Tableau and S/4HANA Analytics

A Data Strategy for Enterprise Analytics

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Overview

At Tableau, we value our customers' access to their data, wherever it resides. Many of our customers have invested in SAP, and we continue to work closely with SAP to ensure our connectivity and integration meets the needs of our shared customers. In 2020, the Tableau and SAP engineering teams worked together to officially certify Tableau's products for integration with SAP HANA. With this comes the responsibility of providing best practices and updates around how to work efficiently and effectively with Tableau and SAP products. The purpose of this whitepaper is to educate you about Tableau's integration with SAP's new S/4HANA product. There are considerations we want our customers to be aware of to help optimize their experience using Tableau and S/4HANA together for their analytics platform, and it's important to understand what S/4HANA is and is not before planning on where Tableau fits into the picture.

SAP announced 2027 as the end of life for its legacy ERP applications, mandating customers migrate to S/4HANA, which is an integrated ERP system that runs on SAP HANA. SAP S/4HANA is the successor of SAP R/3 and SAP ERP and is described by SAP as an intelligent, integrated ERP system that runs on their in-memory database, SAP HANA. An important feature of S/4HANA is it's ability to support transactions and analytics in the same database. This new capability allowed SAP to re-imagine applications where SAP Fiori (the new user interface for SAP's software and applications) integrates analytics as part of the transactional process. For example, a Fiori app for purchasing now displays contextualized real-time information to inform supplier decisions. These use cases are continually being enhanced with predictive and machine learning capabilities, providing intelligent decision support.

However, the capability of supporting both analytics and transactions comes with a cost. In numerous articles, blogs, and SAP documentation, SAP has stated that S/4HANA is not intended for data warehousing use cases. S/4HANA is sized, tuned, and maintained for optimal performance as a **transactional system**, it is **not** a data warehouse. Therefore, to ensure analytics does not negatively affect the performance, and to safeguard the operation of your S/4HANA system, SAP recommends that embedded analytics should only be leveraged to support fact-driven process handling and embedded decision support **inside** of transactions. In other words, doing analytical processing directly in S/4HANA should only be done in support of transactional workflows.

Incorporating Tableau

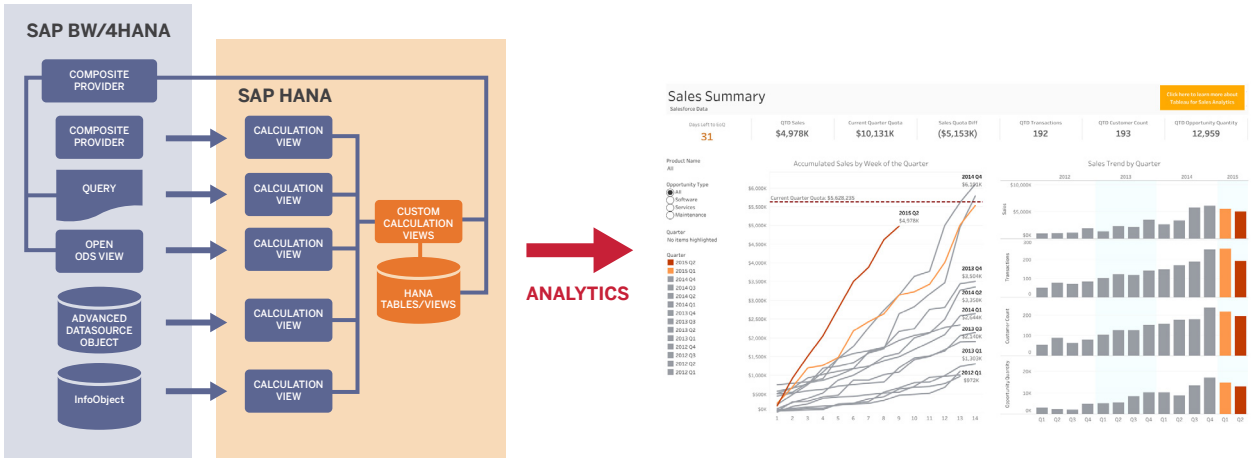
Customers can use Tableau to augment the pre-delivered analytical content provided by SAP for their S/4HANA deployment via the creation of targeted dashboards and reports. One approach would be to create HANA Calculation Views in the S/4HANA environment as the data source for these dashboards and reports. Another approach is to leverage BW/4HANA's

ability to use S/4HANA CDS Views as a data source for real-time reporting. These reports and dashboards should be small in number and only used in support of a transaction.

Consequently, to enable analytics and data discovery and ensure the smooth-running operation of S/4HANA, data must be replicated from S/4HANA into a separate reporting environment. There are several approaches for this process, depending upon factors such as cost, database size, corporate standards, and more. Some of the more common approaches are described below. These approaches are not mutually exclusive and are often combined by customers when implementing their data strategy.

BW/4HANA

One approach recommended by SAP is to integrate BW/4HANA with S/4HANA. BW/4HANA is positioned by SAP as an Enterprise Data Warehouse (EDW) with unique integration capabilities with S/4HANA. BW/4HANA also allows for what SAP describes as a Hybrid or Mixed Approach by allowing the generation of native HANA Calculation views from the BW/4HANA components.



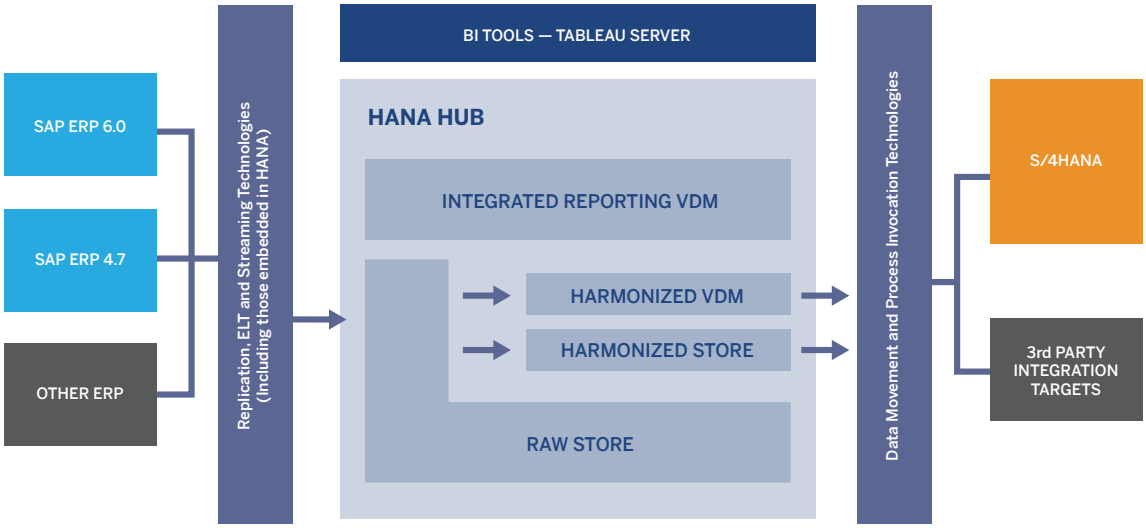
Calculation Views are SAP HANA's native modeling environment and can be consumed by Tableau's HANA connector to fulfill your analytics requirements. Additionally, customers can easily load external data directly into the native HANA environment that underpins BW/4HANA and model the combination of this external data with the BW data. Tableau can access the resulting Calculation Views that bring these disparate sources together.

HANA Sidecar/Agile Data Hub

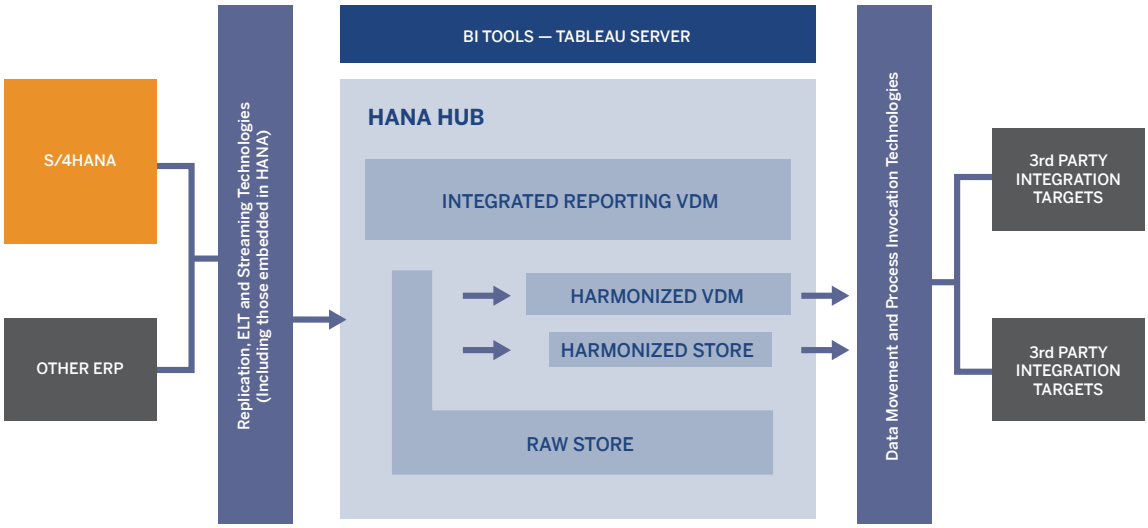
Another approach is to replicate data directly to SAP HANA rather than leveraging the capabilities of BW. To achieve this, SAP has positioned concepts such as a HANA Sidecar and an Agile Data Hub to support a customer's operational reporting requirements.

What exactly is a HANA Sidecar? It is an approach to data management where a customer will start with replicating data from a single SAP ERP system (SAP ECC, S/4HANA, etc.) into a separate HANA database to address targeted operational reporting requirements. As customers' requirements grow, there is a desire to incorporate multiple systems into the HANA database (both SAP and non-SAP applications). This type of approach can be referred to as an Agile Data Hub. These approaches recognize that regardless of which SAP ERP application you are using, it should not be used to support enterprise reporting use cases.

The following is an example of an Agile Data Hub where multiple legacy SAP and third-party ERP systems are copying/replicating data into HANA to support both enterprise and operational reporting requirements. HANA also becomes the source for customers in their migration to S/4HANA.



Since multiple systems are being brought together, customers need to identify areas where data duplication within the Agile Data Hub is necessary for harmonization to facilitate reporting/ migration requirements. The layer above the Harmonized Store is the Virtual Data Model (VDM) which will typically be implemented as HANA Calculation Views, and then finally the Reporting Calculation Views at the top. Organizations can leverage their visualization products (such as Tableau) to connect to this reporting environment to address both their operational and enterprise reporting needs.



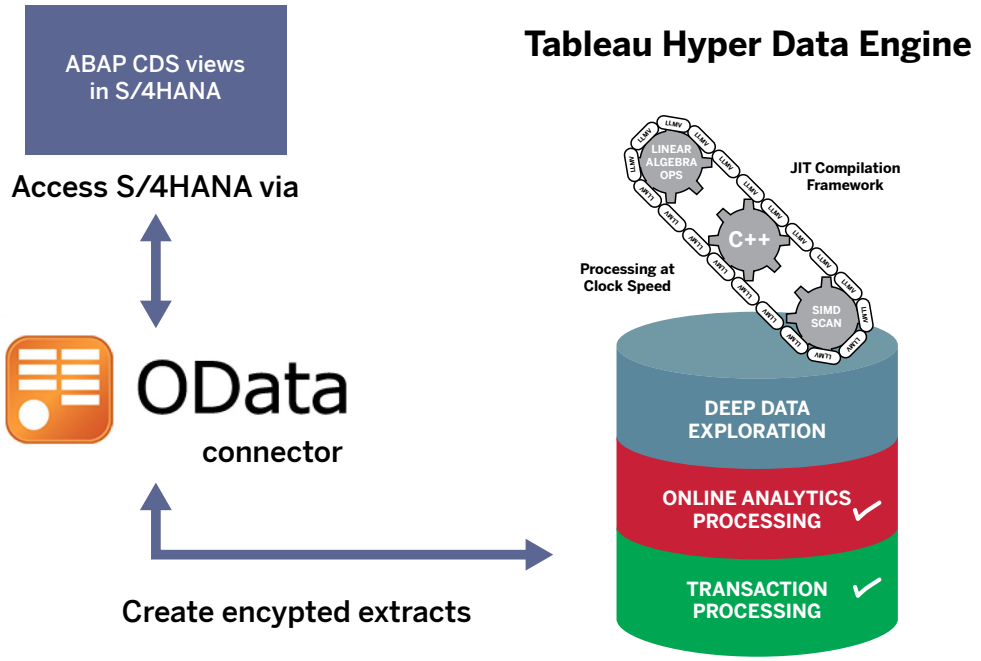
It is important to note that even after the migration is complete, and S/4HANA becomes live, it will not be used as the source for enterprise reporting requirements; but rather a source to the Agile Data Hub.

Non-SAP Databases

Given that S/4HANA shouldn't be the source for robust analytical activities, and that this data should be copied into another reporting environment, organizations are not limited to using an SAP product to house this data and thus the following options can also be explored.

Tableau Hyper

Hyper is Tableau's in-memory data engine technology, designed for fast data ingest and analytical query processing on large or complex data sets. Hyper uses proprietary dynamic code generation and cutting-edge parallelism techniques to achieve fast performance for extract creation and query execution. Tableau can connect to S/4HANA ABAP CDS Views via the OData connector to create a Hyper Extract that can be used for your analytical requirements.



These extracts can be scheduled to execute on a recurring basis and can be blended in with other data sources to provide a complete view of your business requirements.

3rd Party Data Warehouse

Another example would be to change out the database supporting the Agile Data Hub concept to a 3rd party database system (Snowflake, Redshift, etc.) Other data warehouse modeling approaches and techniques can be used to house the copied/replicated data and make it available to Tableau.

Other Considerations

S/4HANA Licensing – Another factor that customers should consider when determining how much reporting should be performed directly against S/4HANA is licensing. If a user simply needs to run and/or view reports from S/4HANA, a S/4HANA user license is still required for all these report viewers **if the reports are launched from within the S/4HANA Application**. This can add on a significant amount to your overall S/4HANA License.

S/4HANA to BW/4HANA Extraction via CDS Views – SAP has invested a significant amount of work to enable the CDS Views to become a source to BW/4HANA and support both full and delta loads as well as become a source for their business content. The fact that SAP continues to develop and enhance BW with these new capabilities provides further evidence that S/4HANA is not recommended, or designed, to be used as a data warehouse.

Summary

SAP has upgraded the user experience with the introduction of S/4HANA. It showcases an intuitive user experience that enables fact-driven process handling by providing:

- Combined screens with transactional and analytical information
- Decision Support where it is needed…inside the transactional screen

However, SAP S/4HANA is not an EDW and was not designed for the workload and sizing required for this business need. Tableau can effectively and efficiently provide you with insight to transform your business when you move your transactional data into an environment that has been architected for this level of processing. This method will also safeguard your investment and ensure the smooth-running operation of your transactional system.

About Tableau

Tableau is a complete, integrated, and enterprise-ready visual analytics platform that helps people and organizations become more data driven. Whether on-premises or in the cloud, on Windows or Linux, Tableau leverages your existing technology investments and scales with you as your data environment shifts and grows. Unleash the power of your most valuable assets: your data and your people.

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