EPI-USE LABS
value through innovation

TAKE CONTROL OF YOUR OWN BW TEST DATA

A WHITE PAPER BY KAPIL DESAI, EPI-USE LABS

CONTENTS

BUSINESS WAREHOUSE (BW) IS DIFFERENT

Everyone understands that BW is different. Even the SAP ERP specialists who don't understand BW certainly understand it's different. The very nature of what BW is used for differs from the OLTP systems so much that the testing requirements and, furthermore, test data requirements have to be different. When a change is made on an ERP system, you must test every process that can be affected by it and see that the outcomes are 100% accurate. To be sure of that, you have to be certain the data underneath is the same, otherwise the outcome being the same could be a false positive.

In a BW system, you aren't necessarily looking to see that the outcome is 100% the same. There may be no 'control' sample for comparison. The queries have never covered that dimension before. What you are looking to validate is that each part of the process chain can function to receive, manipulate and then present the data in the expected format. Data of the right volume and intricacy is important but you will rarely have a test system displaying exactly the same output as production because the picture is changing constantly. For some testing situations you may need to be able to trace the data back and check it in a source system, but in many cases you do not. Often it may be sufficient to compare reporting data in the test system to the Persistent Storage Area (PSA) on the same testing system. Although the data doesn't need to tie back to the source systems necessarily to provide adequate testing, it does require source systems to get real data into the test BW system.

TEST DATA MANAGEMENT (TDM) CHALLENGES IN BW

With related OLTP systems, it is an absolute requirement for the systems to be in sync in order to function. For example, a CRM test system and an ERP test system must be refreshed together and connected to each other for the business processes to function. With BW, that is not necessarily the case. There often isn't a one-to-one relationship between ERP systems in the transport path and BW. Some organisations may not even have a test BW system, only Development and Production. Or the only BW test system is only linked to a pre-production ERP system so projects have to move a long way through the ERP landscape before the effect on BW can be investigated. This puts immense pressure on the BW team to then carry out their testing quickly. Some of the time, the BW team can work with what they have – systems not receiving deltas and old data that is representative of the business 18 months ago. However, when that changes, and there is a change that requires proper testing – and, therefore, proper testing data – the process for getting a BW test system updated is often long and complex, requiring basis activity, hardware, downtime and then a fair amount of reconnecting work from the BW team themselves. How many BW projects have been on time and on budget until the testing is held up because of the lack of accurate test data? In some projects, this happens at several stages as the project moves through the outdated test environments.

> *"In over a decade of working with SAP, time and again I've seen limitations of the test data inhibit or compromise a project to the point where it is either delayed, over budget or – in extreme cases – cancelled. Having the right data, in the right place, at the right time is particularly challenging for BW but brings rich rewards."*
>
> **Paul Hammersley,**
> SVP ALM Product Portfolio at EPI-USE Labs

DATA ON DEMAND, WHEN YOU NEED IT

Data Sync Manager: Object Sync for BW is designed as a means of enhancing the SAP BW test cycle by allowing users to test developments and upgrades with real data copied from their production environments to non-production environments used for testing.

In essence, this breaks the dependency on traditional source systems for the test BW system and allows data to be loaded via a proprietary file mechanism which is up to 10 times faster than a normal file load. Each sync is logged in a monitoring desk which can be used to monitor syncs as they are exported from the source system and imported into the target system. Historical syncs can be resubmitted as needed and trace functionality allows the processing of each sync to be viewed in detail for troubleshooting or to investigate unexpected results. Of course, in some cases the metadata may not exist, or could be structurally different to Production.

Object Sync for BW has the capability to create or update the metadata before beginning a load, and that metadata can also be copied by itself without any loading activities. When Object Sync loads data into a BW Infoprovider, it uses all the standard BW functionality. Object Sync creates its own datasource and transfer rules that load the data from the sync files and into the Infoprovider. This data load pathway is parallel to and independent of the data load pathways that connect the Infoprovider to the source systems, but it can be monitored in exactly the same way. This allows data loads from object syncs and source systems to be easily differentiated while allowing maintenance on data from both sources to work in exactly the same way.

SO HOW CAN DSM HELP US?

Some of these test scenarios result from the day-to-day maintenance of an SAP system, some may be valid during major projects, and some are unique to the current movement in SAP BW toward SAP BW 7.5 on HANA and SAP BW/4HANA.

1. **Query testing:** When testing newly-developed queries, it is imperative that accuracy is achieved before queries are used to make business decisions. When choosing a test data management solution, check with the provider that accuracy is achieved, even when testing with a subset of the original data.
2. **ETL testing:** Often our clients encounter an issue with the standard SAP BW load process. Object Sync is capable of passing copied data through the SAP standard load procedures (for example, loading the PSA level so that the data can then be processed inside the test BW system). This allows you to test transformations, custom formulas and start-and-end routines against real data from a productive environment.
3. **Compliance with change management:** At times, we have found that a client wants to maintain a component such as a process chain, web template or query using their standard change management procedures but these components exist only in a productive environment. Object Sync allows you to transfer such components created in a productive environment to development and test environments so that they can be maintained through proper change management procedures.
4. **Upgrade testing:** Many InfoProvider definitions are changing in newer SAP BW versions or are being replaced with HANA optimised components, such as HANA Optimised InfoCubes or Advanced DSOs. It is invaluable to test transformed components, such as a HANA Optimised InfoCubes, against the original data model for the same set of data. Check that your test data management solution is compatible with such transformations. Using the PSA object organisations can load real data into the test systems, which in production had been processed with the existing architecture, but process with new ADSOs in the test systems.

5. **Prototyping:** Development projects may require parallel landscapes or sandboxes for testing the viability of upgrades, such as a move to SAP HANA. It is valuable to be able to create entire scenarios of SAP InfoProvider definitions, their data and connective processes in an integrated fashion without having to copy full systems. The space savings and flexibility to create lean systems alone constitute great value in a test data management solution.

The good news, of course, is that Object Sync for BW and the Data Sync Manager suite enables all of the above. If you face any of these challenges, please contact us for a discussion of how our product suite can help you in each of these challenges and more.

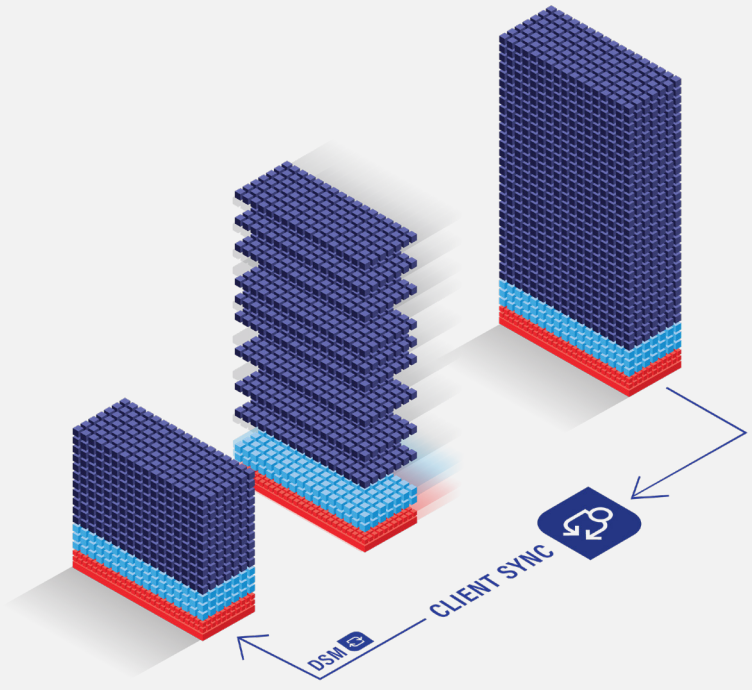
WHAT ABOUT WHEN OUR SOURCE SYSTEMS ARE REFRESHED?

Source systems for a test BW system will be refreshed from production periodically. How that happens – whether it's via backup/restore, snapshot, or data subsetting technology, like DSM Client Sync – it may be a requirement to refresh BW at the same time. With Object Sync in use, it may not be mandatory. In fact, DSM has a utility to align deltas when source systems have been refreshed, but for some projects – such as enhancement packs – it may well make sense to also refresh BW.

System Builder and Client Sync allow technical teams to refresh test systems and clients respectively across ERP, CRM, SRM, SCM and BW. When the repository is significantly different, as is often the case with BW, System Builder can be used with the SAP Software Provisioning Manager to install a system shell with the exact repository of the source. Client Sync is then used to populate that system.

WHAT'S THE BENEFIT OF THIS APPROACH?

Client Sync allows the InfoCubes and DSOs to be put in subsets based on time characteristics, For example, when the user selects six months' history, InfoCubes with a fiscal year characteristic will automatically include the whole fiscal year, whereas cubes with a calendar day characteristic will have just six months of data. This can dramatically reduce



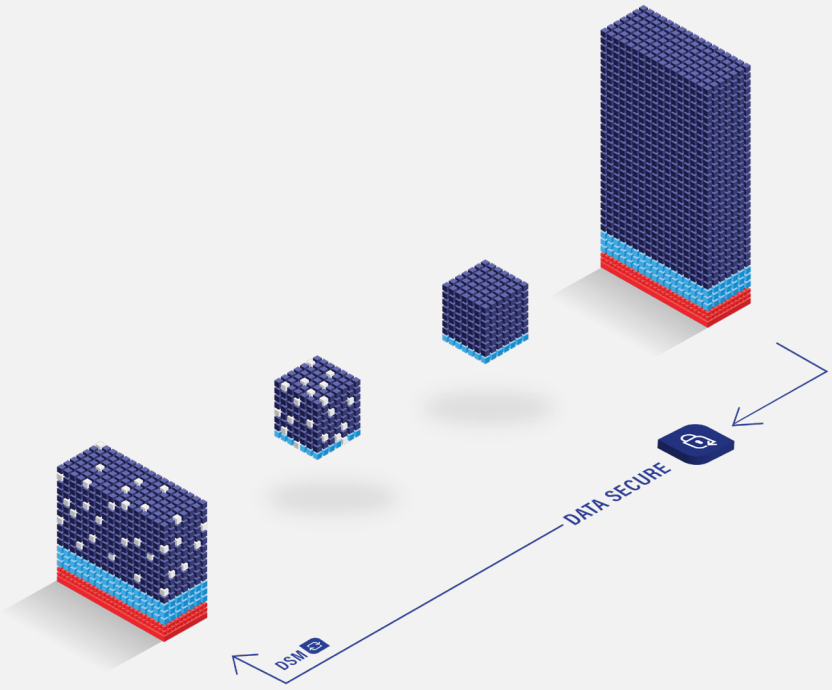
the volume of data used by the system and, therefore, the disk space required, resulting in lower costs. This can also allow greater flexibility in the landscape, for example a dedicated lean test system for a specific project, or temporarily part of the landscape during a period of significant change. System Builder and Client Sync can also be used to prepare a baseline system which can then be used with Object Sync for BW. The baseline system would essentially be empty of Infoproviders and data. Each Infoprovider or object could be imported into the baseline system on an ad-hoc basis ensuring that the system only contained data that was absolutely needed at any one point.

Many organisations have replaced parts of their own refresh process with System Builder and Client Sync, but some prefer to engage with EPI-USE Labs to have this capability delivered as a service, freeing up their own technical resources to focus on more strategic, high-value activities.

PROTECTING SENSITIVE DATA

In the current climate, privacy of personal and sensitive data is more important than ever before. New projects must include 'Data Protection and Privacy by design' if the personal data of European citizens, Brazilian citizens, Californian consumers (and many other jurisdictions around the world) is present.

The BW system may not be the first consideration when thinking about data privacy and their SAP landscapes, but some key data may be replicated from multiple sources into BW. 0CUSTOMER, for example, may include real names, addresses and telephone data for all customers being extracted from an ERP source. If extractors for employee data are leveraged, the potential for Personally Identifiable Information (PII) residing in test and development systems becomes even larger. Unless this data is masked/scrambled directly in BW or an initial load taken after the source systems have been masked, then there is a real data privacy risk which must be managed. The Data Sync Manager solution can provide intelligent masking out-of-the-box for common tables fields like /BI0/PCUSTOMER-NAME, but also has discovery technology to find all the generated tables/fields where the data can be duplicated. The rules created inside the Data Secure component can be leveraged in a standalone run on an existing test/development environment, or called as part of a client refresh with Client Sync, or as data on demand is copied back with Object Sync.



DATA SECURE

Commercially or Financially sensitive information may also be contained in time series data stored in BW. For example, sales figures for a company's best-selling product would be easy to identify in test data, even if the material numbers had been masked by anyone using only a basic background knowledge of the company. With this in mind, Data Secure provides simple rules that allow the randomisation of continuous variables, and also allows the creation of custom transformation rules. Similarly HR data in BW may contain information on wages that would be easily associated with a person even if the other identifying information such as the name were masked. To tackle this, Data Secure provides a number of solutions: randomisation, setting a constant value or randomising an annual salary amount within the pay scale for that role.

SUMMARY

Accurate test data for BW is hard to come by when you need it. DSM for BW gives you all the tools and techniques to ensure your projects are provisioned with the right testing data when you need it. EPI-USE Labs can seamlessly integrate with your organisation to provide the right blend of software and services for each unique client.

> *"DSM provides our clients with capabilities and flexibility around test data in BW they could never otherwise have. Day in, day out, I see use-cases that help our clients' teams work smarter."*
>
> **Paul Hammersley,**
> SVP ALM Product Portfolio at EPI-USE Labs