

Virtual Persistent Memory (Virtual PMEM) for SAP HANA on IBM Power Systems

Highlights

- Reduce maintenance outage time with faster SAP HANA shut down and restart
 - Preserves SAP HANA performance since solution is built on DRAM
 - Change PMEM allocation on demand with virtualization support
 - Available on existing and new POWER9 based systems at no additional cost
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Over the next two to three years, there will be a broad range of new memory technologies that are designed to disrupt the industry, providing persistence characteristics with a range of performance and cost advantages to benefit in-memory workloads like SAP HANA. These technologies will come from a multitude of memory partners and IBM has taken a multi-step approach to address the various client use cases. IBM and SAP are co-innovating to enable clients running SAP HANA on IBM Power Systems to adopt them and Virtual Persistent Memory is the first solution in this approach.

What is Virtual Persistent Memory for IBM Power Systems?

Virtual Persistent Memory (PMEM) is an enhancement to our advanced virtualization platform (PowerVM). This new enhancement introduces the ability to configure persistent volumes using the existing DRAM technology. This persistent memory solution on Power Systems is being made available on existing POWER9 processor-based systems with just a firmware upgrade and that too at no additional costs. There are no special or additional HW components or memory modules required on IBM Power Systems with this solution. This functionality is built on top of the standard memory DIMMs that are available on IBM Power Systems.

Since this feature is based on existing DRAM technologies, it has the same performance characteristics that clients already experience today, providing them with the peace of mind of using memory technology that already

meets their performance requirements. It is engineered to allow IBM Power Systems clients to restart SAP HANA faster for the vast majority of their planned maintenance and unplanned outages without compromising the performance of SAP HANA during normal use. SAP HANA is aware of the various memory types and can directly store data according to its type, i.e. working memory or persistent memory. Since Virtual Persistent Memory is architected according to industry standards, it works with software versions which support Persistent Memory without any modifications. Virtual PMEM will significantly reduce the shut down and start-up time of the database compared to disk-based reloads from storage. This significantly improves serviceability for SAP HANA and Linux software maintenance, in particular for large-scale databases.

Advantages of Virtual PMEM for SAP HANA

- Virtual PMEM solution reduces both shut down and start-up time of SAP HANA, thus significantly reducing maintenance related outage time.
- The solution uses DRAM for persistency. Hence it preserves the runtime performance, unlike the competitive offering which introduces latency by virtue of introducing a new memory technology that is slower than DRAM. It also provides better memory affinity and NUMA awareness, which allows SAP HANA clients to not only take advantage of the reduced maintenance outage time but also continue to get faster insights with better performance.
- Since it is built on PowerVM, clients will continue to get the flexibility of virtualization for SAP HANA workload. They can continue to run multiple VMs on a single system and also change persistent memory allocation on demand.
- Virtual PMEM will be available on existing and new POWER9 processor-based Power Systems at 'no additional cost'.
- No new special hardware is required as the functionality is built on top of existing DRAM technology and can be seamlessly shared across SAP HANA and other applications.

Why IBM?

IBM has been co-innovating with SAP and led with technological advancements that are unmatched in the industry. The focus of IBM Power Systems has always been to simplify and accelerate the deployment of SAP HANA environments. This is the first system that supported virtualization for SAP HANA production environments and continues to provide unmatched scalability and flexibility with PowerVM. IBM further advanced its leadership in virtualization of SAP HANA environment with Shared Processor Pools that helped optimize and improve the TCO for our clients. Now with the availability of industry first Virtual Persistent Memory solution on IBM Power Systems, clients can take advantage of data persistence to further maximize SAP HANA uptime, without compromising performance or being forced to purchase special hardware that cannot be shared or reused in a flexible manner.

Next steps

→ www.ibm.com/saphana

→ [Persistent memory enhancements on IBM Power Systems for SAP HANA](#)

For more information

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