Adding additional data volume partitions

NetApp Solutions

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Previous: SAP HANA software installation.

Starting with SAP HANA 2.0 SPS4, you can configure additional data volume partitions, which allows you to configure two or more volumes for the data volume of an SAP HANA tenant database. You can also scale beyond the size and performance limits of a single volume.

Using two or more individual volumes for the data volume is available for SAP HANA single-host and multiple-host systems. You can add additional data volume partitions at any time, but doing so might require a restart of the SAP HANA database.

Enabling additional data volume partitions

1. To enable additional data volume partitions, add the following entry within `global.ini` using SAP HANA Studio or Cockpit in the SYSTEMDB configuration.

```
[customizable_functionalities]
persistence_datavolume_partition_multipath = true
```

Adding the parameter manually to the `global.ini` file requires the restart of the database.

Volume configuration for a single-host SAP HANA system

The layout of volumes for a single-host SAP HANA system with multiple partitions is like the layout for a system with one data volume partition, but with an additional data volume stored on a different aggregate as the log volume and the other data volume. The following table shows an example configuration of an SAP HANA single-host system with two data volume partitions.

Aggregate 1 at Controller A	Aggregate 2 at Controller A	Aggregate 1 at Controller B	Aggregate 2 at Controller b
Data volume: SID_data_mnt00001	Shared volume: SID_shared	Data volume: SID_data2_mnt00001	Log volume: SID_log_mnt00001

The following table shows an example of the mount point configuration for a single-host system with two data volume partitions.

Junction path	Directory	Mount point at HANA host
SID_data_mnt00001	–	/hana/data/SID/mnt00001
SID_data2_mnt00001	–	/hana/data2/SID/mnt00001
SID_log_mnt00001	–	/hana/log/SID/mnt00001
SID_shared	usr-sap shared	/usr/sap/SID /hana/shared

Create the new data volume and mount it to the namespace using either ONTAP System Manager or the ONTAP cluster command line interface.

Volume configuration for multiple-host SAP HANA system

The layout of volumes for a multiple-host SAP HANA system with multiple partitions is like the layout for a system with one data volume partition, but with an additional data volume stored on a different aggregate as the log volume and the other data volume. The following table shows an example configuration of an SAP HANA multiple-host system with two data volume partitions.

Purpose	Aggregate 1 at Controller A	Aggregate 2 at Controller A	Aggregate 1 at Controller B	Aggregate 2 at Controller B
Data and log volumes for node 1	Data volume: SID_data_mnt00001	–	Log volume: SID_log_mnt00001	Data2 volume: SID_data2_mnt00001
Data and log volumes for node 2	Log volume: SID_log_mnt00002	Data2 volume: SID_data2_mnt00002	Data volume: SID_data_mnt00002	–
Data and log volumes for node 3	–	Data volume: SID_data_mnt00003	Data2 volume: SID_data2_mnt00003	Log volume: SID_log_mnt00003
Data and log volumes for node 4	Data2 volume: SID_data2_mnt00004	Log volume: SID_log_mnt00004	–	Data volume: SID_data_mnt00004
Shared volume for all hosts	Shared volume: SID_shared	–	–	–

The following table shows an example of the mount point configuration for a single-host system with two data volume partitions.

Junction path	Directory	Mount point at SAP HANA host	Note
SID_data_mnt00001	–	/hana/data/SID/mnt00001	Mounted at all hosts
SID_data2_mnt00001	–	/hana/data2/SID/mnt00001	Mounted at all hosts
SID_log_mnt00001	–	/hana/log/SID/mnt00001	Mounted at all hosts
SID_data_mnt00002	–	/hana/data/SID/mnt00002	Mounted at all hosts
SID_data2_mnt00002	–	/hana/data2/SID/mnt00002	Mounted at all hosts
SID_log_mnt00002	–	/hana/log/SID/mnt00002	Mounted at all hosts
SID_data_mnt00003	–	/hana/data/SID/mnt00003	Mounted at all hosts
SID_data2_mnt00003	–	/hana/data2/SID/mnt00003	Mounted at all hosts
SID_log_mnt00003	–	/hana/log/SID/mnt00003	Mounted at all hosts
SID_data_mnt00004	–	/hana/data/SID/mnt00004	Mounted at all hosts
SID_data2_mnt00004	–	/hana/data2/SID/mnt00004	Mounted at all hosts

Junction path	Directory	Mount point at SAP HANA host	Note
SID_log_mnt00004	–	/hana/log/SID/mnt00004	Mounted at all hosts
SID_shared	shared	/hana/shared/SID	Mounted at all hosts
SID_shared	usr-sap-host1	/usr/sap/SID	Mounted at host 1
SID_shared	usr-sap-host2	/usr/sap/SID	Mounted at host 2
SID_shared	usr-sap-host3	/usr/sap/SID	Mounted at host 3
SID_shared	usr-sap-host4	/usr/sap/SID	Mounted at host 4
SID_shared	usr-sap-host5	/usr/sap/SID	Mounted at host 5

Create the new data volume and mount it to the namespace using either ONTAP System Manager or the ONTAP cluster command line interface.

Host configuration

In addition to the tasks described in the section "Host setup," you must create the additional mount points and fstab entries for the new additional data volume(s), and you must mount the new volumes.

1. Create additional mount points:
   - For a single-host system, create mount points and set the permissions on the database host.

     ```
     sapcc-hana-tst-06:/ # mkdir -p /hana/data2/SID/mnt00001
     sapcc-hana-tst-06:/ # chmod –R 777 /hana/data2/SID
     ```

   - For a multiple-host system, create mount points and set the permissions on all worker and standby hosts. The following example commands are for a 2+1 multiple-host HANA system.
     - First worker host:

       ```
       sapcc-hana-tst-06:~ # mkdir -p /hana/data2/SID/mnt00001
       sapcc-hana-tst-06:~ # mkdir -p /hana/data2/SID/mnt00002
       sapcc-hana-tst-06:~ # chmod -R 777 /hana/data2/SID
       ```

     - Second worker host:

       ```
       sapcc-hana-tst-07:~ # mkdir -p /hana/data2/SID/mnt00001
       sapcc-hana-tst-07:~ # mkdir -p /hana/data2/SID/mnt00002
       sapcc-hana-tst-07:~ # chmod -R 777 /hana/data2/SID
       ```

     - Standby host:

```
sapcc-hana-tst-07:~ # mkdir -p /hana/data2/SID/mnt00001
sapcc-hana-tst-07:~ # mkdir -p /hana/data2/SID/mnt00002
sapcc-hana-tst-07:~ # chmod -R 777 /hana/data2/SID
```

2. Add the additional file systems to the `/etc/fstab` configuration file on all hosts. An example for a single-host system using NFSv4.1 is as follows:

```
<storage-vif-data02>:/SID_data2_mnt00001 /hana/data2/SID/mnt00001 nfs
rw,
vers=4minorversion=1,hard,timeo=600,rsize=1048576,wsize=1048576,bg,noati
me,lock 0 0
```

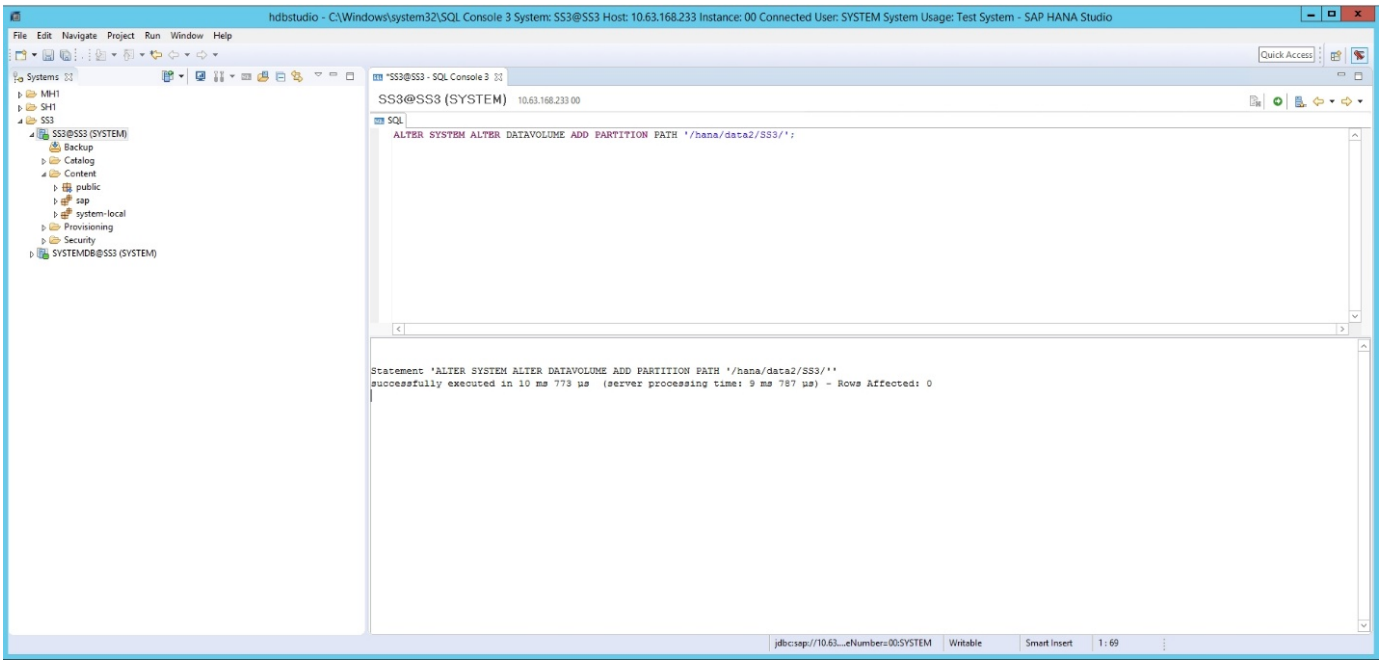
Use a different storage virtual interface for connecting to each data volume to make sure that different TCP sessions are used for each volume. You can also use the nconnect mount option if it is available for your OS.

3. To mount the file systems, run the `mount -a` command.

Adding an additional data volume partition

Execute the following SQL statement against the tenant database to add an additional data volume partition to your tenant database. Use the path to additional volume(s):

```
ALTER SYSTEM ALTER DATAVOLUME ADD PARTITION PATH '/hana/data2/SID/';
```



Next: Where to find additional information.