation information lifecycle management using data aging concept based on SAP HANA
- Secure and flexible storage of data in the Support of Internet of Thing (IoT) - managing huge data volumes securely

**Cloud demand rises:**
- Secure long-term storage in the *cloud*
- Providing Data Aging as a service for a diverse application landscape

**Awareness of cost increases:**
- Establish information lifecycle management as a best practice for managing data volume in a live system environment
- Optimize cost–risk relationship for managing data
Data Archiving - Overview
Data Archiving – Purpose

- Data Archiving refers to the removal of application data that is no longer needed in everyday business processes - but that has to be kept for business or legal reasons - from the online database of the SAP system and storing of the data in an archive file.

- Data Archiving in SAP ensures that all of the information belonging to a business object is written to an archive file and deleted from the database.
Database Table, Business Object and Archiving Object

- Files in file system
- Archiving object
- Business object
- SAP database

Archiving object SD_VBAK

Order 6320
- Table VBAK 6320
- Table VBUK 6320
  
Order 6321
- Table VBAK 6321
- Table VBUK 6321
  
Order 6320
- Table VBPA 6320
- Table VBUK 6320
  
Order 6321
- Table VBPA 6321
- Table VBUK 6321
  
Table VBAK 6320
- Table VBUK 6320
  
Table VBAK 6321
- Table VBUK 6321
  
Table VBPA 6320
- Table VBUK 6320
  
Table VBPA 6321
- Table VBUK 6321
Archiving Process

Data Archiving consists of *two phases*:

1. **Creation of archive file:**
   - The write program writes the data to be archived from the SAP database to archive files.

2. **Deletion of data:**
   - The deletion program first reads the data in the archive file and then deletes the corresponding data records from the database.

A *possible third phase* is:

3. **Moving the archive files to a separate storage medium:**
   - Usually, it is not enough just to write the data to be archived to archives files and to delete it from the database.
   - *The archive files must be securely stored and managed,* so that they can be accessed at a later date if necessary.
Archiving Process - Detail

1. Archive Run
   (Data from DB is written to Archive Files)

2. Delete Run(s)
   (Archive Files are read and corresponding data is deleted from DB)
Information Lifecycle Management - Overview
SAP ILM - Retention Management
Managing the Amount of Time and the Location Where Data Is Securely Kept

Manage and enforce retention policies
- Set policies for automatic data/content retention/destruction based on underlying SAP object
- Retain data and documents according to set policy
- Responsibly destroy data and documents when expiration date has been reached

Maintain separate archives per retention period
- Create multiple archives for each expiration date

Perform e-Discovery
- Search for information in response to legal requests

Apply hold on information
- Automatically prevent deletion or destruction
- Apply holds to archives and current database
SAP ILM - System Decommissioning

Motivation

Consequence of normal business operations
- Acquisition of new systems during M&A activity
- System upgrades over time

However, decommissioning can be difficult
- Need access to data residing on legacy systems for financial reporting
- Legal regulations may require retention of data
System Decommissioning
An Efficient Way to Manage Legacy Systems

- Consolidate multiple large legacy systems into small single instance
- Retain on demand access to data from legacy systems
- Respond to tax audits and create financial reports

TCO Reduction without losing auditing and reporting capability

Retention Warehouse
SAP BO Solutions
ILM-Certified Storage
Enterprise Library

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Information Lifecycle Management - Innovations
ILM Store
Classic Storage in SAP ERP and SAP BW

- Creates two data store silos
- Requires investment in two discrete storage infrastructures
- Increased administration costs
- Higher TCO
Holistic Archive Store Based on SAP IQ

Classic storage in ERP and BW

Storage of operational and analytical data in Sybase IQ

SAP ERP
- Archiving / ILM Framework
  - DB
  - 3rd Party Store

SAP BW
- 3rd Party NLS
  - DB
  - IQ

SAP ERP
- ILM Framework
  - DB
  - AS Indices
  - 3rd Party Store (optional)
  - Arch Data

SAP BW
- DB
  - ADK files

Note: Current state of planning. Subject to change.
*archive information structures
**NW 7.30 SP9 / NW 7.31 SP7 (both GA)
The ILM Store

Availability

Archive Indices  ✔
- NetWeaver 7.40 SPS11

Archive Files  ✔
- NetWeaver 7.40 SPS11

HANA DB Support  ✔
- NetWeaver 7.40 SPS11

Document Support  ✔
- NetWeaver 7.40 SPS12

*archive information structures
ILM Store – Planned Features

Hadoop Support

- Storage w/ full retention management on Hadoop

Compliance Features

- Hash values
- Time stamps

Solution Manager Integration

- Monitoring features

*archive information structures
Unified System Decommissioning
System Decommissioning - Process Flow

1. Maintain Retention Rules
2. Connect the legacy system
3. Run extraction process
4. Transfer & convert data
5. Store archive files
6. Reporting

- SAP LT Replication Server
- SAP ILM Retention Warehouse
Unified System Decommissioning

SAP LT Replication Server

- Configuration
- Generation
- Runtime

SAP LT Database

SAP ILM Retention Warehouse

WORM-like Storage

SAP LT Database

Apply ILM rules

CDE

Metadata

SAP

Non-SAP
System Decommissioning
Enhanced Tools and Processes for Faster Projects

Main Features

Legacy Extraction Workbench

Supports SAP and non-SAP systems

Automated creation of write programs

Simplified user interface
Accelerated Reporting
Accelerated Reporting
Overview

SAP ILM Retention Warehouse

WORM-like Storage

Audit Package

Optimized RW

AnyDB

Infoset

SAP Query SQVI

BOE Server

 Universe

WEBI Tool

BOBJ Environment
Accelerated Reporting
Cookbook

Process of data extraction and reporting

Landscape overview

Creation of queries in RW

Use of joins

Example scenarios

Availability:

- NetWeaver 7.31 (Note 1942476)
- NetWeaver 7.40 (Note 1974000)

Link on SCN: http://scn.sap.com/docs/DOC-53409
Accelerated Reporting for Business Users

Main Features

- Configuration of reporting requirements
- Generated Reports based on configuration
- Option to load and unload data in the reports
- Navigation and authorization checks

SAP Lab preview
Questions?
Thank You!

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