TR-4435: SAP HANA on NetApp AFF Systems with NFS - Configuration Guide

NetApp Solutions

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Table of Contents

TR-4435: SAP HANA on NetApp AFF Systems with NFS - Configuration Guide 1
SAP HANA tailored data center integration 2
SAP HANA using VMware vSphere 3

TR-4435: SAP HANA on NetApp AFF Systems with NFS - Configuration Guide

Nils Bauer and Marco Schön, NetApp

The NetApp AFF system product family has been certified for use with SAP HANA in tailored data center integration (TDI) projects. The certified enterprise storage system is characterized by the NetApp ONTAP software.

This certification is valid for the following models:

- AFF A220, AFF A250, AFF A300, AFF A320, AFF A400, AFF A700s, AFF A700, AFF A800

A complete list of NetApp certified storage solutions for SAP HANA can be found at the Certified and supported SAP HANA hardware directory.

This document describes the ONTAP configuration requirements for the NFS protocol version 3 (NFSv3) or the NFS protocol version 4 (NFSv4.0 and NFSv4.1).

For the remainder of this document, NFSv4 refers to both NFSv4.0 and NFSv4.1.

The configuration described in this paper is necessary to achieve the required SAP HANA KPIs and the best performance for SAP HANA. Changing any settings or using features not listed herein might cause performance degradation or unexpected behavior and should only be done if advised by NetApp support.

The configuration guides for NetApp AFF systems using FCP and for FAS systems using NFS or FCP can be found at the following links:

- SAP HANA on NetApp FAS Systems with Fibre Channel Protocol
- SAP HANA on NetApp FAS Systems with NFS
- SAP HANA on NetApp AFF Systems with Fibre Channel Protocol

The following table shows the supported combinations for NFS versions, NFS locking, and the required isolation implementations, depending on the SAP HANA database configuration.

For SAP HANA single-host systems or multiple hosts that do not use Host Auto-Failover, NFSv3 and NFSv4 are supported.

For SAP HANA multiple host systems with Host Auto-Failover, NetApp only supports NFSv4, while using NFSv4 locking as an alternative to a server-specific STONITH (SAP HANA HA/DR provider) implementation.

SAP HANA	NFS version	NFS locking	SAP HANA HA/DR provider
SAP HANA single host, multiple hosts without Host Auto-Failover	NFSv3	Off	n/a
	NFSv4	On	n/a
SAP HANA multiple hosts using Host Auto-Failover	NFSv3	Off	Server-specific STONITH implementation mandatory

SAP HANA	NFS version	NFS locking	SAP HANA HA/DR provider
	NFSv4	On	Not required

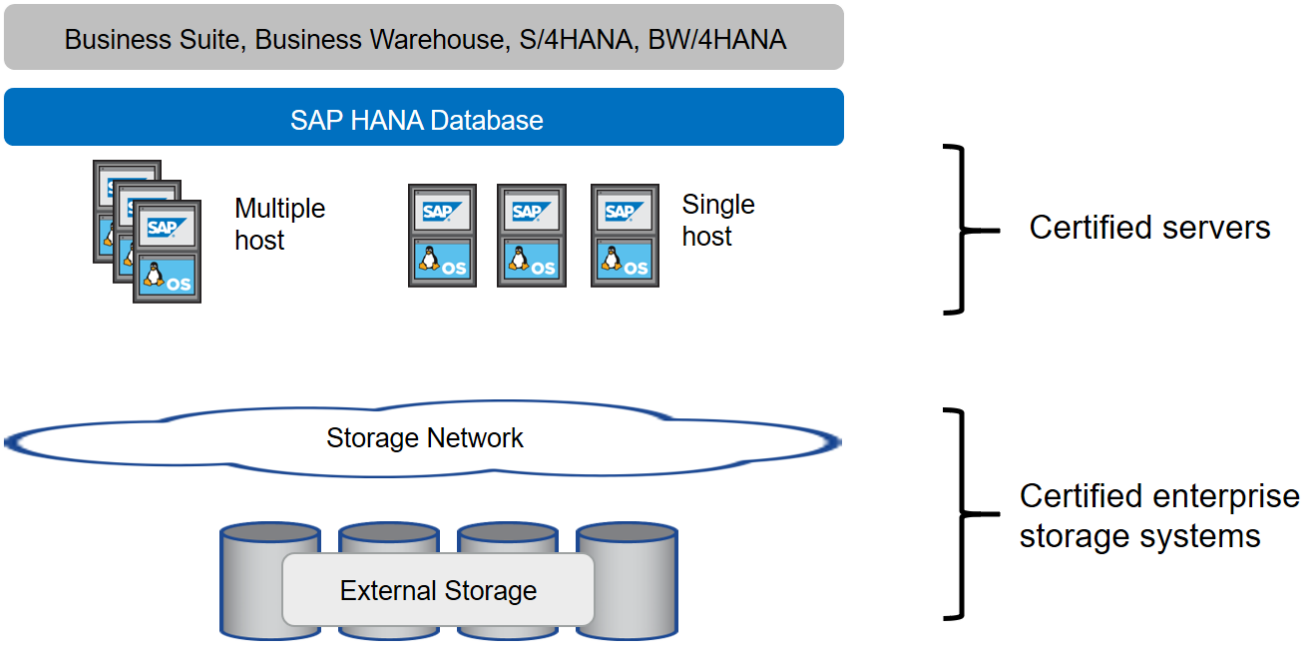
A server-specific STONITH implementation is not part of this guide. Contact your server vendor for such an implementation.

This document covers configuration recommendations for SAP HANA running on physical servers and on virtual servers that use VMware vSphere.

See the relevant SAP notes for operating system configuration guidelines and HANA-specific Linux kernel dependencies. For more information, see SAP note 2235581: SAP HANA Supported Operating Systems.

SAP HANA tailored data center integration

NetApp AFF storage controllers are certified in the SAP HANA TDI program using both NFS (NAS) and FC (SAN) protocols. They can be deployed in any of the current SAP HANA scenarios, such as SAP Business Suite on HANA, S/4HANA, BW/4HANA, or SAP Business Warehouse on HANA in either single-host or multiple-host configurations. Any server that is certified for use with SAP HANA can be combined with NetApp certified storage solutions. See the following figure for an architecture overview of SAP HANA TDI.



For more information regarding the prerequisites and recommendations for producti SAP HANA systems, see the following resources:

- SAP HANA Tailored Data Center Integration Frequently Asked Questions
- SAP HANA Storage Requirements

SAP HANA using VMware vSphere

There are several options for connecting storage to virtual machines (VMs). The preferred option is to connect the storage volumes with NFS directly out of the guest operating system. Using this option, the configuration of hosts and storage does not differ between physical hosts and VMs.

NFS datastores and VVOL datastores with NFS are supported as well. For both options, only one SAP HANA data or log volume must be stored within the datastore for production use cases. In addition, Snapshot-based backup and recovery orchestrated by NetApp SnapCenter and solutions based on this, such as SAP System cloning, cannot be implemented.

This document describes the recommended setup with direct NFS mounts from the guest OS.

For more information about using vSphere with SAP HANA, see the following links:

- SAP HANA on VMware vSphere - Virtualization - Community Wiki
- Best Practices and Recommendations for Scale-Up Deployments of SAP HANA on VMware vSphere
- Best Practices and Recommendations for Scale-Out Deployments of SAP HANA on VMware vSphere
- 2161991 - VMware vSphere configuration guidelines - SAP ONE Support Launchpad (Login required)

Next: Architecture.

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