

## Demystifying SAP® HANA: Understanding Options, Determining the Best Path

Although SAP HANA products have been around for some time, they continue to evolve, and we continue to find that many clients remain unsure of how to best unlock the potential of HANA solutions within their organizations. Most know that HANA is SAP's high-powered, in-memory column and row store database. Yet many overlook the fact that SAP HANA is much more than a really quick database. It offers a multitude of functionality, including a database which also serves as the db foundation for many of SAP's Netweaver based solutions, a development platform and a data warehouse solution. In addition, SAP HANA can function as the foundation for the BI platform, providing users the ability to model business scenarios in real-time, adding tremendous value. Yet, not all versions of SAP HANA are equal.

At the recent 2018 BI/HANA conference, Protiviti Managing Director (and co-author of this post) Don Loden presented a breakout session on understanding and demystifying the SAP HANA options available. During that session, Loden discussed real-world use cases and used product demonstrations to help attendees understand when and where HANA options make sense and the impacts these solutions have on complex global organizations.

During the conference session, Loden outlined the most common options for SAP HANA. First is SAP Suite on HANA or SAP S/4HANA. With both, HANA becomes the data platform that runs business suite applications. But in a true S/4HANA world users see another lift in performance because S/4 has been purposely designed for HANA.

However, S/4HANA isn't the right answer for everyone. Migration to S4/HANA is a complex process involving many changes to an existing SAP environment, workflows and even business logic. Custom content will require a large amount of effort to rework into the new S4/HANA system. Occasionally, such a massive shift is more than an organization may be willing to make at one time. Also, S/4HANA, including hardware and licensing, is easily the most costly version of SAP HANA and not every organization is willing to go all-in out of the gate. CIOs may be asking, "What if I already have invested a significant amount of money and effort in another solution -- Is it just out with the old and in with the new?" Fortunately, no.

With SAP BW on HANA, organizations can leverage the power of SAP HANA under the hood of their existing SAP BW infrastructure. SAP BW continues to work as it always has, supporting innovation without disruption, and HANA replaces the older, slower database platform. There are some enhancements in SAP BW such as HANA optimized data cubes, which are more capable of taking advantage of SAP HANA's superior power, making BW on HANA a great option for an organization that already has BW and wants to move gradually to a more elegant and more performant solution.

In addition to BW on HANA, SAP offers BW/4HANA, developed specifically for HANA in order to maximize power and efficiency. BW/4HANA has a reduced number of object types. In BW/4HANA, data cube and DSO functionality is combined within the single aDSO (Advanced Data Store Object) and is used as the preferred object for data persistency. The classic BW multiprovider is replaced with the new composite provider, which is used to join or union existing virtual or persistent data objects. Both of these objects are fine-tuned to work with SAP HANA. Another large shift in workflow is the use of HANA Studio for development of BW/4HANA objects. Before, development was done in the SAP GUI, but now,

with the BW add-in, all back end BW as well as HANA development can be housed within a single agile application.

What makes SAP HANA the preferred choice for so many companies? It is fast, largely due to the use of columnar store tables and in-memory data storage. What does that mean? Historically, databases have used row store tables which are great for writing to, but not so great for reading from. They must be constantly indexed to avoid the dreaded “table scan,” which occurs when the query has to search an entire table, row by row, for the requested data. When dealing with massive tables that can potentially contain millions of rows, this type of operation can drastically slow down query time. With columnar store tables, the values from each column from a table are treated as individual entries and distinctly represented for maximum performance. Although columnar stores are tricky to write against, SAP HANA delta storage overcomes this limitation while still allowing access to all records which have yet to be delta merged. In other words, access to all the data in real time. This is a nice departure from batch replication, which could include up to a day or more lag. In addition to the boost in speed, HANA offers a breadth of benefits:

- Development complexity is minimized, resulting in a shorter development cycle
- Views created in HANA studio are leveraged, so fewer tables and materialized views are needed, preserving valuable storage
- Analytics and ERP in single stop means absolute real time querying of data.
- Multiple deployment options including on premise, cloud, and hybrid
- Business processes are supercharged
- Predictive engine including over 4000 native algorithms for forecasting and facing the future with confidence
- Direct connectivity by many front-end BI tools to HANA models eliminate the need for additional semantic metadata layers

When considering implementing SAP HANA, the first question should be, “are we already using SAP Business Suite Applications like SAP ECC or SAP CRM?” If the answer is yes, then we believe SAP HANA will be a good fit. The second question should be, “are we currently using SAP BW?” If the answer is yes, SAP BW/4HANA or BW on HANA may be the right choice since it would involve less disruption to an organization’s established workflow. Regardless, SAP customers should consider the move to an SAP HANA-based solution as soon as possible as SAP is converting all their enhancements into solutions that only run SAP HANA. It becomes an issue of “adapt, or get left behind.” Finally, “is my current talent pool equipped to handle the day-to-day operations or will I need to consider training or consulting costs?” All of these factors should be considered when exploring an SAP HANA implementation. An eye on the end goal from the start can go a long way in focusing deployment configurations and custom fitting HANA to best serve the needs of any organization.

Implementation Type	Benefits	Drawbacks
BW on HANA	<ul style="list-style-type: none"> <li>• Least costly to implement</li> <li>• Lowest level of complexity</li> <li>• Least amount of change to existing workflow</li> <li>• Smallest learning curve</li> </ul>	<ul style="list-style-type: none"> <li>• Does have some HANA optimization of BW objects, but not as efficiently as BW/4HANA</li> </ul>

<p>BW/4HANA</p>	<ul style="list-style-type: none"> <li>• Reduces total number of BW objects from around 10 to 4</li> <li>• New aDSOs and Composite providers are fine tuned for SAP HANA and fully capable of push down processing</li> <li>• All BW Development done in modern Eclipse based development tools as opposed to the SAP GUI</li> </ul>	<ul style="list-style-type: none"> <li>• Requires refactoring of existing BW structures into new object types</li> <li>• Use of modern tools for development is a departure from the familiarity of SAP GUI</li> </ul>
<p>S/4HANA</p>	<ul style="list-style-type: none"> <li>• All data resides in memory for greatest availability</li> <li>• Multiple deployment options</li> <li>• Modern SAP Fiori UX</li> </ul>	<ul style="list-style-type: none"> <li>• Highly complex migration of existing system into HANA</li> <li>• Potential side by side approach to migration increases maintenance</li> </ul>

The final take away is that SAP HANA is more than just a database. It is a fully loaded analytical platform with hardware, software, database and a development platform. SAP HANA can yield dramatic improvements in analytic capabilities across the organization. When considering how to implement SAP HANA, bear in mind both the existing landscape and available talent pool in addition to the cost of hardware and licensing.

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