ICC

SAP AG

Test Plan

NW-HA-CLU 730

SAP Application Server HA Interface Certification

SAP Kernel 7.2 / SAP NetWeaver 7.30

Version 1.14

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1 About the SAP Application Server HA Interface Certification

The SAP Application Server HA-Interface-Certification for HA Partners certifies the Start/Stop infrastructure within HA-Setups (SAP NetWeaver Management Agents, Cluster-API).

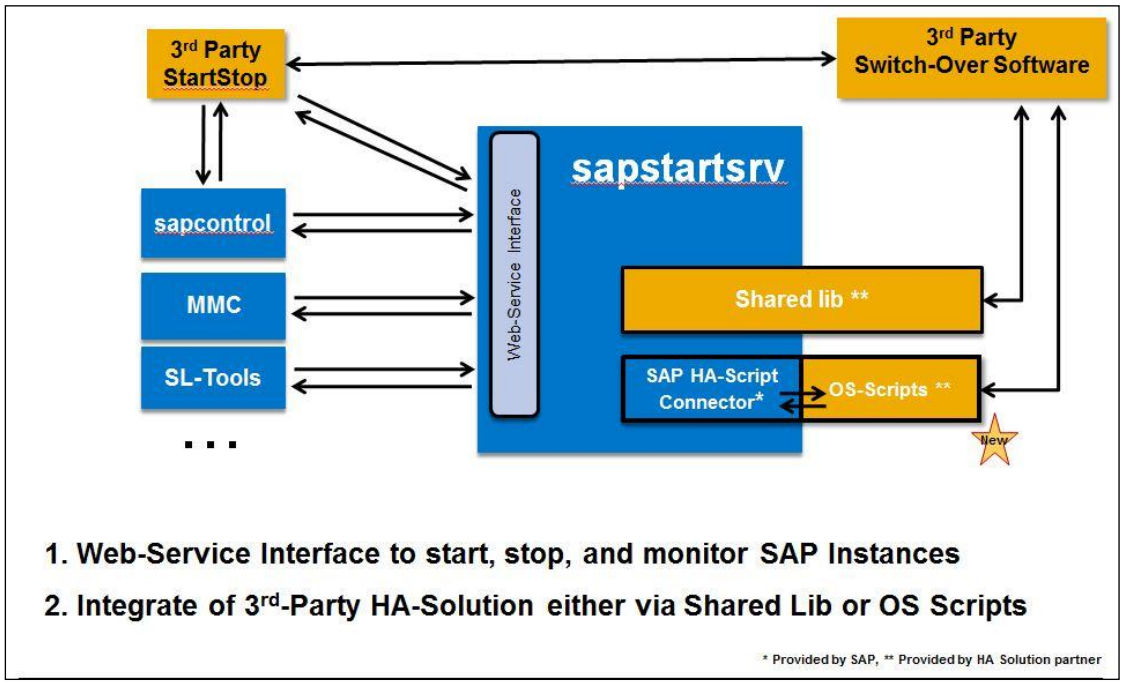
The overall goal of the HA-Interface-Certification is to establish a single SAP HA-Setup scenario that will be known to all HA partners and will be the reference. More specifically, it is the intention to unify HA-Setups for SAP NetWeaver 7.x based on SAP Kernel 7.20 DCK for ABAP as well as for Java based application servers.

It is expected to improve the transparency about operating system dependencies and 3rd party failover software as well as to improve the transparency about available database-specific HA-Solutions of 3rd party vendors. Additionally, the responsibilities of SAP and its partners, especially for support issues will be clarified.

For general information about the HA interface can be found in the SAP developer network http://scn.sap.com/docs/DOC-14382.

1.1 Objectives of this certification

The following SAP Start Service (sapstartsrv) interface configuration provides functionality that the HA vendor solution has to be able to use in a customer environment:



The following tests will help to verify the integration of the 3rd party software in different situations.

1.2 Certification criteria

The following certification criteria will verify the correct functionality and general readiness of the third party HA software operating the various SAP Software components via the HA-Interface offered by the SAP Start Service (sapstartsrv):

- **General Certification Criteria**
  1. Partner commits to regularly contact SAP for changes in the SAP recommendations for SAP HA-Setup, at the latest before stating support for a new major SAP NetWeaver release.
  2. SAP-specific documentation is available at partner web site for targeted user groups (at least to basis consultants and customers, if possible public accessible)
  3. Support responsibilities for HA-Setups are defined and agreed in writing within a dedicated SAP note, and released to customers
  4. List of databases per OS is maintained, for which the partner offers HA-Setups. At least one of the databases are supported with SAP Kernel 7.20
- **Technical Certification Criteria**
  1. New directory structure of Kernel 7.20 is used
  2. Successful failover can be performed manually via 3rd-party software
  3. Crucial SAP-processes are monitored and restored automatically (Restart and/or failover)
  4. Usage of sapstartsrv and integration into 3rd-party failover solution
  5. sapstartsrv status information integrated into 3rd-party failover detection
  6. Starting an instance must be possible via standard web service interface (SAPControl)
  7. Stopping an instance must be possible via standard web service interface (SAPControl) without triggering an instance failover
  8. A document is maintained describing on how to temporarily disable failover software in case of SW maintenance activities. If this is not possible or very difficult, it should describe on how to perform maintenance activities in a fail-over environment. All software maintenance activities that are not possible should be documented as well

2 The certification procedure in detail

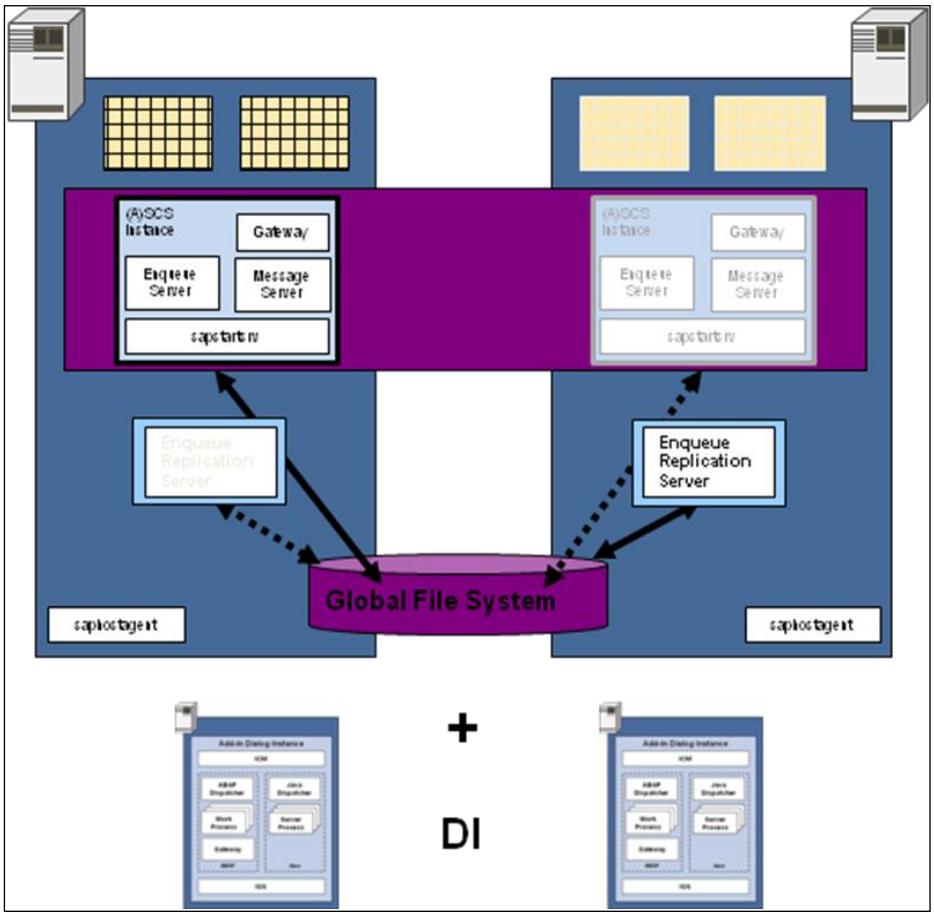
2.1 Preparing the environment

2.1.1 Installing the HA-Solution

The HA-Partner needs to complete all steps required to install the HA-Solution on respective hosts. The HA-Solution has to be fully functional and accessible for the certification process.

2.1.2 Installing the SAP-System

SAP recommends the following HA-Setup in order to minimize system downtime as much as possible. This recommended HA-Setup is the basis of the HA-Interface-Certification. Therefore, it is necessary to setup the crucial and essential components appropriately.



Before the actual certification process starts, the test environment has to be set up by the HA-Partner as follows:

1. A SAP NetWeaver 7.30 System (ABAP) has to be installed for the certification process.

   The SAP NetWeaver 7.3 System automatically includes the necessary SAP Kernel 7.2, which is the actual focus of the HA-Interface Certification.

   An ABAP system is considered as sufficient along the certification, because the SAP Kernel and especially the HA-Interface of the SAP Start Service is the same for ABAP, JAVA, and Dualstack systems, and thus the setup is very similar for the essential components. The HA-Interface certification is therefore valid for all three variants, though.

   In order to exclude and fix already known issues in the software in general, it is recommended, but not mandatory to apply a compatible kernel patch level before the latest available Support Package and Kernel Patches to the system as well.

   The system has to be set up by the partner for high availability according to the partner's documentation.

   A Two-node cluster is sufficient for executing the certification tests, the test environment can be simulated using virtualization technology.

2. The following SAP components and instances have to be installed and setup correctly:
   a. A separated ASCS instance, manageable in a dedicated switch-over group
   b. Enqueue Replication Service (ERS) is setup and configured appropriately
   c. At least 2 ABAP-Dialog instances are installed on two (virtual or physical) hosts, the hosts of the dialog instances can be used also to hold the ASCS and/or ERS-setup
   d. sapstartsrv is part of the failover group and has to be moved as well in case of a failover
   e. saphostagent installed once per host and not part of the failover group
   f. Platform dependent SAPCPE for replication of the executables is in place
3. Independently of whether the SAP System is to be integrated into the HA-Solution by using the HA-Interface-Script-Connector or a vendor HA library, the required SAP Kernel patch level has to be applied as described in SAP note 1693245.
4. The HA vendor software is up and running, and controls the SAP System as desired.
5. A SAP Management Console (SAP MMC or SAP MC) has to be installed to monitor the system landscape. All instances have to be visible there and should be running properly. To ease the operational tasks, the SAP MMC/MC should be called from a separate machine (frontend machine) to be independent from switching the cluster nodes.

Additionally to these mandatorily required setup-characteristics for the HA-Interface certification, the hardware as well as the database is typically set up in a highly available manner (vendor specific) at customer side. To pass the certification, it is not necessary to setup the hardware or database in a highly available manner though, because these components are not in the scope of HA-Interface certification at all.

2.2 General tests to certify the HA-Solution

Test	Title
GEN01	Recommended SAP HA-Setup is described in vendor specific documentation
GEN02	SAP-specific documentation is available at partner web site
GEN03	Support processes are documented and available for customers
GEN04	List of supported databases is maintained by HA-Partner

2.2.1 Test GEN01: Recommended SAP HA-Setup is described in vendor specific documentation

2.2.2 Test GEN02: SAP-specific documentation is available at partner web site

2.2.3 Test GEN03: Support processes are documented and available for SAP customers

2.2.4 Test GEN04: List of supported databases is maintained by HA-Partner

2.3 Technical tests to certify the HA-Solution

The following tests verify the functional correctness of the HA-Solution in conjuction with the HA-Interface of the SAP Start Service (sapstartsrv).

Each test can be performed several times to verify the repeatability, reliability and completeness of the solution.

If not indicated otherwise, every test can be performed manually using the Web-Service-Interface or using the functionality provided by the HA-Solution, if available.

Test	Title
TEC01	New directory structure of SAP Kernel 7.20 is used
TEC02	Shared Lib (HA-Interface) is being loaded without any errors
TEC03	HA-Solution can be temporarily disabled
TEC04	Manually moving the ASCS works correctly
TEC05	Starting and stopping of SAP resources work correctly
TEC06	ASCS moves correctly in case of hardware or OS failure
TEC07	Recoverable outage of the Message Server is handled correctly
TEC08	Irrecoverable outage of the Message Server is handled correctly
TEC09	Irrecoverable outage of the Enqueue Server is handled correctly
TEC10	Outage of the Enqueue Replication Service is handled correctly
TEC11	Outage / Restart of the SAP Start Service is handled correctly
TEC12	Applying the Rolling Kernel Patch procedure is possible
TEC13	Simulating cluster failure works correctly (if functionality is available)

For all test cases, monitoring of the SAP System is crucial, in particular, that all instances are available again after the switch-over procedure of an instance. It is of particular interest, whether

- the Enqueue lock table is correctly restored (Same entries available in restored table, see appendix 3.1: How to check whether the lock table is restored correctly),
- the Enqueue Replication Service is up and running afterwards and the lock table replication is re-established again, and
- the central file systems has to be available after the switch again.

2.3.1 Test TEC01: New directory structure of SAP Kernel 7.20 is used

2.3.2 Test TEC02: Shared Lib (HA-Interface) is being loaded without any errors

2.3.3 Test TEC03: HA-Solution can be temporarily disabled

2.3.4 Test TEC04: Manually moving the ASCS works correctly

2.3.5 Test TEC05: Starting and stopping of SAP resources work correctly

2.3.6 Test TEC06: ASCS moves correctly in case of hardware or OS failure

2.3.7 Test TEC07: Recoverable outage of the Message Server is handled correctly

2.3.8 Test TEC08: Irrecoverable outage of the Message Server is handled correctly

2.3.9 Test TEC09: Irrecoverable outage of the Enqueue Server is handled correctly

2.3.10 Test TEC10: Outage of the Enqueue Replication Service is handled correctly

2.3.11 Test TEC11: Outage / Restart of the SAP Start Service is handled correctly

2.3.12 Test TEC12: Applying a Rolling Kernel Patch is possible

2.3.13 Test TEC13: Simulating cluster failure works correctly (if functionality is available)

3 Appendix

3.1 How to check whether the lock table is restored correctly

Appendix

Disclaimer

Some components of this product are based on Java™. Any code change in these components may cause unpredictable and severe malfunctions and is therefore expressively prohibited, as is any decompilation of these components.

Any Java™ Source Code delivered with this product is only to be used by SAP's Support Services and may not be modified or altered in any way.