SAP INTEGRATION AND CERTIFICATION CENTER
THIRD-PARTY SOFTWARE PRODUCT CERTIFICATION

Documentation and Test Catalog in order to complete the JAVA-EE-NW 7.3 certification scenario based on SAP NW (CE) 7.3

Introduction and Important Things to Know Before You Start

It is assumed that you have a basic understanding of EE 5 concepts, hardware, software, operating systems and databases when reading this document.

This document will address the certification requirements for the **JAVA-EE-NW 7.3** integration scenario based on the SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition architecture, which is part of the SAP NetWeaver Composition Environment (CE) 7.3, a platform that enables building and running applications based on Service-Oriented Architecture (SOA) principles.

To enable SOA development, SAP NetWeaver CE 7.3 provides the following key capabilities:

✓ **A lean and robust application server based on the latest Java EE 5 technology**

With the SAP CE 7.3 Java EE 5 application server, you can **develop** an **J2EE 1.4** and / or **EE 5** compliant application based on the newest Java EE standard, in addition to migrating existing J2EE applications. By leveraging layers of the SAP NetWeaver platform, SAP NetWeaver CE enables the integration of heterogeneous environments and legacy systems into user-centric applications.

SAP's implementation of a Java Virtual Machine is called SAP JVM. **SAP JVM is a certified Java SE 6 Virtual Machine (VM) and Java Development Kit (JDK)** based on the Sun HotSpot technology and enhanced with several supportability features. It is built and supported by SAP and is available for all processor architectures and operating systems supported by SAP NetWeaver. It therefore provides a consistent configuration and behavior of essential VM functions. The SAP JVM aims to be a stable and high performance base for Java application servers, while supporting software developers and system administrators with useful features.

You can also connect the SAP Java server to the System Landscape Directory of the SAP NetWeaver SLD. A system landscape consists of a number of hardware and software components that depend on each other with regard to installation, software updates, and demands on interfaces.

✓ **An integrated environment for Java application development**

The SAP NetWeaver Developer Studio is SAP's Integrated Development Environment (IDE) for Java, and is based on Eclipse 3.5, the open-source tools framework.

You can also make use of the SAP NetWeaver Development Infrastructure (NWDI). The NWDI is designed for the development and maintenance of business applications in complex landscapes. It provides the services for all development steps that are part of the software life cycle: from the administrator creating the development landscape using the central and project-specific administration of source files and archives of the developers, to consolidation and test phases of quality management, to the final delivery and production of support packages.

To briefly summarize, with the Java EE 5 SAP 7.3 NetWeaver Application Server Java, you can develop Java EE applications based on the new Java EE 5 technology, in addition to migrating existing EE 5 / J2EE applications to the SAP platform, and have such applications certified by SAP ICC (Integration & Certification Center.

The certification process verifies that an existing J2EE 1.4 and / or EE 5 compliant application (your software product) that you either <u>migrated</u> or developed from scratch (J2EE 1.4 and / or EE 5 compliant application) runs on the SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition. *<u>SAP NetWeaver CE 7.3 Support Package Stack SP2 or higher must be used during the certification process</u>*.

<u>Migration</u> is the process of taking an existing J2EE 1.4 and / or EE 5 compliant application running on another J2EE or EE 5 application server or an existing J2EE (1.3, 1.4), EE 5 SAP NetWeaver 7.1 and / or EE 5 SAP NetWeaver 7.2 application already running on a previous version of the SAP NetWeaver platform, and porting it on to the SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition**.**

<u>Developing an EE 5 application from scratch</u> will be relevant in the situation where you have no existing J2EE / EE 5 application to migrate. In this case you can use the SAP NetWeaver Developer Studio in order to develop a J2EE 1.4 and / or EE 5 compliant application.

In standard EE 5 / J2EE terminology, the EE 5 / J2EE enterprise archive file is considered the final EE 5 / J2EE product to be used as an application. The EAR file is prepared and deployed according to the EE 5 specification.

In order to have your software product certified, the EE 5 application also known as an **EAR** file (J2EE / EE 5 enterprise archive file) needs to be converted to an <u>SCA (Software Component Archive)</u> file and has to be deployed on the SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition. In the SAP environment this converted EAR file is viewed as <u>one</u> <u>software</u> <u>component</u>. Thus, if you had more than one EE 5 application (several converted EAR files), then each EE 5 application (SCA file) would need to be certified separately, since every individual EAR / SCA file is equivalent to exactly one software component.

An EE 5 / J2EE enterprise application archive file (EAR) can consist of a WAR file (Web archives, for example servlets, JSPs, filters and listeners) and/or JAR (Enterprise Java Beans, for example entity, stateless session or message driven beans). These source or module projects are then deployed or published using SAP standard deployment tools, in order to generate an EE 5 application (EAR file) which when packaged as an SCA file can then be deployed with the **SAP Java Support Package Manager (JSPM)** and / or the **SAP NetWeaver Developer Studio** and certified on the SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition.

You can also develop an SAP WebDynpro application (Java Web Dynpro is a model-driven user interface technology with various backend options such as Business APIs, function modules, enterprise services, and Web services) and have this certified as an EE 5 application.

If you want you can also develop JavaServer Faces (JSF) web applications. A JavaServer Face is a Web User Interface (UI) based on JSF technology. A JSF web application can also be deployed as an enterprise application archive (EAR) file and when packaged and deployed as an SCA file be certified.

Thus, for your product to be certified, you need to have a Java EE 5 application (**EAR** file), *<u>delivered as an SCA file</u>*.

EAR (your final EE 5 software application) = WAR and / or JAR

The **EAR** file is the <u>software</u> <u>component</u> which is part of your certifiable SCA file. Thus, your EAR file which must be converted into an SCA file (details how to do this are explained later in the document) is what we can certify.

For certification purposes, at least one SAP NetWeaver Developer User license per developer in your team will be mandatory in order to go through the certification process. Upon request, SAP can check if your company already has purchased named developer user licenses before you begin with your integration work.

Having the proper development environment installed before, during, and after successful deployment certification enables you to support your product running on the SAP NetWeaver CE 7.3 platform and also entitles you to have access to the SAP support infrastructure.

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SAP support can be used to resolve technical issues encountered within SAP software or to obtain newer SAP support package stacks as they become available. For example, when you purchase a SAP NetWeaver Developer User license, you will:

1) Have access to the SAP support portal on the SAP Service Marketplace. For example, in the SAP Support Portal, SAP customers can obtain their software via download, and also have access to other important information relating to SAP software.

2) Request a development name space for your Java development.

3) Have access to valuable information regarding SAP SLD (SAP System Landscape Directory).

4) Have access to SAP supported software covered under your license agreement.

5) Have access to SAP support packages as they become available.

6) Have access to SAP notes (they help you to analyze and solve technical problems).

7) Have the capability to open up a trouble ticket and submit it to SAP support in order to resolve SAP errors.

8) Have access to information regarding the SAP Service- and Support Infrastructure.

Certification topics tested, covered, reviewed and discussed
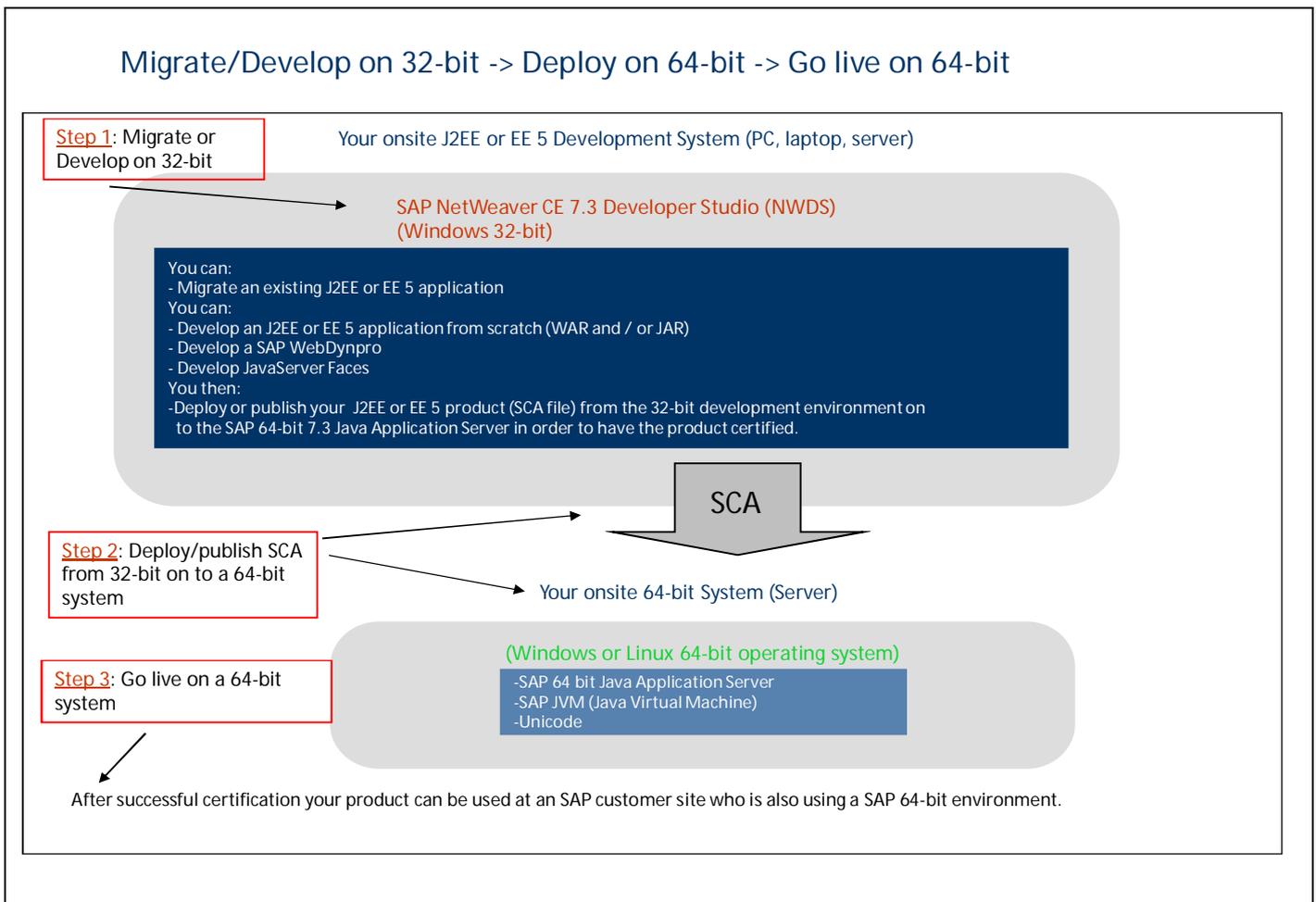
Mandatory test criteria relevant for JAVA-EE-NW 7.3

1) A **SAP NetWeaver Developer User license** must be purchased. Contact icc@sap.com for licensing details.

2) The document with the filename **EE_5_Technical_Product_Profile.doc** must be filled out and will be reviewed and discussed with your designated integration consultant once the certification contract has been signed**.** The document describes both the system environment and the technical details of your EE 5 product which will be utilized during your integration work**.** Your designated integration consultant will send this document to you via e-mail. The file **EE_5_Technical_Product_Profile.doc** will go hand in hand with the file **EE_5_Test_Report.doc.**

Once the certification contract has been signed, your designated integration consultant will send the file called **EE_5_Test_Report.doc** to you via e-mail. The **EE_5_Test_Report.doc** is used to document the certification test and is filled out by SAP during the certification test process.

3) Your EAR file **must** be packed into an SCA file (your final EE 5 certifiable software application) and then deployed using either the SAP Java Support Package Manager (JSPM) or the SAP NetWeaver Developer Studio. See also **SAP note 1223957** (you have access to the SAP note via the S user account you obtain by having purchased an SAP NetWeaver Developer User license) for instructions how to assemble an SCA file. An undeployment test will also be conducted. The reason you need to pack an EAR file into the SAP proprietary SCA file format and then deploy / undeploy the SCA file is to meet and adhere to SAP support requirements. Your certified product will meet the SAP Solution Manager Ready status. Read this in order to see how you can change the default preferences for the application server which the SAP NetWeaver Developer Studio uses when deploying applications.

The EE 5 Application must be deployed during the certification test on an SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition (**Support Package Stack 2 or greater SP2**) running on an SAP supported 64 bit operating system, database and platform.

Thus, you migrate/develop on a 32-bit environment (**Step 1**), deploy the product (EAR converted to an SCA file) on a 64-bit environment (**Step 2**), and after successful certification, your product (when sold to an SAP customer) will then run on a 64-bit SAP supported environment (**Step 3**) as depicted in the figure below.

Migrate/Develop on 32-bit -> Deploy on 64-bit -> Go live on 64-bit

Step 1: Migrate or Develop on 32-bit

Your onsite J2EE or EE 5 Development System (PC, laptop, server)

SAP NetWeaver CE 7.3 Developer Studio (NWDS)
(Windows 32-bit)

You can:
- Migrate an existing J2EE or EE 5 application
You can:
- Develop an J2EE or EE 5 application from scratch (WAR and / or JAR)
- Develop a SAP WebDynpro
- Develop JavaServer Faces
You then:
- Deploy or publish your J2EE or EE 5 product (SCA file) from the 32-bit development environment on to the SAP 64-bit 7.3 Java Application Server in order to have the product certified.

SCA

Step 2: Deploy/publish SCA from 32-bit on to a 64-bit system

Your onsite 64-bit System (Server)

Step 3: Go live on a 64-bit system

(Windows or Linux 64-bit operating system)
- SAP 64 bit Java Application Server
- SAP JVM (Java Virtual Machine)
- Unicode

After successful certification your product can be used at an SAP customer site who is also using a SAP 64-bit environment.

4) The EE 5 application must **start** and **function** successfully without any error (run on the server) after deployment. The EE 5 application must also allow the administrator to **stop** it correctly without any error. Furthermore, the Java EE 5 application must allow the administrator to completely **undeploy** it without any error. Details and instructions will be provided either by your designated integration consultant or contained in the zip file **java_ee_nw_73.zip** which you downloaded and extracted.

5) An **EE 5 application functional test** (minimum five mutually agreed-upon test cases) will be conducted. In addition, an **intentional EE 5 application error test** (minimum five mutually agreed-upon error test cases) requiring you to have your EE 5 application write error messages into the SAP logging framework will be mandatory in order to allow analyzing, troubleshooting and resolving of EE 5 application errors later on if needed. Thus, with the EE 5 application error test, your EE 5 application will need to create intentional errors in order to demonstrate that these error messages can be written into the SAP logging framework (open source logging frameworks such as log4j are not supported for certification purposes). In

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order for this to work, your EE 5 coding will need to be adjusted**. I**n the **java_ee_nw_73.zip** file you downloaded and extracted, see in the subfolder "***Other SAP Documents***" the files called **SAP_Logging_Bridge_NW_CE_7.2.pdf** and **Logging_Tutorial.zip** for instructions how to integrate 3rd party Java logging frameworks into SAP's logging framework. ***Both files are not only applicable for CE 7.2, but also for CE 7.3.***

The SAP NetWeaver Administrator (NWA) tool will be used to view the logs of an application and locate the error messages within the SAP logging framework. See also how to write and log trace messages, logging, tracing, and the SAP logging API.

See also developing logging-enabled applications.

6) The successfully deployed EE 5 application (SCA file) must be visible via the SAP NetWeaver Administrator (NWA) tool -> Configuration Management" -> Infrastructure -> System Information -> Components Info -> Software Components. In the "Software Components" section we must see the vendor, name, version, location of your deployed software component. This test ensures that your certifiable product is SAP Solution Manager Ready.

7) The SAP JVM (Java Virtual Machine) which is a certified Java SE 6 Virtual Machine (VM) and Java Development Kit (JDK) based on the Sun HotSpot technology must be used during certification.

8) You must document any configuration changes of SAP NetWeaver CE 7.3 Application Server Java needed for your application to work. For example, changes via the Config Tool, SAP NetWeaver Administrator Configuration Management, Platform Independent Java EE Application Configurations, Security Configurations, Configuration Changes in regards to migrating existing Java EE applications to AS Java, Configuring SAP JVM Parameters etc. The configuration changes will be documented in the file called **EE_5_Technical_Product_Profile.doc**.

9) The use of SAP backend applications (including ABAP programming and the use of SAP Java Connector is not mandatory, but is permitted if needed. In such cases, SAP ICC reserves the right to check if other certifications are required, for example, ABAP Add-On or an Integration Assessment type of certification. This must be discussed and documented in the **EE_5_Technical_Product_Profile.doc**.

10) Clustering, load balancing, and failover (XML schema element / attribute called fail-over-enable) of the EE 5 applications must be discussed and documented. This will simply be a discussion and does not mean the EE 5 application needs to fulfill these requirements in order to be certified.

11) Third-Party Resource Adapters cannot be certified. You must use the integration scenario called NW-XI-AF (Adapter Framework Certification).

12) A SAP portal application (PAR file) cannot be certified as an EE 5 application, since even if a PAR file could technically be packaged into an EAR file, it is not a standard EE 5 application.

13) Other sources of information helpful for EE 5 certification must be discussed. For example, http://help.sap.com, http://www.sdn.sap.com, http://service.sap.com.

Optional test criteria relevant for JAVA-EE-NW 7.3

1) J2EE 1.4 compliant applications can be certified.

2) JavaServer Faces (JSF) can be certified.

3) You can develop, deploy and certify a SAP Java WebDynpro application, since WebDynpro is also a component of SAP NetWeaver.

Documentation, Hardware and Software Requirements

Documentation

In order to familiarize yourself with the SAP NetWeaver CE 7.3 Application Server Java™ EE 5 Edition and the EE 5 development environment, both of which are part of the SAP NetWeaver Composition Environment (CE) 7.3, please read the documentation and other sources of information as indicated below:

1) **What's New?**
2) **Planning, Installation, Updating** and **Configuration**
3) **Administrator's Guide**
4) **Java Support Package Manager**
5) **SAP JVM**
6) **Developer's Guide**
7) ***SAP Service Marketplace** (check the SAP Support Portal for up-to-date specific information about SAP NetWeaver 7.3 CE as it becomes available. Some useful quick links are):

/netweaver	**SAP NetWeaver information**
/pam	**SAP Product Availability Matrix (search in PAM for SAP NetWeaver 7.3)**
/releasenotes	**SAP Release Notes**
/developmentnews	**SAP Development News (see also the SAP Developer Network)**
/installations	**SAP Installations & Upgrades**
/instguides	**SAP Installation & Upgrade Guides**
/licensekeys	**Request a permanent license key after installing or upgrading a SAP System**
/maintenance	**SAP Maintenance Strategy**
/namespaces	**Development Namespaces**
/patches	**SAP Support Packages and Patches**
/platforms	**Platform and Technology Information Center (includes information on supported operating system and database release combinations for SAP components)**
/releasestrategy	**SAP's Release Strategy**
/solutionmanager	**SAP Solution Manager (see also SAP Solution Manager Ready)**
/sp-stacks	**SAP Support Package Stacks**
/jspm	**Java Support Package Manager**
/swdc	**SAP Supported Software Distribution Center, Download**
	and many other areas you may be interested in.

*You will need a special user to **access certain links and or information on the SAP Service Marketplace**.

Hardware and Software Requirements

At the time of creation of this document, the following SAP supported Hardware and Software Requirements were available (***please check the SAP PAM for future SAP supported operating systems, databases, etc.***)

You need to install **SAP NetWeaver CE 7.3, Support Package Stack 2 (SP2)** or greater for certification purposes. You will need for certification purposes a 64 bit server, with at least 4 GB RAM and 500 GB of disk space in order to install the Java server along with a database. For the SAP NetWeaver Developer Studio (NWDS) installation, you will need a separate Windows 32 bit installation in order to install the NWDS.

In conclusion, whenever you are in doubt as to what platforms - hardware, operating systems, databases and Java Virtual Machines (JVMs) are supported by SAP and which ones can be used during certification, please either ask your designated ICC integration consultant and / or check the SAP Service Marketplace.

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Information Sources

Request assistance

For EMEA: icc@sap.com
For Americas: icc-americas@sap.com
For APA: icc-apa@sap.com

Integration Services:

Apply for services online   http://www.sap.com/PartnerApplication/icc

SAP Integration & Certification Center   http://www.sdn.sap.com/irj/sdn/icc

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