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## SAP S/4HANA Database – Segmentation Approach for Modern Business Applications

\*Pragati \*\*Saroj Kumar Gupta

\*(Student of Master of Technology in Computer Science & Engineering, Rao Pahlad Singh College of Engineering & Technology, Balana(Mahendargarh)

\*\* (Assistant Professor in Department of Computer Science & Engineering, Rao Pahlad Singh College of Engineering & Technology, Balana (Mahendargarh)

### Abstract:

In Today's World it become difficult to handle a large business due to huge amount of data. SAP Has become one of the largest Data warehousing tools to manage data for every kind of businesses. It will take couple of time in fetching data, when there become huge amount of data in database, through SAP also because SAP uses third party Database like Oracle / MYSQL Etc (computation of complicated reports become difficult). *In this Research Paper, proposed a Segmentation approach for fast access of the (computation of complicated reports) count of records using HANA Database. This makes the better performance of system for accessing data.*

The basic Idea of the SAP HANA information is that the integration of the transactional and analytical work among constant direction system. The main feature of SAP-HANA is In-Memory database server is used which helps to store and retrieve data much faster. Beside this, it can perform advanced analytics (predictive analytics, spatial data processing, text analytics, text search, streaming analytics, graph data processing etc) and includes ETL capabilities as well as an application server.

**Keywords** — Analytical appliance, SAP HANA, Reporting, HANA Deployment, Segmentation.

### I. INTRODUCTION

Today's Businesses users always want to react very fast to the ever-changing clients and to the marketing environment. They want Dynamic accessing to the data in real time world.

SAP S/4HANA is an SAP's ERP Platform for large businesses. It is an ERP Software Package with the goal to cover all Day-To-Day Processes of an Enterprise (For Instance, Order-To-Cash, Procure-To-Pay, Plan-To-Product, and Request-To-Service) with Core Capabilities.

SAP S/4HANA is called as the SAP's Biggest Update to its ERP strategy and platform in over two decades. SAP ECC based Businesses are using Third Party Database Platforms Like – ORACLE, Microsoft and IBM. But SAP HANA Based Businesses have its own HANA database which is implemented through In-Memory Strategy.

SAP HANA replaces the traditional relational databases through SAP applications. The SAP Net Weaver Business Warehouse (SAP Net Weaver BW) component, which is a proven enterprise data warehouse solution, is the very first application where SAP customers can migrate from their existing database to an SAP HANA database.[1]

### II. WHAT IS SAP?

SAP has become one of the largest data warehousing and business Processes software in today's marketplace. SAP provides the best ERP (enterprise resource and planning) solutions and services. It provides the modern QuickStart approach to implement small, medium or large businesses. It helps to make business easy, cost-effective and fast accessible. If any Business is looking to grow and transform in today's competitive market, SAP provides the best solution for it. ERP Management Software provides most powerful tool that helps you

do this more efficiently. The Software which is available, that can vary widely in usability and its functionality.

Few Basic Functions are **Finance and Accounting, Human Resources Management and Customer Relationships Management.**[2]

In CRM – Marketing includes Campaign management, Lead Management, Case Management Etc.

ERP Today can include Business Intelligence (BI), Sales Force Automation (SFA), E-commerce and Automated Marketing. Any organization, Large or Small and regardless of its industry can maintain data processing through ERP.[3]

### III. WHAT IS SAP HANA?

SAP launched S/4HANA in February 2015 with much fanfare, so much so that SAP CEO Bill McDermott declared S/4HANA the “biggest launch in 23 years, if not in the entire history of the company.”<sup>1</sup> Surprisingly, SAP revealed few details about what S/4HANA could actually do.

S/4 Hana is a SAP’s ERP platform. It has its own In-Memory Hana Database. Before S/4 Hana, the previous version of SAP is not dependent on Database and uses third party database systems like DB2, Oracle Database system, MS SQL Database etc. [4]

Initially, SAP S/4HANA was released as a Financial Solution for Next-Generation. The Advantage of SAP HANA Library is that it is build into the database , it full fill the need to migrate huge amount of data from outside system or use third party big data systems . The SAP HANA Predictive Analytics Library (PAL) has capability to analyse regression , time series and social networks . An best example is the material forecast of production which is based on the demand.[5]

### IV. SAP HANA ARCHITECTURE

SAP HANA is an In-memory database platform which can be established or deployed on Premise or on Demand. Basically, it is an innovative in-memory database management system. SAP HANA make full use of capabilities of current Hardware to

### V. SAP S/4HANA DEPLOYMENT OPTIONS

There are multiple options through which SAP S/4HANA can be deployed.

#### On-Premise

An SAP S/4HANA on-premises deployment consists of Traditional in-house IT Infrastructure models. It describes an instance of SAP S/4HANA which is physically hosted on customer Resources.

enhance application performance, reduce cost of ownership and also enables some new scenarios and applications that were not previously possible. [6]

AS a Developer, the key aspect is to minimize the data movements. In SAP HANA used HANA database (in-memory database), can perform direct operation on data in memory next to the CPUs, application will perform much better through it . This is the Key to development on the SAP HANA data Processing platform.[7]

### Traditional Database Architecture

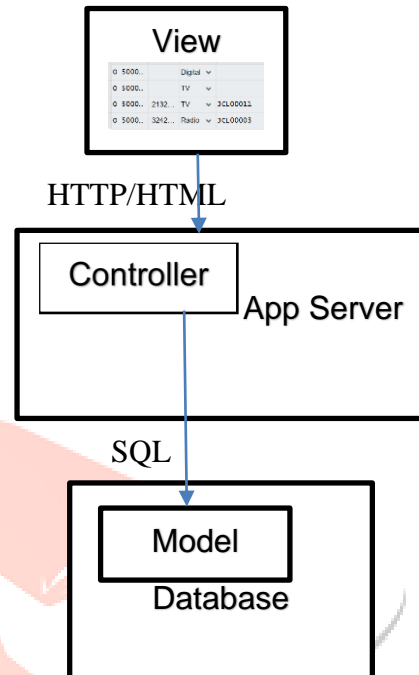


Fig. 1.1 Traditional Database Application Services (Architecture)

### SAP HANA Database Architecture

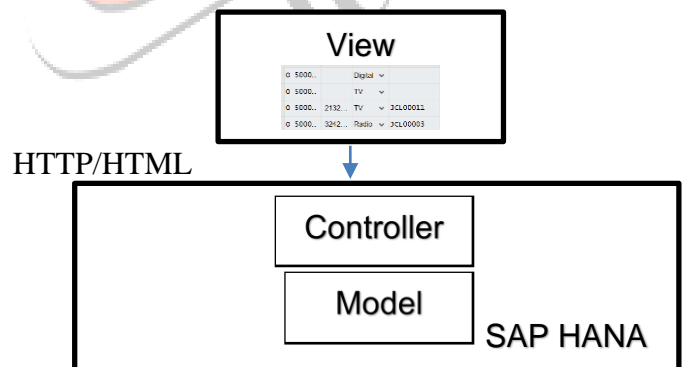


Fig. 1.2 SAP HANA Database Application Services (Architecture)

### Cloud

There can be multiple cloud options for SAP S/4HANA Deployment which includes the external cloud integration facility.

- **SAP S/4HANA Cloud** – This deployment provides SAP S/4HANA functionality for establishing a customer Instance of the solution on a partitioned cloud server alongside other customers. The Functional

scope is limited here due to standardized setup.

- **Private Cloud** – This kind of deployment provides SAP S/4HANA Functionality without the need for the customer to maintain the technical backend. It is best for companies running SAP ERP.[8]

## Hybrid

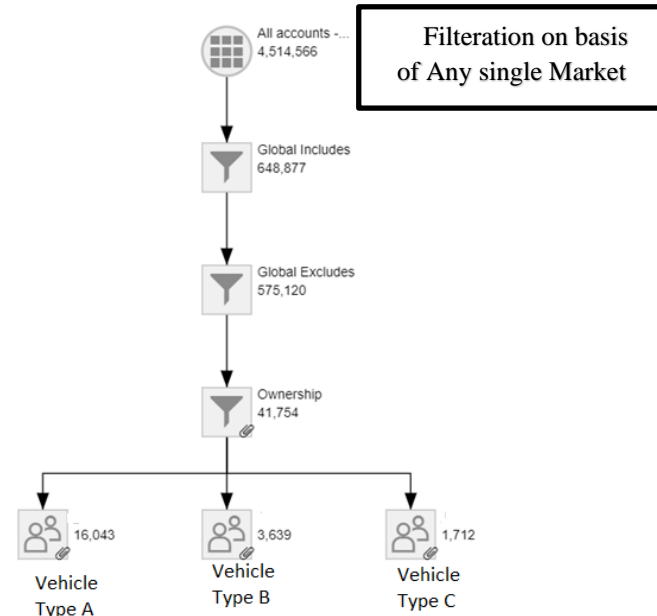
A Hybrid server model gives the opportunity to pick what works for them and combine it into an ad-hoc solution to full-fill their demand.

For example, an inhouse server can be suitable for companies that do not want to rely on the internet to hold their secure data. but to give users a high degree of uptime, cloud can be incorporated. So, in this case the companies priority may be to select hybrid database strategy for their maintenance.[9]

## VI. HANA SEGMENTATION CONCEPT

Segmentation means to divide marketplace into parts or segments which are definable, accessible, actionable and profitable. In other words, A company can find it impossible to target the entire market, due to time, cost and effort restrictions. There needs to have an accurate segment – a mass of people who can be identified and targeted with reasonable effort, cost and time. Segmentation is flexible based on the characteristics that can be created or customized depending on the unique business requirements. you can add multiple characteristics if possible. for any of the characteristics, the blank value can be made as an acceptable input.[10]

For Example, Segmentation process for An Vehicle Manufacturing Organization, where finding the count of records which have been purchased for a particular market and then finding the count of recording for different vehicle type owners.



In Fig. 1.4, Graphical representation have been defined for HANA Segmentation. Take a small instance of any Enterprise provides global services for vehicle manufacturing. For each of the new customer an account will be created. Finally in above Fig. 1.4, Records counted which have Vehicle type ‘A’, ‘B’ and ‘C’ through segmentation process.

For a single market, there is huge number of records existing in system, if want to find the count of few accounts on basis of few conditions, it can be done through filtering in segmentation process as mentioned in fig. 1.4. Here segment “Global Includes” have been filtered on basis of few conditions that have been implemented through AND/OR Strategy. Similarly for each segment filtration have been applied.

Hence, Segmentation Process helps for fast accessing of count of records for a particular category type. Segmentation process used HANA Database which is In-memory set up.

## VII. HOW TO IMPLEMENT SEGMENTATION?

All Records present in database should be stored in HANA Database. For A Single market if the no of records are in huge amount, and we have to find the count of records on basis of few conditions that can be applied here as shown in fig. 1.5 & Fig. 1.6 .

Description:	AWD Jaguar XJ
Segmentation Object:	Business Partners or Relationships
Usage:	Attribute List Usage for UK
Segmentation Basis:	All accounts - United Kingdom
Long Text:	

All Accounts have been fetched for Only United Kingdom market from a huge amount of records .

Attribute List: UK - Vehicle Partner Relationships		Add Filter	
Partner Function	Owner (Equal To '00000059')	+	-
Ownership Status	NEW (Equal To 'NEW')	+	-
Manufacturer	Jaguar (Equal To 'SAJ')	+	-
OR			
Ownership Status	APO (Equal To 'CPO')	+	-
AND			
Ownership Status	USED (Equal To 'USED')	+	-
Ownership Status	Private Used (Equal To 'PS')	+	-
Valid To	31.12.9999 (Equal To '99991231')	+	-

Fig . 1.6 Implementation while Filtering Data

Similarly, Segment “Global Includes” can be filtered like as shown in fig.1.6.

Conditions,

(‘00000059’ OR  
 ‘NEW’ OR  
 ‘SAJ’ OR  
 (‘CPO’ AND ‘USED’ AND ‘PS’) OR  
 ‘31.12.9999’).

## VIII. FUTURE SCOPE

**1. Flexibility** – once you have implemented HANA Database, there is no possibility to migrate back to Standard RDBMS.

**2. HANA Provides a Big memory for CACHE** in the database and it always responsible for very fast Processing. But due to it the Budget also increases.

**3. The main prospect of HANA** is to give the business data to the users as fast as possible . Working on HANA is much more efficient than SAP ERP .[12]

## IX. CONCLUSIONS

Through this Paper, we can conclude that SAP S/4 HANA is the future of database because it takes much lesser time for processing of data by any other database . It gives a complete report of data in very short period of time which is helpful for the enterprise to make strategy for future enhancement. Recently most of the enterprises have managed there database into SAP ERP and now enhancing this into HANA Database. It became easy for those organisations to use either On-Premises HANA Database or Private Cloud HANA Database.[15]

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