SAP Note 1743225 - HANA: Potential failure of connections with scale out nodes

Note Language: English **Version: 3 Validity:** Valid Since 19.09.2012

Summary

Symptom
Depending on client configuration, scale out nodes might 'seem' unreachable to clients when using internal node names for communication.

Other terms
HANA, appliance, hw partner, scale out, db

Reason and Prerequisites
SAP HANA scale out nodes were installed using internal node names

Solution
For internal communication, SAP HANA scale out is using a dedicated network. IP adresses on this network are not routed to the public network segment (sometimes referred to as client and/or BW network).

So far, SAP's recommendation was to install scale out nodes using the hdbinst parameter '-H <nodename>' using an 'internal' nodename, which is resolved to an IP address that resides in the internal network. This is still valid, however, it might lead to problems with clients not using multiple node definitions in their connect strings. Also, this might lead to connection problems with SAP HANA database studio (and other JDBC-based clients), when connecting to an SAP HANA scale out node which is not currently the master nameserver of the system. If, e.g. only the master nameserver is used to connect to a cluster, the client will retrieve a list of nodes from it, containing the internal node names, and thus will fail on operations requiring direct access to those nodes (e.g. during HA fail-over operations).

Three solutions are valid:

1. ensure that all of your clients use the correct list of nodes (through hdbuserstore or when specifying the connection strings)

2. 'use host routes': install the scale out cluster to node names which resolve to IPs in the public network segment (i.e. client or BW facing) and use host specific routes or net specific routes to force internal communication to the internal network. E.g. consider 10.0.0.0/24 on eth0 as your public/BW network, and consider 192.168.1.0/24 on eth1 as your privat network, thus node1 to host 10.0.0.1 and 192.168.1.1, node2 to host 10.0.0.2 and 192.168.1.2, and so on. 10.0.0.[1-N] should resolve to node[1-N], on node1, there have to be host specific routes to 10.0.0.2 et seq. through the 192.168.1.1 network; on node2, there have to be host routes to 10.0.0.1, 10.0.0.3 et seq., likewise, and so on.

3. 'split name resolution': resolve the hostnames used for internal communication in a different way in the public network segment as in the internal segment (e.g. overwrite in /etc/hosts, with nsswich.conf set-up correctly). E.g., consider the sample IP/interface set-up under 2., then, on node1 configure your /etc/hosts in a way that 10.0.0.1 resolves to node1-pub, and 192.168.0.1 to resolve to node1, likewise for node2 et seq. Of course, 192.168.0.[1-N] need to resolve to

node[1-N] for all nodes. Then, configure your 'hosts' configuration in /etc/nsswitch.conf on the cluster to be 'files dns' and make sure that 10.0.0.1 - 10.0.0.N resolve to node[1-N] in the DNS of your BW/client lan.

For 2. and 3., please consult your HW partner which option fits best to the set-up of the HW cluster. While we clearly understand the limitations of the later two approaches we recommend falling back to one of these interim solutions, if you cannot assure that all clients are set up correctly. Also, to prevent JDBC-based clients from exposure to the internal node name list, please set parameter 'client_distribution_mode = off' in the '[distribution]' section of indexserver.ini in your scale out configuration.

Changes to the HANA software towards simplifying the above configuration effort are 'work in progress', and will be referred to in this note, once an improved version becomes available.

Header Data

Release Status:	Released for Customer
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Master Language:	English
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Category:	Installation information
Primary Component:	BC-DB-HDB SAP HANA database

Valid Releases

Software Component	Release	From Release	To Release	and Subsequent
HDB	1.00	1.00	1.00	

Related Notes

Number	Short Text
1780950	Connection problems due to host name resolution
1523337	SAP In-Memory Database 1.0: Central Note
1514967	SAP HANA: Central Note

Attachments

File Type	File Name	Language	Size
PDF	Network_HANA.pdf	E	702 KB