

# Services Registry: Classification Services

Applicable Releases:

SAP NetWeaver Process Integration 7.1 EhP1

SAP NetWeaver Composition Environment 7.1 EHP1

Topic Area:

SOA Middleware

Capability:

Repository-based Modeling and Design

SOA Management

Version 1.0

April 2009

© Copyright 2009 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft, Windows, Outlook, and PowerPoint are registered trademarks of Microsoft Corporation.

IBM, DB2, DB2 Universal Database, OS/2, Parallel Sysplex, MVS/ESA, AIX, S/390, AS/400, OS/390, OS/400, iSeries, pSeries, xSeries, zSeries, z/OS, AFP, Intelligent Miner, WebSphere, Netfinity, Tivoli, Informix, i5/OS, POWER, POWER5, OpenPower and PowerPC are trademarks or registered trademarks of IBM Corporation.

Adobe, the Adobe logo, Acrobat, PostScript, and Reader are either trademarks or registered trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Oracle is a registered trademark of Oracle Corporation.

UNIX, X/Open, OSF/1, and Motif are registered trademarks of the Open Group.

Citrix, ICA, Program Neighborhood, MetaFrame, WinFrame, VideoFrame, and MultiWin are trademarks or registered trademarks of Citrix Systems, Inc.

HTML, XML, XHTML and W3C are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

Java is a registered trademark of Sun Microsystems, Inc.

JavaScript is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

MaxDB is a trademark of MySQL AB, Sweden.

SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serves informational purposes only. National product specifications may vary.

These materials are subject to change without notice.

These materials are provided by SAP AG and its affiliated companies ("SAP Group") for informational purposes only, without representation or warranty of any kind, and SAP Group shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP Group products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

These materials are provided "as is" without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

SAP shall not be liable for damages of any kind including without limitation direct, special, indirect, or consequential damages that may result from the use of these materials.

SAP does not warrant the accuracy or completeness of the information, text, graphics, links or other items contained within these materials. SAP has no control over the information that you may access through the use of hot links contained in these materials and does not endorse your use of third party web pages nor provide any warranty whatsoever relating to third party web pages.

SAP NetWeaver "How-to" Guides are intended to simplify the product implementation. While specific product features and procedures typically are explained in a practical business context, it is not implied that those features and procedures are the only approach in solving a specific business problem using SAP NetWeaver. Should you wish to receive additional information, clarification or support, please refer to SAP Consulting.

Any software coding and/or code lines / strings ("Code") included in this documentation are only examples and are not intended to be used in a productive system environment. The Code is only intended better explain and visualize the syntax and phrasing rules of certain coding. SAP does not warrant the correctness and completeness of the Code given herein, and SAP shall not be liable for errors or damages caused by the usage of the Code, except if such damages were caused by SAP intentionally or grossly negligent.

#### 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 expressly 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.

## Document History

Document Version	Description
1.00	First official release of this guide

## Typographic Conventions

Type Style	Description
<i>Example Text</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options.  Cross-references to other documentation
<b>Example text</b>	Emphasized words or phrases in body text, graphic titles, and table titles
Example text	File and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
<b>Example text</b>	User entry texts. These are words or characters that you enter in the system exactly as they appear in the documentation.
< <b>Example text</b> >	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

## Icons

Icon	Description
	Caution
	Note or Important
	Example
	Recommendation or Tip

## Table of Contents

<b>1.</b>	<b>Scenario</b> .....	<b>1</b>
<b>2.</b>	<b>Background Information</b> .....	<b>2</b>
<b>3.</b>	<b>Prerequisites</b> .....	<b>3</b>
<b>4.</b>	<b>Step-by-Step Procedure</b> .....	<b>5</b>
4.1	Classification in Services Registry.....	7
4.1.1	List and Browse Services via Classification.....	7
4.1.2	Publication of Services with a Certain Classification Assigned within the Services Registry .....	8
4.1.3	Manage Classifications in the Services Registry .....	9
4.2	Using Classification for Access Control within the Services Registry .....	12
4.2.1	Switching on the Access Control within the Services Registry.....	12
4.2.2	Working with Permission Templates.....	13
4.3	Usage of Classification in the Enterprise Services Repository .....	14
4.4	Classification Services API and Interoperability .....	17
4.5	Other Tools and Applications Making Use of Classification.....	20
4.5.1	IDE .....	20
4.5.2	NWA – Publication Rules.....	22
4.5.3	ABAP Backend .....	23
4.5.4	WS Navigator .....	26
4.5.5	SAP Enterprise Services Explorer for Microsoft .NET .....	27
4.6	Maintenance of Classification Content .....	28
<b>5.</b>	<b>Appendix</b> .....	<b>29</b>

## 1. Scenario

A Services Registry is especially useful in a Service Oriented Architecture within System Landscapes with a higher number of Enterprise Services and its components. In order to manage the content within a registry effectively, the use of SAP's classification services can be a powerful mechanism to extend the metadata of services with additional attributes, tailored to the individual needs of each company.

Classification services are an integral part of the Services Registry and are offered in addition to the UDDI v3.0 standard. They can be beneficial while searching for an individual service, getting information about its status as well as managing the lifecycle of services. By this the classification services can be seen as one important prerequisite and part of a SOA governance and as a powerful means of structuring the content of the registry.

This document describes how registry classification services can be used with SAP NetWeaver Process Integration 7.1 EhP1 or/and SAP NetWeaver Composition Environment 7.1 EhP1 and points out some hints and best practices in that area, without claiming for completeness.

## 2. Background Information

Services can be structured with the help of classification services. The classification system is maintained within the services registry as the central and leading system for this purpose. These classifications are used while classifying services on the provider system and within the Enterprise Services Repository during design time and publication of services.

External services can be classified in the Service Registry as well.

The classification system itself currently addresses the following main issues:

1. Structuring the services in the Services Registry in accordance to the need of your company
2. Providing other tools or clients with this structural information
3. Enable efficient search capabilities in the Services Registry
4. Enable authorization for service definitions on a more granular level

### 3. Prerequisites

1. Usage of SAP NetWeaver Process Integration 7.1 EhP1 or SAP NetWeaver Composition Environment 7.1 EhP1 for the central Services Registry
2. The UDDI V3 – server of central registry is configured and running. This is SAP's UDDI Server by default. No additional action after standard installation is required.
3. Access to Central Services Registry is configured from the local systems:  
Logon as an administrator to the SAP NetWeaver Administrator Tool and select *Configuration Management => Scenarios => Configuration Wizard => Connection Configuration to Central Services Registry => Execute Configuration Task "Connection Configuration to Central Services Registry"*

**Configuration Wizard: Overview** [Home](#) [History](#) [Back](#) [Forward](#) [Help](#) [Log Off](#)

Configuration Tasks Related Links

First chose the view, then select a task and the action you want to perform  
Show:

Task Name	Status	Executed By	Execution Time
Configuration of ESR in CE	Initial		
Connection Configuration to Central Services Registry	Cancelled	Administrator	2008-11-12 13:18:24
Initial setup of functional unit ADS	Initial		
Initial setup of functional unit SLD	Initial		
Services Registry Destinations Creation	Initial		

**Description**

Connection Configuration to Central Services Registry  
This configuration task sets the proxy connection to the central Services Registry.

**Details**

Execute the Configuration Task *"Connection Configuration to Central Services Registry"* and provide therein hostname, port and user and password for accessing the central registry.

**Configuration Wizard: Overview** [Home](#) [History](#)

Connection Configuration to Central Services Registry

0%  
Step 1 of 2: Get user input for Services Registry Proxy properties

**Set central Services Registry properties**

**Central Services Registry details**

Host:  ⓘ

Port:  ⓘ

User Name:  ⓘ

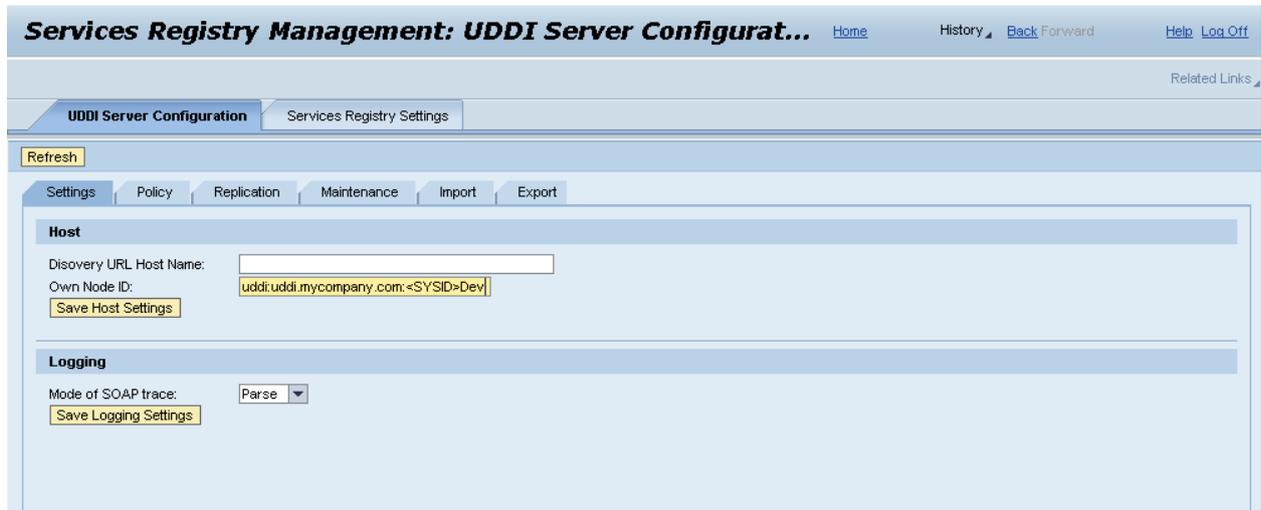
Password:

*Pressing "Next" button will start the wizard execution*

**Details**

After successful execution of this configuration task, the alias “sr\_central” can be used that is pointing to the central registry in addition to the alias “sr” for the local registry.

- Maintaining classification from several CE-systems is recommended to be carried out in one central registry with the help of the alias “sr\_central”. This helps to ensure consistency and also reduces the number of access points to registry classifications while using them in development (Enterprise Services Repository) or during publication (from the backend).
- It is not necessary by default to run the CTC task “Services Registry Destinations Creation” or to set the destination UDDI\_DESTINATION, neither CLASSIFICATION\_DESTINATION (*NetWeaver Administrator => SOA Management => Technical Configuration => Destination Template Management*)
- Classifications and their values can be seen as some kind of content within the registry. In order to avoid conflicts during possible transports (import/exports) it is recommended to work with you own unique UDDI NodeID in the registry and not use the default settings after installation.  
 You can set this in the *NetWeaver Administrator => SOA Management => Technical Configuration => Services Registry Management => UDDI server Configuration Settings => Own Node ID*.  
 Important!!!: This has to be carried out during the initial configuration of the registry after installation. Do not change the own Node ID later on (this would mean re-initialization of the registry content, including the classification systems and their content)!



## 4. Step-by-Step Procedure

This chapter describes the individual areas where classification is used at current. The respective detailed steps that have to be carried out while using classification services are explained later within this chapter.

Scope	Component	Actions related to Classification	Tools/Link	Options related to Classification
Design Time and Governance	Services Registry	Maintain (Create, Change, Delete, Permissions); Classify Service Definitions, Discover (Search, Browse via classification), Publish	Alias "SR", "SR_Central"	Central and Local Registry
Design Time	Enterprise Services Repository	Classify Service Interfaces; Publish; Discover		Search also for all service interfaces within a whole namespace or SWCV
Design Time & Implementation	Development Environment ABAP	Discover (Search, Browse), Classify	IDE (TA "SE80")	Configuration to multiple Services Registries with classification
Design Time & Implementation	SAP NetWeaver Developer Studio	Discover (Search, Browse), Classify	Import Manager, WebService Implementation (Java)	Configuration to exactly one ESR and exactly one registry via preference settings; Search by classifications only while importing WSDL from registry (not available during import from ESR)
Configuration & Administration	Application Server ABAP	Discover (Search, Browse), Publish	SOAMANAGER	Configuration to multiple Services Registries with classification
Configuration and Administration	Application Server Java	Discover (Search, Browse), Publish Services described within SAP	Service Publications Rules in NWA	Configuration to exactly one registry with classification

<b>Enterprise Service Browser for .Net</b>	<b>.Net Visual Studio</b>	<b>Discover (Search, Browse), Classify, Publish Services described outside SAP</b>		
<b>Test and QA</b>	<b>WS Navigator</b>	<b>Discover (Search, Browse)</b>		

## 4.1 Classification in Services Registry

The Services Registry comes with a predefined classification system and content that can be seen as an SAP specific extension to the UDDI v.3 standard. As an administrator or user with the respective UME-role you can maintain the classification directly via the Service Registry User Interface.

### 4.1.1 List and Browse Services via Classification

You can browse for services or service groups that are classified with a certain classification and its value:

Alias *"sr\_central"* => *Service Definitions/Service Groups => Search => Advanced*

or

Alias *"sr\_central"* => *Classifications => Show Advanced Search*

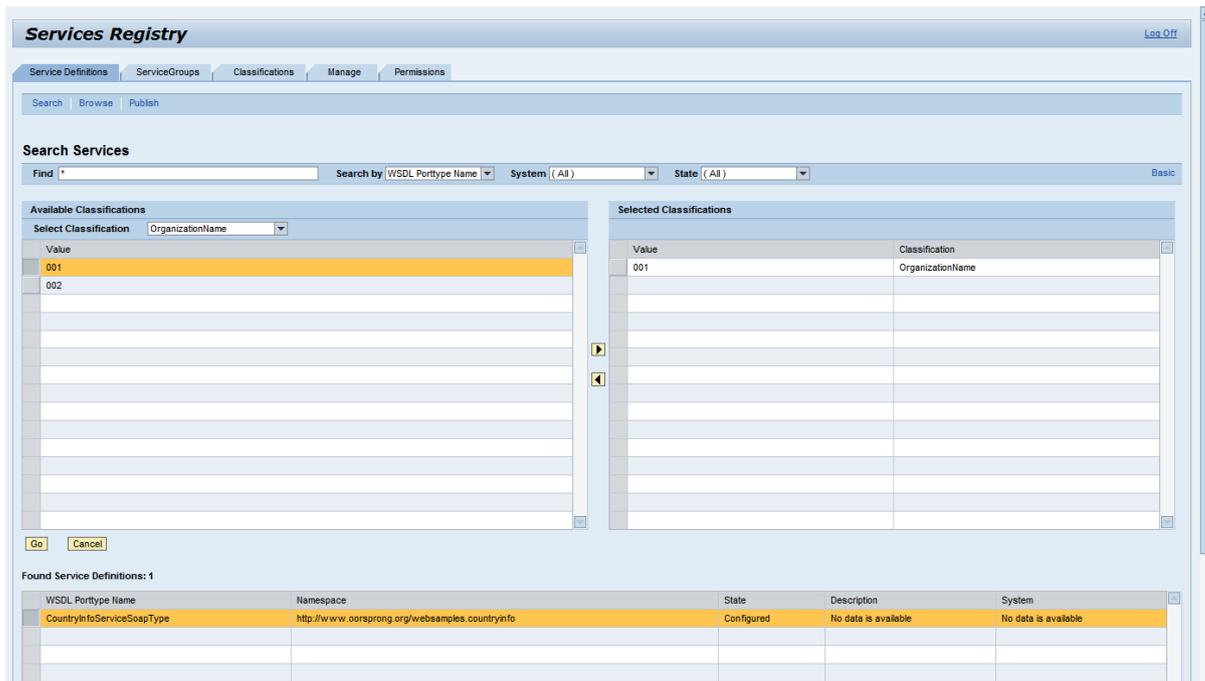


If you select several classification values, all the services are listed that match ALL the criteria specified.



In order to search for a given service by classification a user has to have assigned at least the following UME-roles:

- a) UDDI\_TierN and SERVICES\_REGISTRY\_READ\_ONLY if the user intends to have access to its own defined services only.
- b) UDDI\_Admin and SERVICES\_REGISTRY\_READ\_ONLY if the user intends to have access to data of other users too.



**Services Registry** Log Off

Service Definitions | ServiceGroups | **Classifications** | Manage | Permissions

Search | Browse | Publish

**Search Services**

Find \* Search by WSDL Porttype Name System (All) State (All) Basic

**Available Classifications**

Select Classification OrganizationName

Value
001
002

**Selected Classifications**

Value	Classification
001	OrganizationName

Go Cancel

Found Service Definitions: 1

WSDL Porttype Name	Namespace	State	Description	System
CountryInfoServiceSoapType	http://www.oorsprong.org/websamples.countryinfo	Configured	No data is available	No data is available

-  If you choose “Browse” for classified services you can find services that are classified at least with one classification system of type hierarchic or group (not flat).

#### 4.1.2 Publication of Services with a Certain Classification Assigned within the Services Registry

One can initially assign classifications values to a service while publishing:

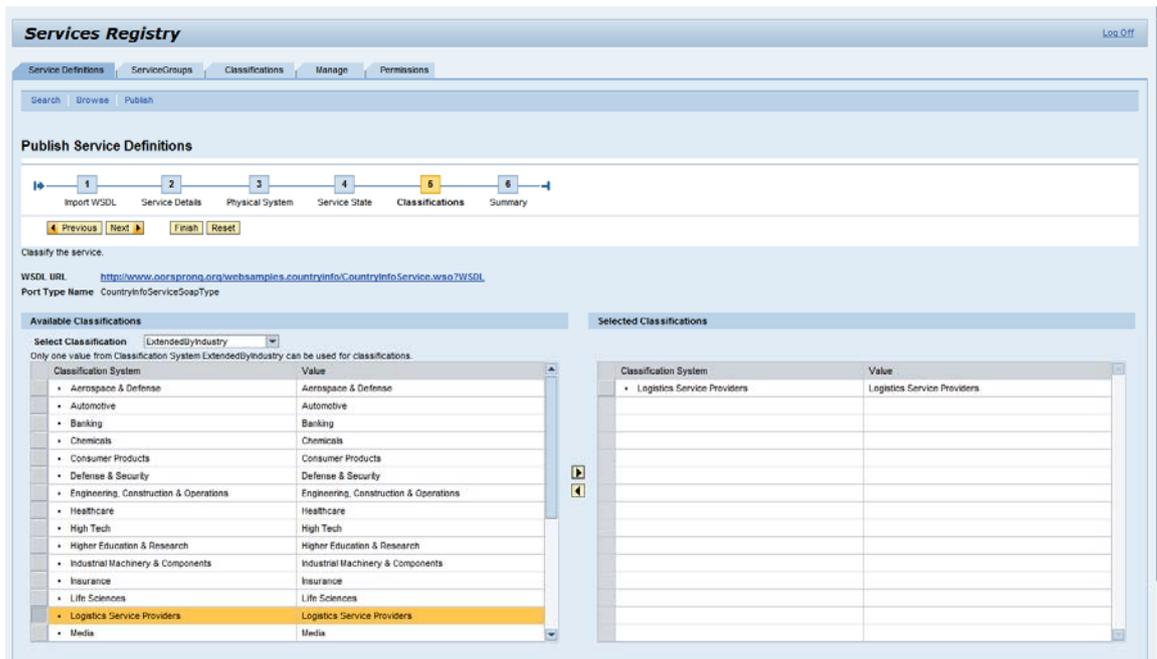
Alias “sr\_central” => Service Definitions => Publish

-  In order to publish services and add the classification value to a service definition a user has to have assigned at least the following permissions:

UDDI\_TierN and SERVICES\_REGISTRY\_READ\_WRITE

The required permissions are maintained in the user management of the SAP JEE only. At current there does not exist any ABAP-role/JEE-group dedicated to the registry and its classification (if UME with ABAP is selected as the user store, e.g. with SAP NetWeaver Process Integration).

There are also no roles dedicated just for publishing services.



**Services Registry** Log Off

Service Definitions | Service Groups | **Classifications** | Manage | Permissions

Search | Browse | Publish

**Publish Service Definitions**

1 Import WSDL | 2 Service Details | 3 Physical System | 4 Service State | **5 Classifications** | 6 Summary

Previous | Next | Finish | Reset

Classify the service:

WSDL URL: <http://www.oorsprogn.org/websamples/countryinfo/CountryInfoService.wsdl?WSDL>  
 Port Type Name: CountryInfoServiceSoapType

**Available Classifications**

Select Classification: ExtendedIndustry

Only one value from Classification System ExtendedIndustry can be used for classifications.

Classification System	Value
Aerospace & Defense	Aerospace & Defense
Automotive	Automotive
Banking	Banking
Chemicals	Chemicals
Consumer Products	Consumer Products
Defense & Security	Defense & Security
Engineering, Construction & Operations	Engineering, Construction & Operations
Healthcare	Healthcare
High Tech	High Tech
Higher Education & Research	Higher Education & Research
Industrial Machinery & Components	Industrial Machinery & Components
Insurance	Insurance
Life Sciences	Life Sciences
<b>Logistics Service Providers</b>	<b>Logistics Service Providers</b>
Media	Media

**Selected Classifications**

Classification System	Value
Logistics Service Providers	Logistics Service Providers

### 4.1.3 Manage Classifications in the Services Registry

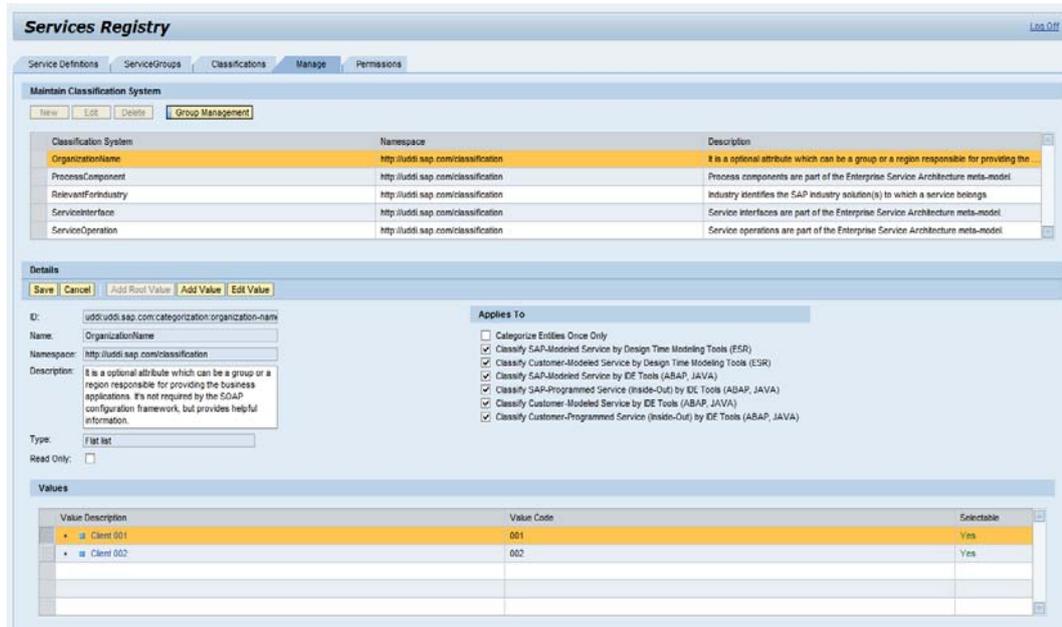
You can create and maintain classification master data (i.e. classification systems with its details, attributes and its values) within this section of the services registry:

Alias "sr\_central" => *Manage*



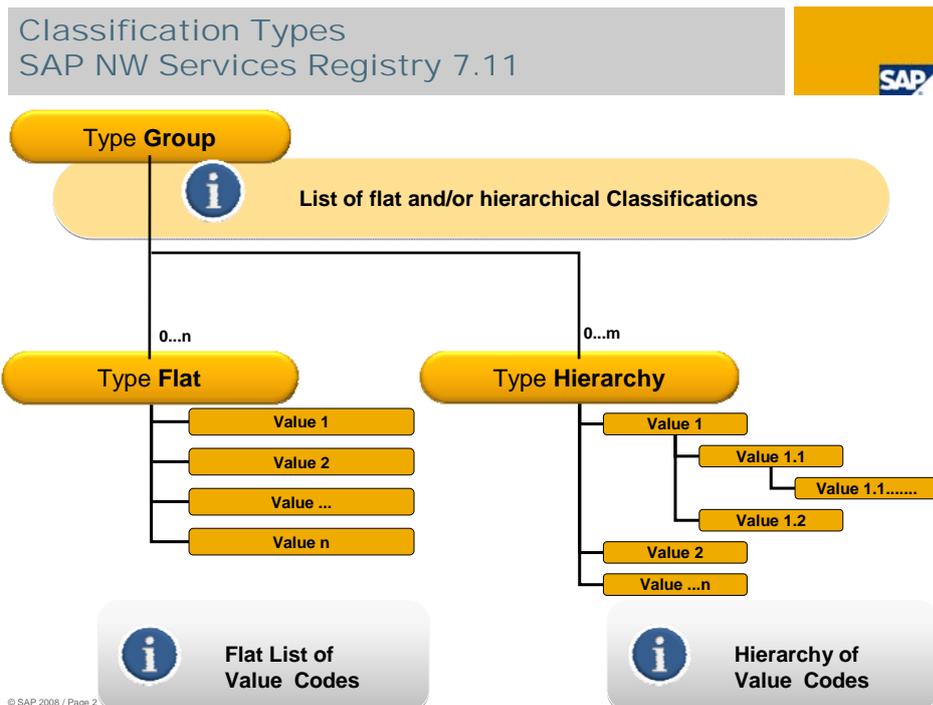
In order to manage services and add the classification value a user has to have assigned *at least the following permissions/roles:*

- a) UDDI\_TierN and SERVICES\_REGISTRY\_READ\_WRITE if the user intends to maintain its own classifications
- b) UDDI\_Admin and SERVICES\_REGISTRY\_READ\_WRITE if the user intends to maintain all available classifications.



There are 3 different types of classification systems:

- Flat – this type refers to classifications that simply contain a flat list of values.
- Hierarchy – objects of this classification type contain a hierarchy of values
- Group – this type of classification consists of a list of other classifications (not values!). They can be of type flat or/and hierarchical.



-  You can not delete classifications and its values if they are already assigned to a service definition. At current it is also not possible to delete values from a hierarchy classification.
-  For every classification there is a “Read Only” flag. If you select this flag, during publishing services and while adding classifications to services there can not be selected any values!

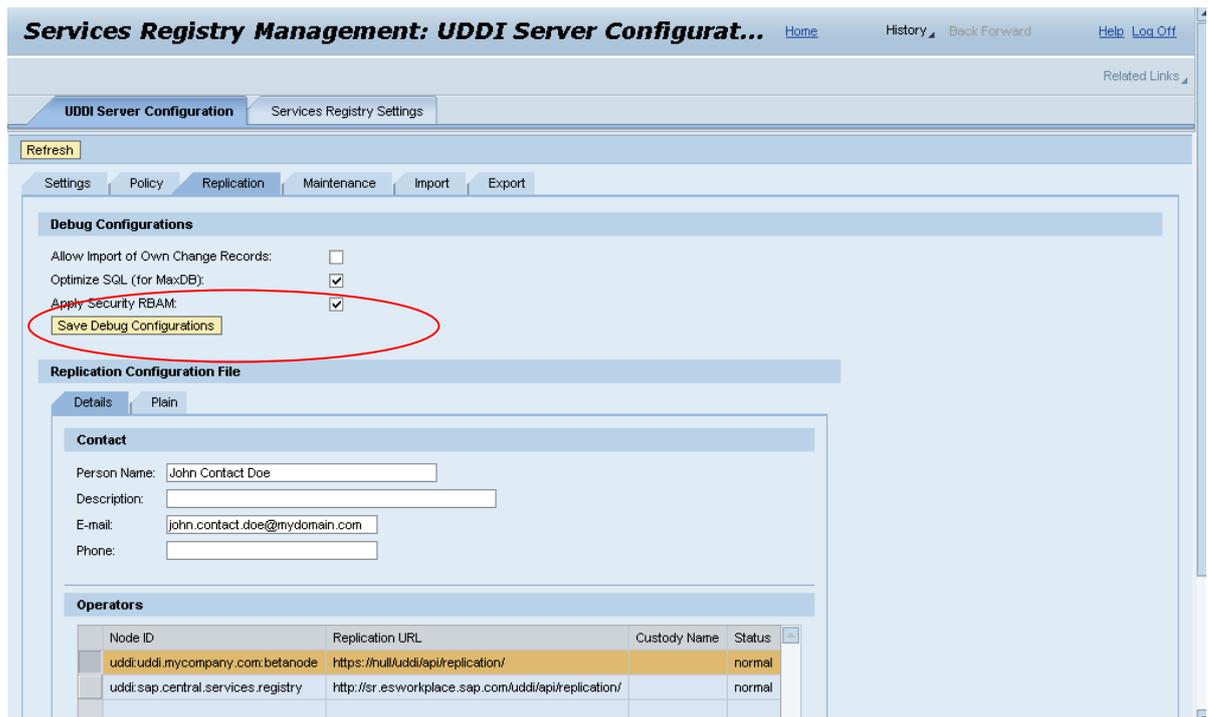
## 4.2 Using Classification for Access Control within the Services Registry

### 4.2.1 Switching on the Access Control within the Services Registry

In order to restrict the access to certain service definitions in the Services Registry on a service level permission templates are introduced with SAP NetWeaver Process Integration / Composition Environment 7.1 EhP1.

To work with permission templates, there is a system wide setting to be switched on in the SAP NetWeaver Administrator:

*Configuration Management => Infrastructure => Services Registry Management => UDDI Server Configuration => Replication => "Apply Security RBAM" (RBAM = Rule based authorization management for UDDI entities)*



The screenshot shows the SAP NetWeaver Administrator interface for 'Services Registry Management: UDDI Server Configuration'. The 'Replication' tab is selected, and the 'Apply Security RBAM' checkbox is checked and highlighted with a red circle. Below this, the 'Replication Configuration File' section is visible, including a 'Contact' form and an 'Operators' table.

Node ID	Replication URL	Custody Name	Status
uddi:uddi.mycompany.com:betanode	https://null/uddi/api/replication/		normal
uddi:sap.central.services.registry	http://sr.es.workplace.sap.com/uddi/api/replication/		normal



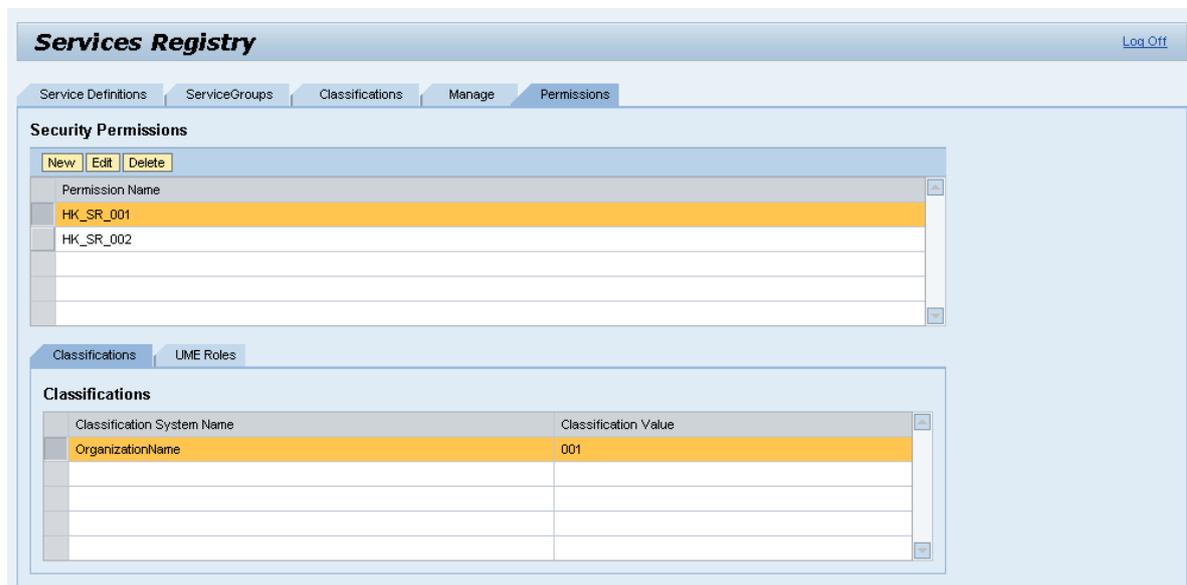
Security restrictions apply for all service definitions that will be published AFTER making the setting above.

## 4.2.2 Working with Permission Templates

With the help of Security Permission Templates one can restrict the access to Service Definitions within the Services Registry based on classification values. A given security permission assigns these classification values to SAP JEE UME Roles.

Only SAP JEE users or user groups that have the required role(s) assigned will have access to the service definition after publication.

Maintenance of permission templates requires the SAP JEE role "SERVICES\_REGISTRY\_READ\_WRITE". The alias "sr" or „sr\_central“ is extended with a permission section in such case.



The screenshot displays the SAP Services Registry interface. At the top, there is a navigation bar with tabs for Service Definitions, ServiceGroups, Classifications, Manage, and Permissions. The Permissions tab is active. Below the navigation bar, there are two main sections:

- Security Permissions:** This section contains a table with the following data:

Permission Name
HK_SR_001
HK_SR_002
- Classifications:** This section contains a table with the following data:

Classification System Name	Classification Value
OrganizationName	001

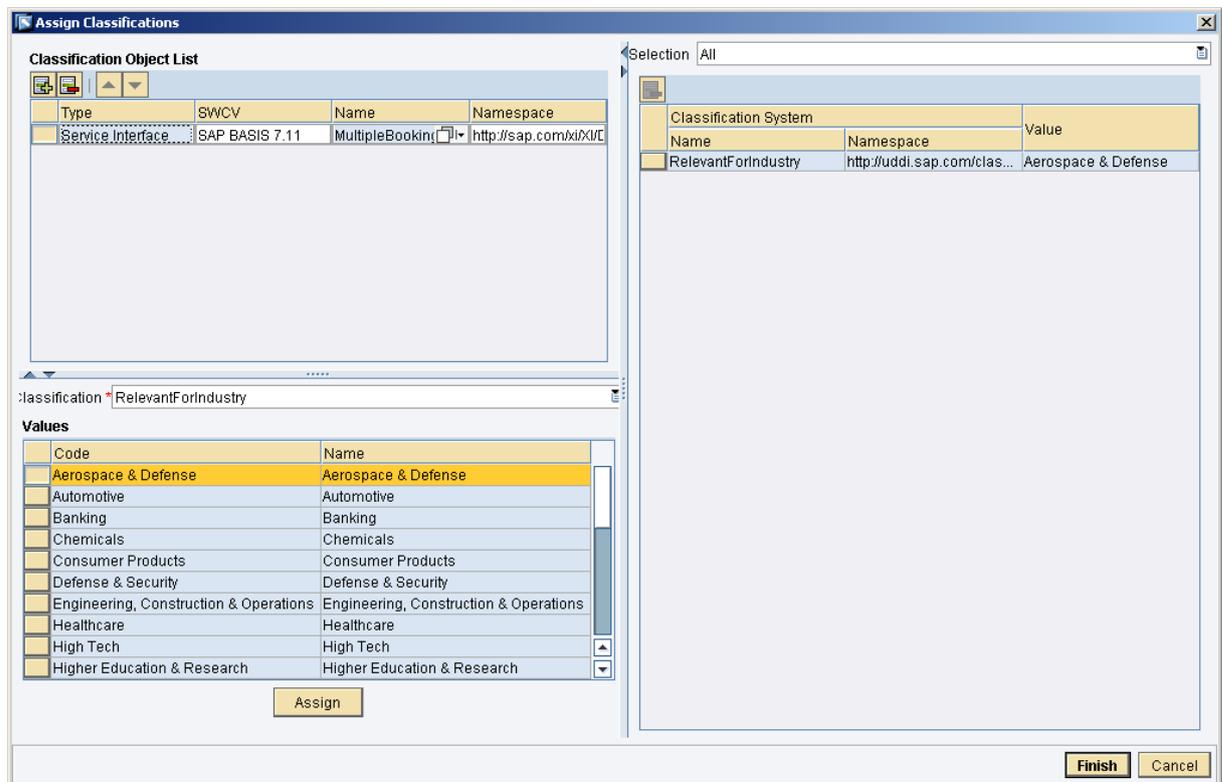
 Service Definitions, already existing in the Services Registry, that match the classification value specified within a given permission template, must be republished in order to be taken into account!

Also, changing the permission template requires republication of the affected Service Definitions.

## 4.3 Usage of Classification in the Enterprise Services Repository

You can access the classification within the ESR with the following menu:

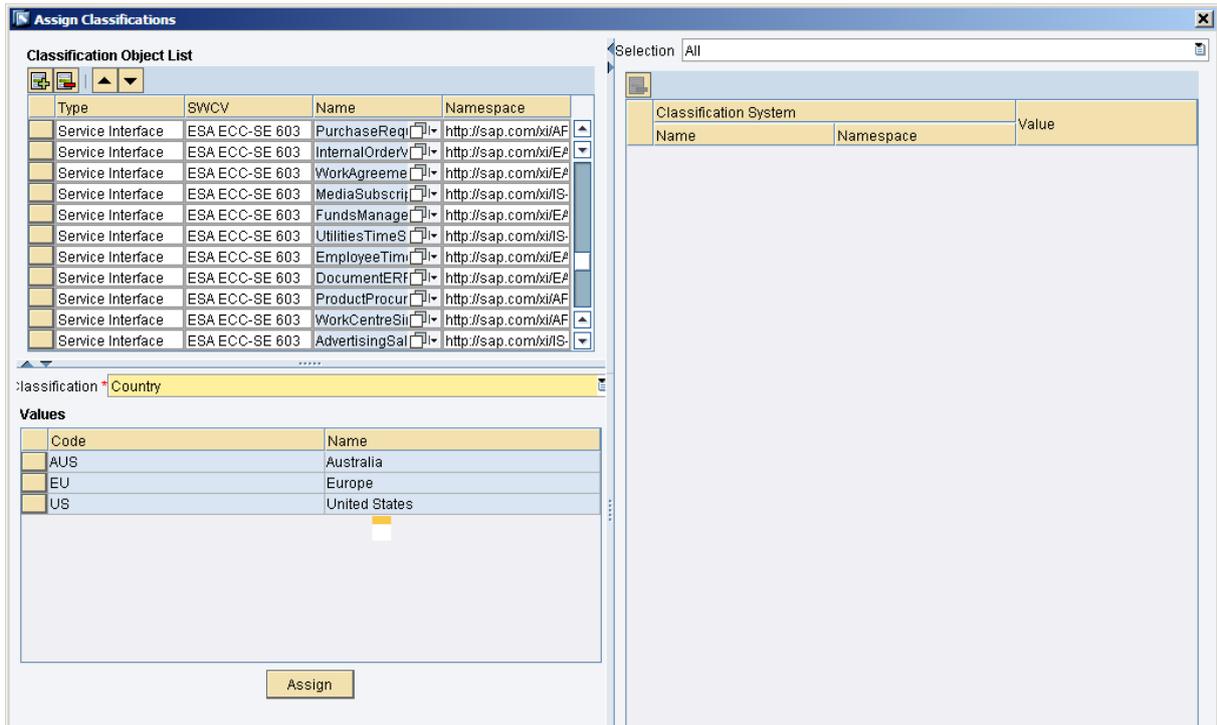
*Tools => Classification*



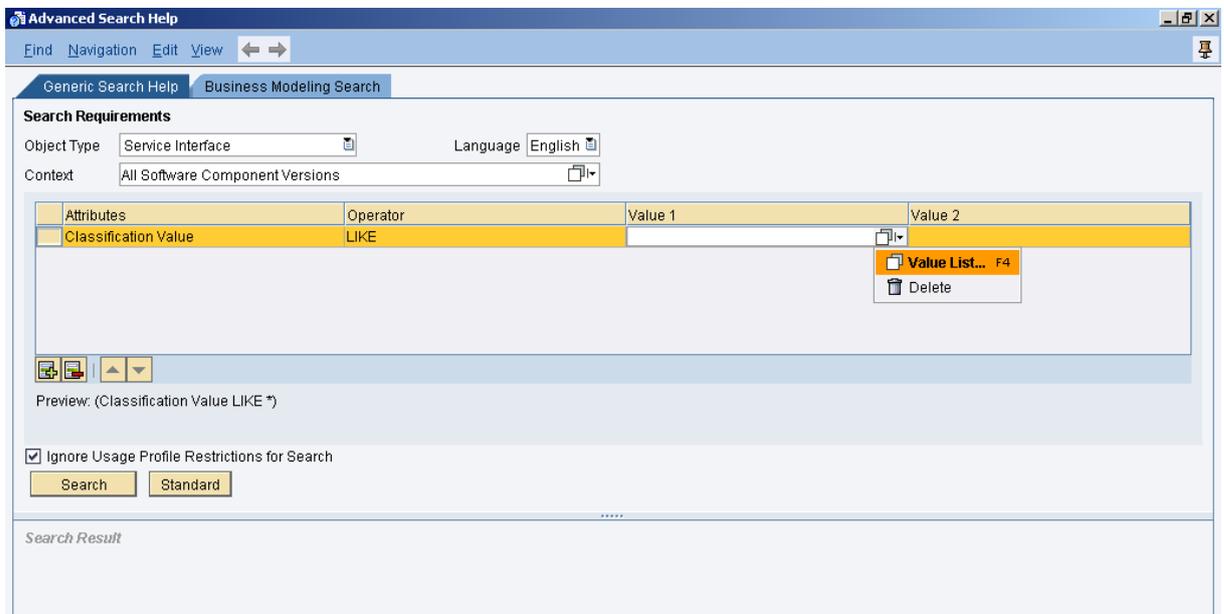
It is possible to assign values of classifications to service interfaces within the SAP NetWeaver Enterprise Services Repository that are predefined or customer defined within the Services Registry. You can only assign classifications to objects of type service interface.

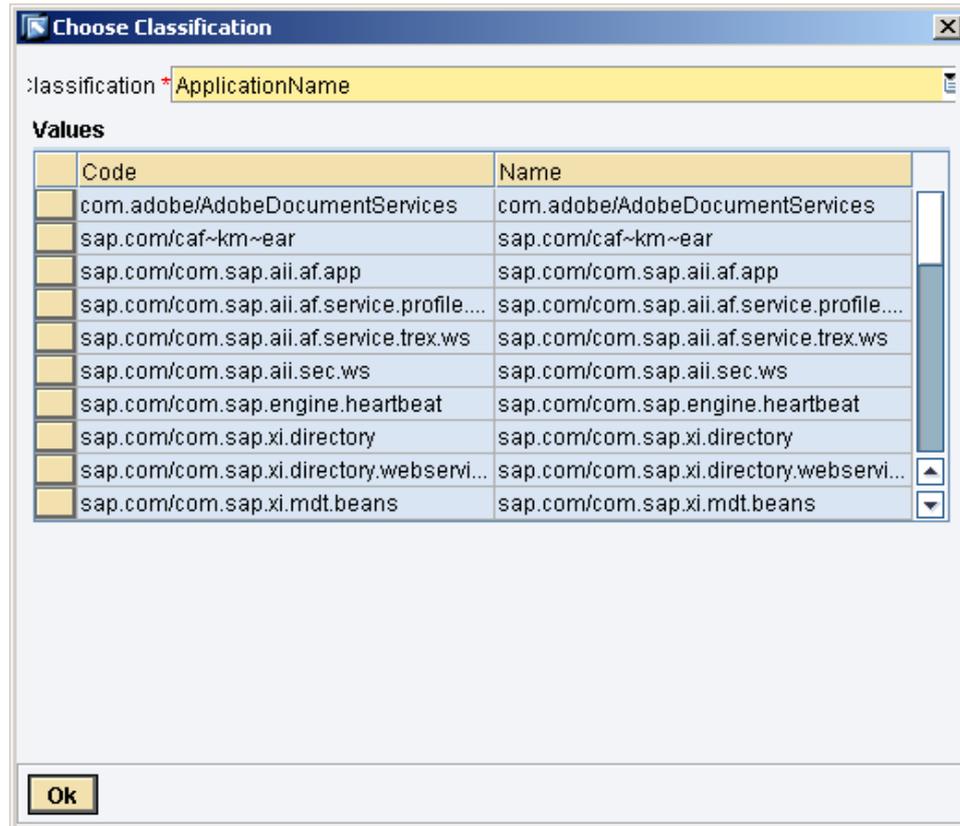
Classification systems and its values as metadata are not cached in the repository. Classification values chosen and assigned to service interfaces are stored within the repository.

-  Although classification values can be assigned to service interfaces only, it is also possible to select a namespace or software component version in order to classify all the service interfaces of this given namespace or software component version with the same values (mass assignment). Choose *classification* from the context menu after selecting the respective namespace in such case.



It is also possible to search for classified objects of type service interface in the following manner:  
*Object => Find => Select Object Type "Service Interface" => Press Extended => Select Attribute "Classification Value"*





-  From a pure technical perspective it is possible to classify and publish service definitions or within the Services Registry directly or within the Enterprise Services Repository.

Since existing classification value assignments for service definitions will be overwritten in the Services Registry while publishing the correspondent service interface definition (with their respective classification values assigned) from the Enterprise Services Repository again to the Services Registry, the following recommendation can be given as some kind of best practice:

- Maintain the classification systems and their values as some kind of master data within a Central Services Registry.
- Classification assignments should be made always in one central place, i.e. or in the Enterprise Services Registry or within Enterprise Services Repository.
- For Outside-In Development Approach, service interfaces have to be classified within the Enterprise Services Repository (see also chapter 4.5.3 for details)

-  The Process Integration Directory does not use the classification services yet, even during publication of services with their respective endpoints from a sender agreement of the adapter types “WS” or “SOAP”.

## 4.4 Classification Services API and Interoperability

Classification Support in UDDi v3 is very limited since this Standard was originally not intended to address extended business semantics. Therefore, as already stated above, SAP added its enterprise services classification in addition to the standard-conform UDDI part of the Services Registry. This is also the reason why the classification API is SAP proprietary.

There are high level API's and low level (UDDI) standard API's available. For classification services with external tools SAP's proprietary Services Registry API's for Java and ABAP should be used with their latest version 1.1.

This is documented in the SAP Help Portal:

[http://help.sap.com/saphelp\\_nwpi71/helpdata/en/45/bc01c4900b0039e10000000a11466f/content.htm](http://help.sap.com/saphelp_nwpi71/helpdata/en/45/bc01c4900b0039e10000000a11466f/content.htm)

WebServiceNavigator can be used for testing the individual operations of the interface.

There was also a dedicated interface available for classifications: ClassificationServiceVi Please note that this interface is obsolete in SAP NetWeaver Process Integration/SAP NetWeaver Composition Environment 7.1 EhP1.

Example with WebServiceNavigator:

In order to retrieve all classification metadata with a service consumer you can use the operation *getClassificationSystemsGreaterThanVersion* of the service interface *ServicesRegistrySi*

The screenshot shows the 'Service Test' interface with a search for service interfaces. The search type is set to 'Provider System' and the search for field is empty. The provider system is set to 'Local Java AS'. The search results show 32 service interfaces, with 'ServicesRegistrySi' highlighted in yellow.

Name	Namespace
SalesOrderByIDQueryResponseIn	http://sap.com/xi/INVDemo
SalesOrderIDByBuyerQueryResponseIn	http://sap.com/xi/INVDemo
ServicesRegistryFlatSi	http://sap.com/esi/Uddi/sr/api/vrs/
ServicesRegistrySi	http://sap.com/esi/Uddi/sr/api/vrs/
SimpleEchoEJBBean	http://grmg/
TXVRepositoryAPI	http://srgp.com/xi/BASIS
UDDISecurity	http://sap.com/esi/Uddi/ejb/security/
WSCconnector	urn:WSCconnector/WSCconnector
WSRMCallbackVi	urn:WSRMCallbackWsd/WSRMCallbackVi
wssprocessorVi	urn:wssprocessorWsd/wssprocessorVi

**SAP NetWeaver™ WS Navigator**

Service Test | Test Scenario

1 Service | 2 **Operation** | 3 Input Parameters | 4 Result

Previous | Next | Invocation Parameters | Invoke | Add to Test Scenario

**Service Information**

**Operations**

Operation Name
findServiceDefinitionsByKeywords
findServiceEndpoints
getClassificationSystemValues
getClassificationSystemValuesFlat
getClassificationSystems
<b>getClassificationSystemsGreaterThanVersion</b>
getConsumerGroups
getGroupClassificationSystemValues
getGroupClassificationSystemValuesFlat
getGroupClassificationSystems

Service Test | Test Scenario

1 Service | 2 Operation | 3 Input Parameters | 4 **Result**

Previous | Next | Invocation Parameters | Invoke | Add to Test Scenario

**Service Information**

**Input Parameters**

- getClassificationSystemsGreaterThanVersion:
  - version: 0
  - listHead: 0
  - maxRows: 300

**Result**

- getClassificationSystemsGreaterThanVersionResponse:
  - return:  Skip
  - classificationSystems []:  Skip
    - classificationSystem:
      - description []:  Skip
        - description:
          - language:  Skip
          - text: [The name of the technical]  Skip
        - groupComponentIds []:  Skip
        - hasValues:  True  Skip
        - normalizeCodes:  True  Skip
        - onlyOnce:  True  Skip
        - parameters []:  Skip
          - qname: {http://uddi.sap.com/class}  Skip
          - readOnly:  True  Skip
          - type: FLAT  Skip
          - uddiKey: uddi:uddi.sap.com:category  Skip

Besides the name and other attributes the uddiKey for the classification system is provided. This uddiKey can be used as a further input parameter for other operations, e.g. to retrieve the values of a given classification system with operation getClassificationSystemValues:

The screenshot displays the SAP Service Test interface. At the top, there are tabs for 'Service Test' and 'Test Scenario'. Below these, a progress bar shows four steps: 1. Service, 2. Operation, 3. Input Parameters, and 4. Result. The 'Input Parameters' step is currently active. Below the progress bar, there are navigation buttons: 'Previous', 'Next', 'Invocation Parameters', 'Invoke', and 'Add to Test Scenario'. The main area is divided into two sections: 'Input Parameters' and 'Result'.

**Input Parameters:**

- getClassificationSystemValues:
  - classificationSystemKey:  Skip
    - qname:  Skip
    - uddiKey: uddi:uddi.sap.com:category  Skip
    - version:
    - listHead:
    - maxRows:

**Result:**

- getClassificationSystemValuesResponse:
  - return:  Skip
    - classificationSystemValue []:  Skip
      - classificationSystemValue:
        - children []:  Skip
        - code: com/loc-nrwdemo-sm-ear  Skip
        - disabled:  True
        - name: com/loc-nrwdemo-sm-ear  Skip
      - classificationSystemValue:
        - children []:  Skip
        - code: sap.com/com.sap.engine.heartbeat  Skip
        - disabled:  True
        - name: com.sap.engine.heartbeat  Skip
      - classificationSystemValue:
        - children []:  Skip
        - code: sap.com/com.sap.xi.mdt.b  Skip

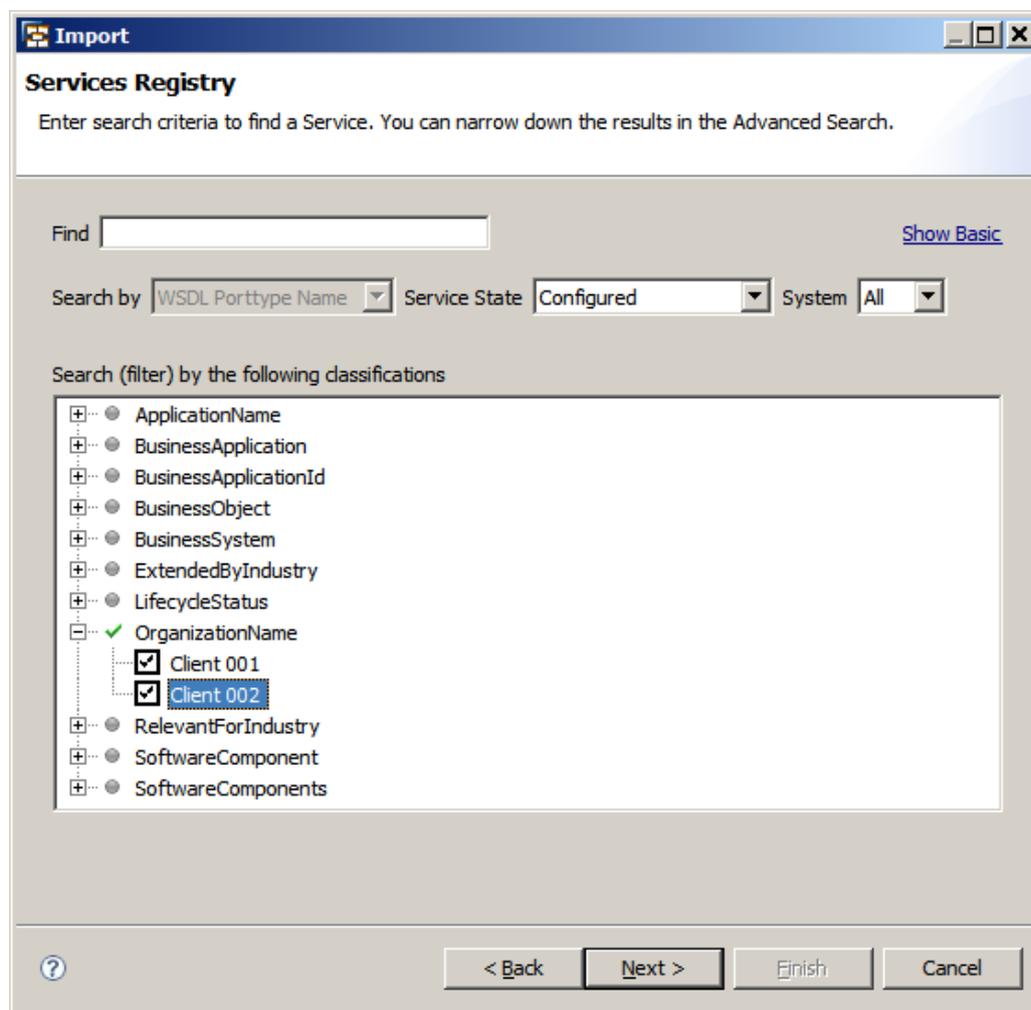
Authorizations with permission templates are taken into account also via the Services Registry Java API in its latest version 1.1 only!

## 4.5 Other Tools and Applications Making Use of Classification

### 4.5.1 IDE

The Import Manager in SAP NetWeaver Developer Studio makes use of classifications as well while searching for services against the Service Registry. Results are retrieved synchronously and are not cached in the SAP NetWeaver IDE.

Choose available WSDL-source “*Services Registry*” => Select “*Show Advanced*”. The Classifications are listed and one can restrict the service selection in accordance to the classification.



↑ At current it is not possible to restrict the result list for service interfaces within the import manager via classification if “Services Repository” is selected as the WSDL-source (i.e. of classified service interfaces from the configured Enterprise Services Repository)

↑ There is no classification information transferred during proxy generation.

When you add classification information to a Web service, the system:

- Creates the following file in the project: <implementation bean name>.classifications.
- Contains the classifications you added to the implementation bean.
- Creates or updates a *sr-publication.metadata* file in the *META-INF* folder of the project.
- Inserts the following annotation in the implementation bean:  

```
@SrPublication(location="<path>")
```
- Contains a reference from the implementation bean to its classifications file.

The procedure for adding classifications is the following:

1. In the Project Explorer of the J2EE perspective, choose the Web service implementation bean, and then from the context menu, choose *Web Services* → *Create Publication Information*.
2. In the *Output Package* field, enter the package in which you want the system to generate the classifications file, or leave the default value.
3. In the *Classification File* field, enter a name for the classification file, or leave the default value.
4. Choose *Finish*.
5. The system opens the classification systems on the Services Registry.
6. From the *Classification Systems* window, expand the relevant node, and then select the necessary classifications.
7. Save your changes.

 If the classification assignments described above are published to the service registry, other existing classification assignments to that service definition will be overwritten.



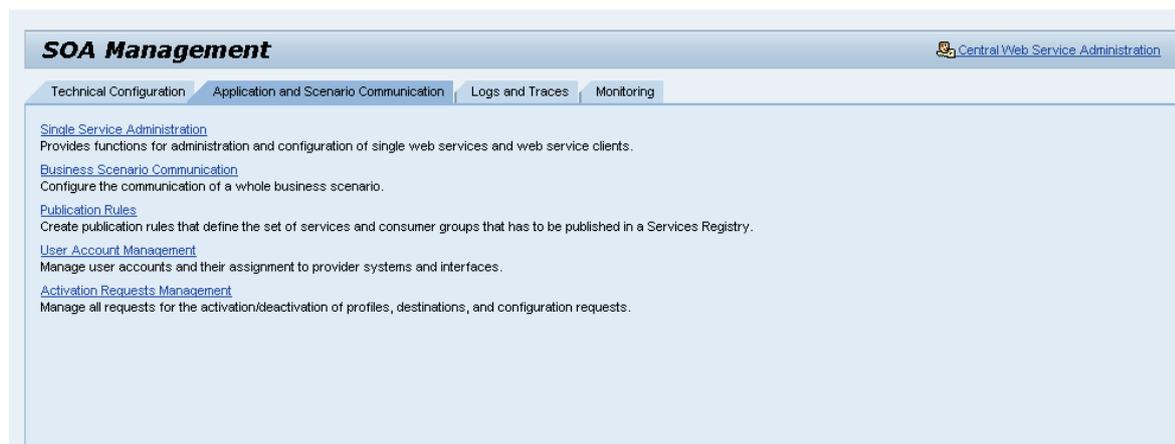
### 4.5.3 ABAP Backend

As a prerequisite, access to the Services Registry has to be configured (see SAP OnlineHelp <[http://help.sap.com/saphelp\\_nwpi71/helpdata/en/25/683fbe7e01407cb20995d10d71c895/content.htm](http://help.sap.com/saphelp_nwpi71/helpdata/en/25/683fbe7e01407cb20995d10d71c895/content.htm)> for any details).

-  The Transactions “WSPARAM” and “LPCONFIG” used in previous releases for configuring backend access to the Services Registry are obsolete.
-  Classification Systems and their values as some kind of metadata of each individual configured access to a Services Registry are not cached or persisted in the ABAP backend itself.

In SOA Management (Transaction “SOAMANAGER”) you can search via classifications as well. You can proceed as following:

Go to the *Application and Scenario Communication* tab and select single service administration. Select Search and press Advanced Search.



You can add service definitions with a certain classification in the same manner as described above in section 4.5.2 NWA – Publication Rules.

-  There is a difference in using the classification services between the ABAP and Java part of the SAP NetWeaver Application Server. The ABAP-Backend allows configuration of connections to multiple SAP Services Registries and clearly distinguishes between Inside-Out and Outside-In Development.

For Inside-Out (e.g. function module or manually generated services from external WSDL or ESR) development, it is possible to assign new and additional classification systems and their values. Classifications and Values during F4 help are retrieved from the Services Registry with the Registry connection settings configured in Transaction SOAMANAGER.

With the Outside-In approach the classification values displayed and used in SOAMANAGER and ABAP-Workbench are already pre-assigned from Enterprise Services Repository. This fixed pre-assignment is transferred to the ABAP Backend via proxy generation and classifications can be displayed via advanced search or in ABAP IDE and published for service definition to the Services Registry. In this case it is not foreseen and possible to add additional classifications or values that are directly retrieved from the related Services Registry.

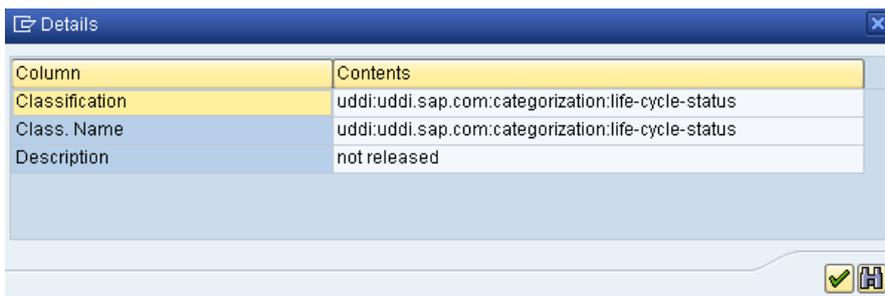
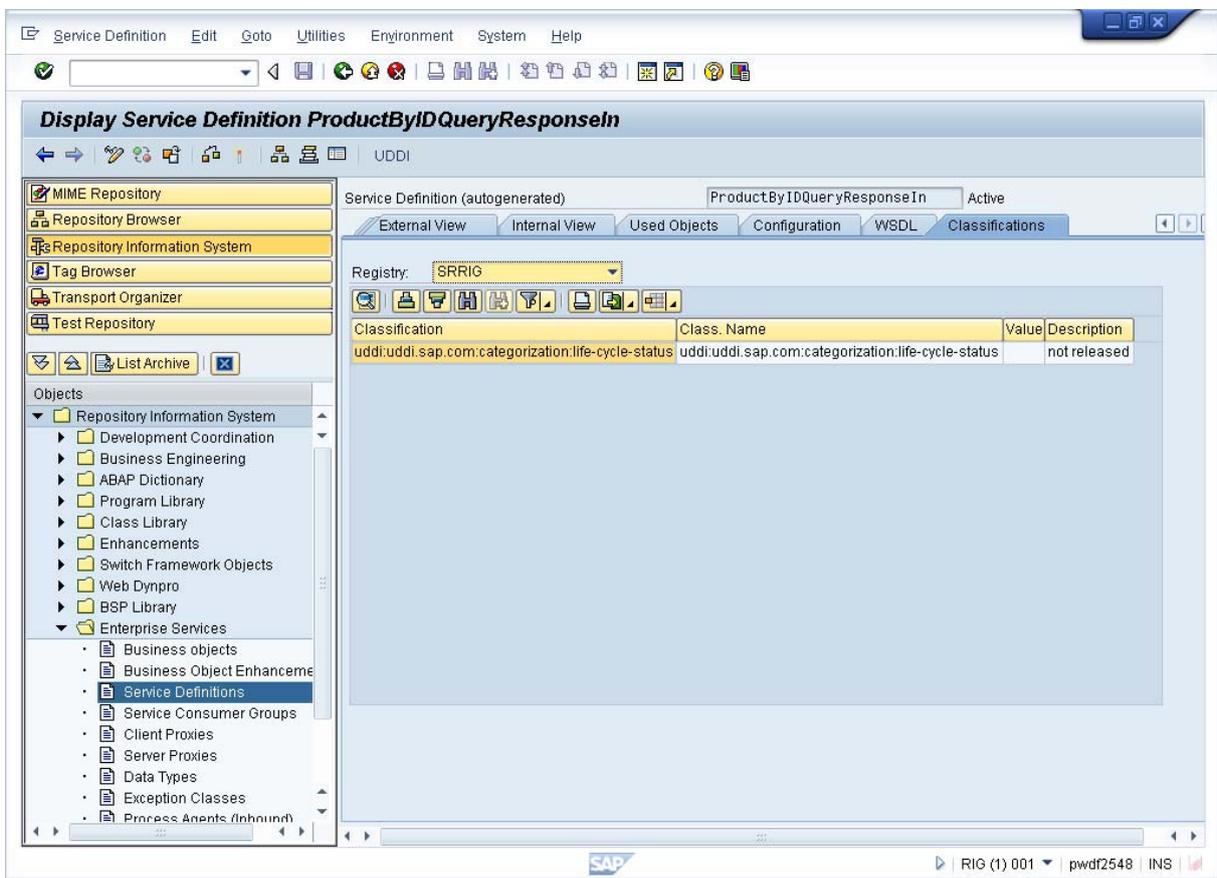
Services publication for both inside-out and outside-in services happen via Transaction SOAMANAGER or with the alternative Report "PRG\_ER\_SERVICES\_PUBLISH".

In the ABAP Development Workbench – Transaction "SE80": you can see the classification assigned to a service definition:

Double-click the *service definition* of the sub-tree *Service Provider* in the Object Navigator of the ABAP Workbench under *Enterprise Services*

and

In the application toolbar, choose *Display/Change*.  
On the right-hand side, you will see different tab pages displayed. Select *Classifications*.



You can classify a service in 3 different ways, which is described in the following link:

[http://help.sap.com/saphelp\\_nwpi71/helpdata/en/44/bb2c48e00215b2e10000000a155369/content.htm](http://help.sap.com/saphelp_nwpi71/helpdata/en/44/bb2c48e00215b2e10000000a155369/content.htm)



The classifications and values for a given service interface are not part or an attribute of the WSDL-that is retrieved from the Enterprise Services Repository to the ABAP-part of the SAP NetWeaver Application Server.



Since it is possible to configure access to several registries in the ABAP part of the SAP NetWeaver Application Server, in principle it is possible to assign classifications and values to a service interface or in the Enterprise Repository or to assign them from a given configured Services Registry (in case of inside out approach). If these assignments are published to another registry, only classifications and their respective values are assigned to the published service definitions that are also known in this other registry. Other classification assignments will be missing in this case. In other words, classifications and their values are always maintained in the Services Registry itself. This metadata are not created automatically while publishing service definitions in the target registry in case they do not exist.

## 4.5.4 WS Navigator

In the WS Navigator Tool one can choose to retrieve service information from the Services Registry. Here it is also possible to use a certain classification value(s) for searching the right service to test against:

*http(s)://<host>:<port>/wsnavigator => Service Registry => Advanced*

The screenshot displays the SAP NetWeaver WS Navigator interface. At the top, there is a navigation bar with 'Service test' and 'Test scenario' tabs. Below this is a process flow diagram with four steps: 1. Service, 2. Operation, 3. Input Parameters, and 4. Result. A progress bar indicates the current step is 'Service'. Below the flow diagram are buttons for 'Previous', 'Next', 'Invocation Parameters', 'Invoke', and 'Add to Test Scenario'. The main section is titled 'Service Information' and contains a 'Search Service Interfaces' section. Under 'Search Type', the 'Service Registry' radio button is selected. The search criteria include a 'Find' field, a 'Search by' dropdown set to 'WSDL Port Type Na...', and 'System' and 'State' dropdowns both set to '(All)'. Below the search section are two tables: 'Available Classifications' and 'Selected Classifications'. The 'Available Classifications' table has a 'Select Classification' dropdown set to 'BusinessSystem' and a table with a header 'Value' and one row containing 'NPI'. The 'Selected Classifications' table has a header with 'Value' and 'Classification' and one row containing 'NPI' and 'BusinessSystem'. Navigation arrows are visible between the two tables.

## 4.5.5 SAP Enterprise Services Explorer for Microsoft .NET

SAP Enterprise Services Explorer tool for Microsoft .NET (ES Explorer for .NET) is an add-in for Microsoft Visual Studio 2005 and 2008. It is a consumer tool that also provides search for service states and physical system. In the advanced search there is also an option for browsing by service classifications.

Classifications and their values can be added while publishing service definitions.

More details are provided in the following SDN-Blog.

< <https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/c0319dc4-d76d-2a10-d19f-e4f4ff315bde>>

## 4.6 Maintenance of Classification Content

Classification and their values can be imported or exported from/into a ZIP-File that contains a set of XML-files:

*SAP NetWeaver Administrator => Configuration Management => Infrastructure => Services Registry Management => UDDI Server Configuration => Import/Export.*

This import/export always contains all classification data of a given Services Registry.

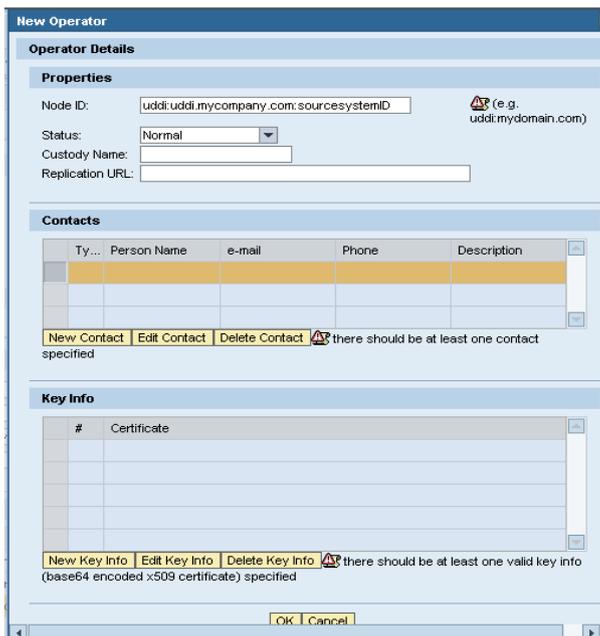
-  The Target Registry for Importing the UDDI-content and the classification must have another "Own NodeID". See chapter 3 for details.

There is no import of classifications without importing the UDDI-Data beforehand!  
Classifications and their values refer to this content.

-  Another prerequisite for import/export is that replication settings are configured:

*NetWeaver Administrator => Configuration Management => Infrastructure => Services Registry Management => UDDI Server Configuration => Replication*

Add a new operator here with the Node ID of the original source registry. Add at least a new contact and one base64 encoded X509-certificate key.



-  Classification content is compatible between SAP NetWeaver Process Integration 7.1/SAP NetWeaver Composition Environment 7.1 and the related Enhancement Packages EhP1.

## 5. Appendix

Related Documents available in SAP Developer Network (SDN):

- **“All you ever wanted to know about Enterprise Services Repository and Services Registry – Really!”**  
< <https://www.sdn.sap.com/irj/scn/weblogs?blog=/pub/wlg/10860> >
- **Enterprise Services Registry – New Features for 7.1 EhP1**  
< <https://www.sdn.sap.com/irj/scn/go/portal/prtroot/docs/library/uuid/e0c77d7b-e6c9-2b10-ff9f-8572715e1f6a> >

[www.sdn.sap.com/irj/sdn/howtoguides](http://www.sdn.sap.com/irj/sdn/howtoguides)