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**Title:** Nearline Storage in SAP BW 7.0  
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**Topic:** SAP BW  
**Published:** March 2008

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**Management summary**

The term “nearline storage” (NLS) is an abbreviation of “near online storage” describing a storage technology that lies between the two classic options of online storage within the application database (which means that data can be accessed directly and fast) and offline archiving (in which data can be used only once it has been reloaded to the online area). With NLS, data can be removed from the online database but, at the same time, remains available for the relevant applications. While transactional applications can frequently manage without it, historical data is precisely what analytical applications (such as OLAP reports) very often need. Due to the ad-hoc nature of data analyses, it is often difficult to predict how long and how often certain data will be required. That’s why the decision about releasing data for archiving is a usually difficult one in a data warehouse such as SAP BW. And that’s also why the data invariably remains in SAP BW’s online database for a relatively long period, contributing to enormous data growth (often into terabyte territory). With version 7.0 (NW 2004s), SAP BW provides a certified interface for NLS and thus enables – as part of the standard processes but with the help of additional software – something that was only offered as a project solution in earlier releases: Data can be removed from SAP BW’s online database and transferred to more favorable storage media. With the help of this interface, the load on SAP BW can be significantly reduced, and users will experience a tangibly positive impact on the performance of the majority of data analyses. If it transpires that users do need access to the historical data, the NLS interface makes this possible. The runtimes for NLS access are only marginally slower than for online access. A further advantage for users is that they usually receive the data faster, because the reduced data volume means that loading processes do not take as long. At the same time, the costs for operating SAP BW are reduced: In most cases, online databases require expensive hardware. But above all, maintaining an online database puts considerable pressure on system operations (backups, long loading times, and so on). Typically, NLS expenditure pays off as early as the second year.

## Facts and recommendations

The opportunities of NLS in BW lie in reducing the cost of system operation for storage hardware and for data management processes (for example, backups, ETL processes, system copies) and in improved system performance. Data can be provided in less time and using fewer personnel resources, query runtimes are reduced, and loading processes (loading and activating data) become much faster. Shifting data to NLS can be automated using data archiving processes and process chains.

However, NLS does have some limitations: Data in NLS cannot be updated. For time slices that have already been written to NLS, new data cannot be loaded to the same InfoProvider. If data needs to be updated, it must first be loaded back to the online database – and the NLS interface is explicitly designed to make this possible. NLS can only be used for loading processes based on BW 7.0 loading technology with data transfer processes and transformations, because the conventional loading technology with InfoPackages and update rules does not support data-range protection, i.e. checks on whether freshly loaded data would fall into time slices already saved nearline. A further limitation lies in the fact that access to NLS data is intended for OLAP queries only. For access within other BW applications (for example, InfoSets, Analysis Process Designer) or using external analysis tools such as SAS, which access the BW database directly, additional solutions must be developed and existing analyses migrated. Likewise, access to NLS data is not possible for ad-hoc queries using the BW OLAP server. On the other hand, alternative front ends that access BW data using OLE DB for OLAP have full access to NLS.

NLS investments comprise hardware, software, and services. The hardware required for NLS is less expensive, because it does not have to meet the same requirements for data security and availability. With most NLS providers, the license costs are usually linked to the volume of the data stored. As an estimate, you can assume that costs will be around €50,000 per terabyte of data. In addition, NLS providers charge a maintenance fee (of approximately 20% per year). The most expensive factor is that of personnel and services for the initial implementation project, during which suitable InfoProviders are identified, age limits for online data are determined, data loading processes are adapted for NLS, the NLS software is set up, and, if required, non-OLAP applications are also adapted. The amount of work necessary in such a project depends to a great extent on factors such as data volumes, the number of InfoProviders and loading processes to be switched to NLS, and the type of existing and future analyses. For a typical pilot project (for example, NLS of 1 TB online data from 10-20 DataStore objects), over 100 person days may well be required. If data models and processes are well standardized, the rollout of further datasets will involve considerably less time and effort. If we just look at savings at operational level – industry experts work on the assumption of annual costs of €200,000 per TB of live SAP data - an NLS project pays off in the second year, at the latest.

Currently, three NLS providers are certified for the SAP interface: [FileTek](#), [SAND Technology](#), and [PBS](#). FileTek StorHouse/BI is a complete storage management solution that also enables backups and, among other things, age-dependent migration to other archiving technology at a later point in time (cheap rather than fast). Customers who do not yet have any archiving solution may prefer FileTek. With SAND DNA, on the other hand, the NLS data is highly compressed and stored fully indexed on a hard disk. This enables a reduction in the data volume and very good performance for queries against NLS datasets (approximately factor 2 relative to pure online queries). However, SAND DNA contains no further data management functions. Backups and so on must be set up using additional processes (and if necessary, also additional software) but, in view of the high compression, are much less time-consuming than in the online database. PBS, finally, provides its add-on solution CBW in various versions: The standard version for 7.0 offers storage of PSA tables, master data tables, or any SAP tables, in addition to storing data from InfoCubes and DataStore objects. Furthermore, PBS also provides a version that is based on Sybase IQ, the functions of which are comparable with SAND DNA.

## More information

- › Two online articles by Bill Inmon ([part 1](#) and [part 2](#)) provide a good overview of NLS in data warehousing.
- › The three NLS providers named above have published extensive information on their Web sites.
- › SAP's online help contains all the important details on implementing NLS within SAP BW at: Business Intelligence → Data Warehousing → Data Warehouse Management → Information Lifecycle Management.

- › Project managers should definitely refer to the relevant SAP Notes for the component BW-WHM-DST-ARC. The SAP Notes contain important information about functional limitations and existing workarounds.