

LOWER COSTS DRAMATICALLY WITH PURE STORAGE® AND SAP HANA® DATA-TIERING SOLUTIONS

Pure Storage provides powerful solutions to work alongside SAP HANA data-tiering options, including SAP HANA Native Storage Extension (NSE) and dynamic tiering. Together, these solutions can empower your organization to perform at full potential.

A driving force of modern businesses, SAP® software is mission-critical for high-performing organizations. Enterprises identify the SAP HANA platform as a key technology that allows them to boost performance, to drive business innovation, and to simplify existing SAP environments. IT is charged with managing the explosion of new data and providing more value so teams can make faster, more-accurate business-critical decisions. Although SAP HANA earns its reputation for simplifying and speeding up business processes, it still requires efficient, effective data management in any environment. The challenge is to encourage innovation while managing systems, monitoring costs, maintaining reliability, and ensuring efficiency in every area of your organization.

Pure Storage helps streamline and optimize SAP HANA environments, efficiently managing data storage with SAP HANA dynamic tiering and NSE. SAP HANA NSE is a powerful, built-in option for accessing infrequently used data directly from storage, where you reap the benefit of fast all-flash and NVM Express® (NVMe™) storage with data services.

Rely on Pure Storage expertise to take full advantage of the performance and data-storage capabilities of SAP HANA NSE. With Pure Storage, you can easily lower both operating and capital expenditures of SAP HANA deployments. At the same time, you can maintain performance similar to SAP HANA when implementing SAP HANA NSE as a simpler, seamless, and more cost-effective data tiering solution.

How Percentage of Data In-Memory and Data in SAP HANA NSE Correlates to Cost and Performance

Percentage of data in-memory	100%	50%	20%
Percentage of data in NSE	0%	50%	80%
	PERFORMANCE		
Database performance degradation when hosted on Pure Storage FlashArray™	0%	8%	17%
	COST		
SAP HANA license (thousands)	\$2,848	\$1,242	\$497
SAP HANA maintenance (thousands)	\$546	\$273	\$109
Total cost (thousands)	\$3,030	\$1,515	\$606
Amount saved due to license deferral	\$0	\$1,515	\$2,424
Hardware upgrade deferral	0%	50%	80%

Table 1. Data in-memory and percentage of data in NSE vs. performance and cost.

SAP HANA Data Tiering — Better Performance with Pure

The high demands of today's business workloads require rapid data access, reliable storage, and efficient memory solutions. At the same time, you must continually reduce costs and better manage system maintenance.

SAP HANA NSE is a powerful data-tiering solution that provides a simple way to efficiently manage hot and warm data.

SAP HANA NSE is a general-purpose warm data store extension for additional database capacity. With it, you can manage less-frequently accessed read-only data without full memory loading, which results in a more efficient system with fewer latency concerns.

SAP HANA NSE AND DYNAMIC TIERING BOOST LOW-LATENCY PERFORMANCE

DRAM	PMEM	SAP HANA Native Storage Extension (NSE)	NLS IQ (BW Only)	Apache Spark™ Controller/Apache™ Hadoop® SAP® IQ
		SAP HANA Extension Node		
		SAP HANA Dynamic Tiering		
Hot Store		Warm Store	Cold Store	
Persistent memory (PMEM) extends the in-memory storage capacity for hot data in SAP HANA.		NSE is an intelligent built-in disk extension for the SAP HANA in-memory database. It is the primary warm store option for SAP HANA on-premises and SAP HANA services. SAP HANA extension node and dynamic tiering will continue to be offered.	SAP HANA cold data tiering provides persistence capabilities for SAP HANA cold data in external data stores, like Hadoop Distributed File System (HDFS), Microsoft® Azure® Data Lake, and SAP Big Data Services.	

Table 2. SAP HANA NSE and dynamic tiering.

As an in-memory data platform, SAP HANA requires low-latency storage as each new transaction shifts data demands. Pure Storage FlashArray//X, an end-to-end NVMe storage solution, offers the low latencies that SAP HANA workloads require. This data-management partnership can result in reduced costs and simplification across the most demanding environments. SAP HANA NSE manages how data is accessed between hot (in-memory) and warm (paged-disk) tiers based on use frequency and the specific form of data. The FlashArray//X solution for SAP HANA NSE is fully scalable to accommodate growing demands.

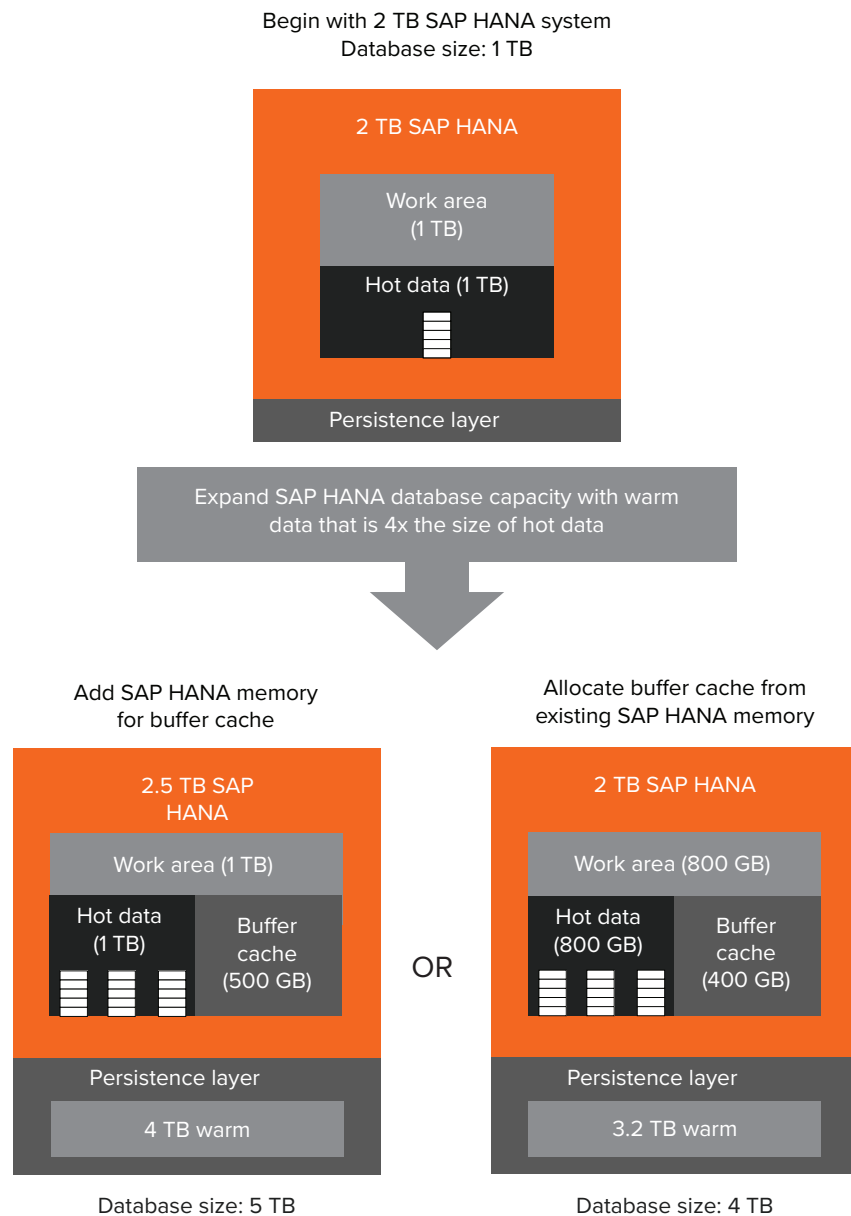


Figure 1. Adding SAP HANA memory for buffer cache or allocating buffer cache from existing SAP HANA memory.

With SAP HANA NSE, you can expand SAP HANA database capacity with warm data on disk by up to four times the size of hot data in memory. Because the buffer cache can easily handle eight times its size of warm data on disk, it requires only a small amount of SAP HANA memory for the NSE buffer cache for common paging operations.¹

Because a 2 TB SAP HANA NSE system can expand a database to 5 TB using a 500 GB buffer cache, it increases database size five times, saving the cost of purchasing five times as much memory — and the associated licenses — and delivering quicker access to the most frequently used data.

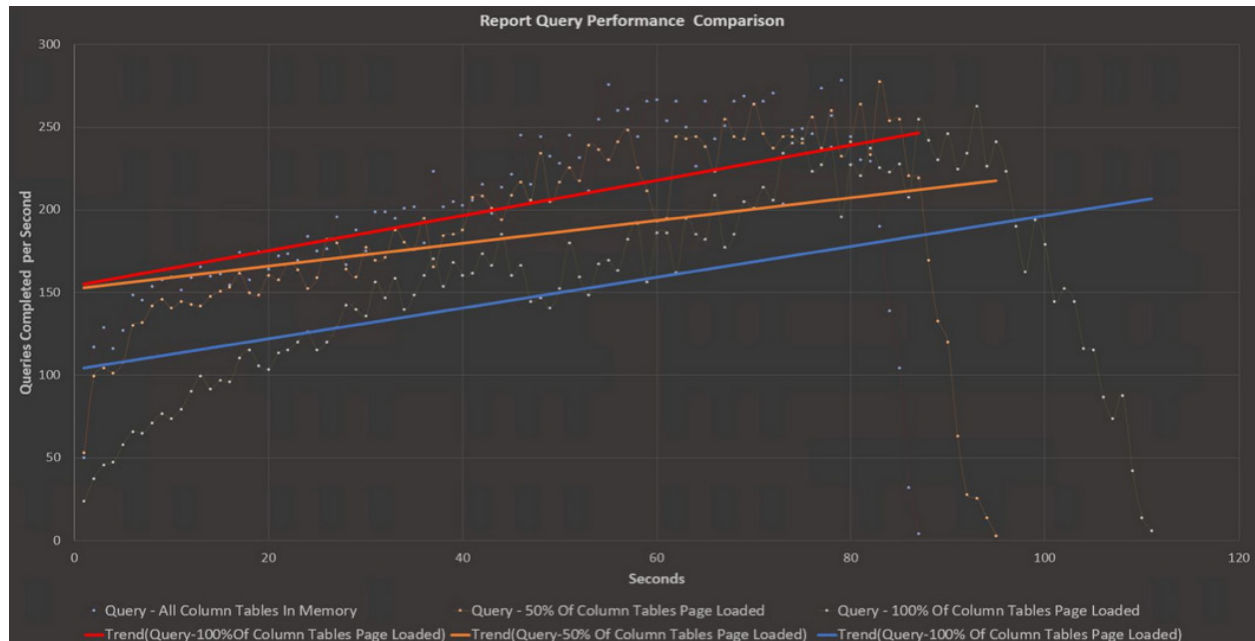


Figure 2. Read-only performance evaluation of SAP HANA NSE using Pure Storage FlashArray//X.

Tiered, Fast, and Efficient

Pure Storage solutions allow you to safely and reliably achieve faster performance and efficient delivery from SAP HANA NSE tiered capabilities. For example, using Pure Storage FlashArray//X, you can:

- Improve system performance with a seamless, reliable, and cost-effective storage solution that utilizes scalability and precision data-tiering capabilities. SAP HANA NSE can help reduce system complexity and maintenance costs when implemented as a data-tiering solution.
- Avoid significant costs for server and memory hardware and build the right scalable memory storage solution to meet growing business needs.
- Avoid up to 75% of SAP licensing costs.²
- Achieve performance similar to SAP HANA, yet experience extremely minimal performance degradation of less than 8% for read-only operations.³
- Stay current and competitive with reduced latency, increased data integrity, and faster data retrieval speeds.⁴
- Help free up IT talent and budget for more innovation, future development, and growth.

Pure Storage Adds Value to Critical SAP Services

SAP services are especially important to organizations with complex, data-intensive workloads. High-performance, cost-effectiveness, seamless maintenance, and reliable systems are basic requirements. System downtime not only hinders business performance, it can also harm your reputation when customers notice interruptions. It's crucial to avoid unplanned maintenance and the significant costs attributed to downtime. The right solution ensures each industry's unique needs are met and business is uninterrupted.

With FlashArray//X, Pure Storage delivers a high performing solution for SAP HANA NSE that helps you get the most from your SAP HANA implementations.

Industry Leader, SAP Experts

For four years running, Pure Storage has been an industry leader in the delivery of data-driven business-to-business (B2B) solutions built for successful outcomes and exceptional customer service. Pure Storage's 2018 certified Net Promoter Score® (NPS®) of 86.6 is more than three times the average score of 23 across all industries, and it places them in the **top 1% of B2B vendors**.⁵

© 2019 Pure Storage, Inc. All rights reserved. Pure Storage, the P Logo, and FlashArray™ are trademarks or registered trademarks of Pure Storage, Inc. in the U.S. and other countries. All other trademarks are registered marks of their respective owners

- ¹ SAP. "What type of SAP HANA (License) do you need?" January 2019. <https://blogs.sap.com/2019/01/23/what-type-of-sap-hana-license-do-i-need/>. And SAP. "SAP Support Strategy." <https://support.sap.com/en/offerings-programs/strategy.html>.
- ² SAP. "SAP HANA Platform 2.0 SPS 04 Features." <https://help.sap.com/viewer/42668af650f84f9384a3337bcd373692/2.0.04/en-US/dec1cd31c070411dbe558f4953793169.html>.
- ³ Included as a reference point.
- ⁴ SAP. "SAP HANA Native Storage Extension: A Native Warm Data Tiering Solution." April 2019. <https://blogs.saphana.com/2019/04/16/sap-hana-native-storage-extension-a-native-warm-data-tiering-solution/>.
- ⁵ PR Newswire. "Pure Storage Establishes B2B Standard with Certified Net Promoter Score (NPS) of 86.6." October 2018. www.prnewswire.com/news-releases/pure-storage-establishes-b2b-standard-with-certified-net-promoter-score-nps-of-86-6-300732541.html.