SAP Note

1995460 - Single SAP HANA VM on VMware vSphere in production

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Component	HAN-DB SAP HANA Database
Other Components	BC-OP-LNX-ESX Linux on VmWare ESX
Priority	Recommendations / Additional Info
Category	Consulting

Symptom

You want to install SAP HANA in a virtualized environment using VMware vSphere virtual machines

Other Terms

ESXi, VMW, vSphere, virtualized

Reason and Prerequisites

With the release of SAP HANA SPS 05, SAP announced support for VMware vSphere 5.1 for non-production scenarios of SAP HANA on either certified appliances or through SAP HANA tailored data center integration verified hardware configurations.

Meanwhile VMware and SAP have gathered further experience in running SAP HANA in virtualized environments, allowing us to now also announce support for virtual single-VM deployments of SAP HANA SPS 07 (or newer) on VMware vSphere 5.5 for production use cases, provided all the following conditions have been met.

Solution

By issuing this SAP Note, SAP extends support for SAP HANA on VMware to include general availability of SAP HANA SP07 (and later releases) on VMware vSphere 5.5 in production, providing all the following conditions have been met:

- A single SAP HANA virtual machine on a dedicated SAP HANA certified server is supported. SAP HANA multi-node / scale-out deployment configurations are not supported.
- Multiple SAP HANA virtual machines on a single physical server are not supported in general availability.
  SAP has released use of parallel SAP HANA VMs on VMware vSphere 5.5 into controlled availability, allowing selected customers, depending on their scenarios and system sizes to go live with this configuration.
  For further details on approval process, see the updated slide deck on our SAP HANA virtualization roadmap [6].
- The maximum size of a virtual SAP HANA instance is limited by the maximum size of a virtual machine on VMware vSphere 5.5 release, which is 64 vCPUs and 1 TB of memory.
  Each SAP HANA instance / virtual machine is sized according to the existing SAP HANA sizing guidelines and VMware recommendations.
  CPU and Memory overcommitting must not be used.
- 2 or 4-socket SAP HANA certified Intel E7 Westmere EX or Intel E7 v2 Ivy Bridge EX processor based configurations in single-node, scale up configurations are supported only.
  8-socket SAP HANA certified hardware configurations are not supported.
- Both SAP HANA appliance and SAP HANA Tailored Datacenter Integration (TDI) delivery methods are supported for SAP HANA on VMware vSphere. Where the SAP HANA system has either been delivered pre-configured on certified SAP HANA appliances, as listed in SAP HANA Product Availability Matrix (PAM) [3], with VMware vSphere hypervisor installed by SAP HANA hardware partner or the SAP HANA installation was done by an SAP certified engineer, qualified as "SAP Certified Technology Specialist - SAP HANA Installation" [4] on SAP HANA certified hardware and successfully verified with the SAP HANA hardware configuration check tool [5].
- VMware vMotion, VMware Distributed Resource Scheduled (DRS), as well as VMware HA capabilities can be used to achieve operational performance and availability between two or more SAP HANA single-node VMs.
- Configuration and overall setup complies with current version of the "SAP HANA Guidelines for being virtualized with VMware vSphere" [1] and "VMware Best Practices for SAP HANA virtualized with VMware vSphere" [2].

For SAP HANA on VMware in non-production scenarios, the following exceptions to the conditions above apply:

- Besides 2 and 4-socket, also 8 socket single-node SAP HANA appliances or SAP HANA tailored data center integration, verified hardware configurations may be used. The Time Stamp Counter (TSC) must be synchronized between all sockets/cores.
- Multiple virtual machines may be deployed on a single SAP HANA server. Each SAP HANA database instance is to be sized the same as SAP HANA deployed on bare metal.

SAP and VMware will jointly support virtual SAP HANA in production adhering to the SLAs defined in the customer support contract. If a reported problem is a known SAP HANA issue with a validated fix, SAP support will recommend the appropriate fix directly to the customer. For all other performance related issues, the customer will be referred within SAP's OSS system to VMware for support. VMware will take ownership and work with SAP HANA HW/OS partner, SAP and the customer to identify the root cause. Due to the abstraction of hardware that occurs when using virtualization, some hardware details are not directly available to SAP HANA support. Work is ongoing between SAP and VMware to improve this visibility inside the SAP HANA virtual machine. Until then SAP support may request that additional details be gathered by the customer or the SAP HANA HW partner to help with troubleshooting issues or VMware to re-produce the issue on SAP HANA running in a bare metal environment.

During recent performance analysis conducted jointly by SAP and VMware, majority of the test cases stayed within the defined KPI of 12% performance degradation compared to bare metal. However, there are around 100 low-level performance tests in the test suite exercising various HANA kernel components that exhibit a performance degradation of more than 12%. This indicates that there are particular scenarios which might not be suited for HANA on VMware.

To allow for an easier distinction to be made between scenarios which can be considered a good fit against those scenarios which seems to be less suitable for virtualization, more scenario specific examples are being worked out and planned to be attached to this SAP Note upon availability.

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This note will be continuously updated with the latest support information without further notice.

[1] http://www.saphana.com/docs/DOC-4192
[2] http://scn.sap.com/docs/DOC-27384
[3] https://service.sap.com/sap/support/pam?hash=pvnr%3D01200314690900003484%26pt%3Dg%257Cd
[4] https://training.sap.com/shop/certification/
[5] http://www.saphana.com/docs/DOC-3633
[6] http://www.saphana.com/docs/DOC-3334

Validity

Software Component	From Rel.	To Rel.	And Subsequent
HDB	1.00	1.00	☐

References

This document refers to:

SAP Notes

2024433	Multiple SAP HANA VMs on VMware vSphere in production (controlled availability)
1788665	SAP HANA Support for VMware Virtualized Environments
1492000	General Support Statement for Virtual Environments

This document is referenced by:

SAP Notes (1)

171356	SAP software on Linux: General information