Applies to:

SAP NetWeaver System Landscape Directory (SLD). In this document all main SLD’s mechanisms to retrieve and distribute Data are discussed in detail. The screenshots shown here are taken from an SAP NetWeaver System Landscape Directory 7.2, but will also valid for SLD systems of SAP NetWeaver 7.1 / SAP NetWeaver CE 7.1 in practically all aspects. Apart from the Full Automatic Synchronization, which only became available in 7.1 releases, step wise this will work mostly identical in 7.0 SLD systems; however, there might be slight changes in the UI.

Summary

The System Landscape Directory (SLD) of SAP NetWeaver is a central provider of information on software and systems. It is used by many client applications, such as SAP NetWeaver Process Integration, SAP Solution Manager, and the Adaptive Computing Controller.

SLD data is needed in three areas of the landscape, for development systems, productive systems and systems managing systems. According to the different roles, different types of data are needed in each area and represented by separate SLD systems. On the other hand, data should be gathered in one place to avoid inconsistencies. Therefore, data is retrieved once and then distributed.

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Data Handling in the SAP NetWeaver System Landscape Directory

Introduction

The System Landscape Directory (SLD) of SAP NetWeaver is a central provider of information on software and systems. It is used by many client applications, such as SAP NetWeaver Process Integration, SAP Solution Manager, and the Adaptive Computing Controller.

SLD data is needed in three areas of the landscape, for development systems, productive systems and systems managing systems. According to the different roles, different types of data are needed in each area. On the other hand, data should be gathered in one place to avoid inconsistencies. Therefore, data is retrieved once and then distributed.

Data Gathering and Distribution Mechanisms in the SLD

SLD Data Types and Hierarchy

Data types in the SLD in the hierarchy are:

- **CIM Model** describing all SLD content, therefore being the basis of SLD data
- **CR Content**, based on CIM, describing software products, components and versions
- **Technical Systems data** describing technical systems including their software based on CIM and CR Content
- **Manually created data**, mostly based on technical systems added to processes plus non-SAP CR Content

Distribution Mechanisms for SLD Data

To match the different needs of each area, three transport mechanisms with different features are used:

- **Manual export and import of data** allows distributing all data and includes filtering. It is therefore used to bring new data from development into productive area with full control of the export process. This kind of transport should be combined with CTS+
- **Automatic bridge forwarding** keeps all vital data of all technical systems in the landscape up-to-date. It is therefore used to distribute data from a central SLD gathering all these data in or associated with productive area into both development and systems management area.
- **SLD’s full automatic synchronization** feature delivered with SAP NetWeaver AS Java 7.1 allows you to set up SLD instances so that they automatically keep their content identical. This is the basis for a new way of switching between equivalent instances in a few seconds. The result is that SLD data can be made available independently from software or hardware maintenance.
### Part 1 – Handle SLD Data in Namespaces

#### Introduction to Part 1
The SLD contains 4 types of data:
- Data of the SLD itself, especially the **CIM (Common Information Model)** used to interpret all other data
- **Software Catalog** data: All software versions delivered by SAP and software created by customers and partners
- **Landscape** data: Technical systems available in the IT landscapes and Meta Data of these systems, which are used as **Business Systems** or as part of a **Landscape** for example for administrative purposes.
- **Development** data: Reserved names and namespaces, locations of development configurations, CIM information

#### Steps in Part 1
Data types 1 to 3 form a hierarchy each one being the prerequisites for the next one. All SLD data are handled in **namespaces**. You will see how to handle SLD namespaces.

### 1.1 Check SLD State and Content

#### Check SLD Data

<table>
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- Check the **CIM version**:
  - Open your SLD’s “about this SLD” page on SLD Home by clicking its SID, e.g.: “LD1”.
  - Check **CIM Model version**, etc.
  - Choose **Close**.

**Note**: In many cases, SLD data can only be exchanged, when the receiving SLD’s CIM version is at least as new as the sender’s. SLD checks this for example at file imports and displays a notification if prerequisites are not met.
Check the Software Catalog:
On SLD Home choose Software Catalog / Products

Filter for SAP NetWeaver and check the details:
Choose a product version and open the tab Software Components for example.

Note that data and version of the “CR Content” is shown in the upper right part of the window.

1.2 Manage SLD Data in Namespaces

SLD Data are organized in namespaces, which allow to separate for example test data from productive data. Default namespace “sld/active” is always present and will be generated (but empty!) when deleted.

Add an SLD namespace:
Open the namespace page by clicking the active namespace, here “sld/active”.

Here you can select or edit namespaces. Create a new namespace for test data.
Choose Edit Namespaces…

Select Namespace

Edit Namespaces...
Add a new namespace, which will be empty:

Click Add…

Define a name for the new SLD Namespace:

Enter “sld/test”, for example and confirm with Add.

Note: Automatically, the new namespace is active in the SLD (check on SLD Home).

A model import is needed: SLD displays an error message on SLD Home.

To prepare the new namespace, for use you must import CIM data first:

- On SLD Home navigate to Administration
- Choose Content / Import.

Import the CIM Model From Server.

- Choose Import…

Load CIM model or CIM data

Target Namespace: sld/test_00
SAP Model Version: No model loaded (required version 1.5.42)
SAP CR Content Version: No versioned SAP CR imports detected

Choose From Browser:
File: [Browse]

Choose From Server:
Import Model 1.5.42

Import:

Upload specified file and import into SLD.
Confirm with **Continue Import**.

This will load the model data; after that you can now work in the new namespace.

**Note**: If any inconsistencies exist – such as a higher model version already available – SLD displays a warning.

Your System Landscape Directory is now working with two separate namespaces. From now on, use your test-namespace for the other exercises – **Note** that SLD switches to sld/active, when restarted.

**Result**
Your SLD is configured now with a 2\(^{nd}\) namespace (this is useful but not mandatory), which contains a CIM Model and therefore is prepared for the import of CR Content (see next part). The steps to import CIM Model and CR Content are necessary in any SLD. The initial setup, which takes care of these steps is part of the installation and automated configuration of the SLD, but updates of both data are a recurring administrative task in the SLD (see SAP Note 669669).
Part 2 – Import, Gather, and Create SLD Content

Introduction to Part 2
Content is added to SLD namespaces in 3 ways:
- Import of data (CIM and Software Catalog data as a prerequisite for landscape data)
- System self-registration
- Manual creation of data

Steps in Part 2

2.1 Import SLD Content – Get SLD CR_Content (Software Catalog Data)

Import SLD CR Data

Once the CIM is imported into a new namespace, the next type of data, which needs to be imported, is the **Software Catalog (Component Repository or CR Content)**.

- Download **CR Content** from SAP Service Marketplace (for the path, see the Note below):
  - Open the file share where a ZIP-file with CR Content is available (the name of the downloaded file will differ from the example shown here)
  
  **Note**: You can also import from the server.

- Then choose **Administration → Content / Import**
  - Use option **From Browser** to locate the ZIP-file, trigger. **Confirm** the import.

**Result**: The product data will be loaded. This may take several minutes. You will get a confirmation message.

**Note**: Usually, CR Content is updated from SAP Service Marketplace Download Centre under Support Packages & Patches → Entry by Appl. Group → SAP Technology Comp.s → SAP CR CONTENT
Check the imported data:
Choose **Home → Software Catalog / Products**.

Your SLD test namespace now contains product data of several SAP NetWeaver releases.

### 2.2 Gather SLD Content – Configure the Self-Registration of a Technical System

Gather Technical Systems Data via SLD Data Supplier

All stacks of all technical systems (including those that host an SLD) in the landscape should be set up to report to 1 central SLD.

- Open the **NetWeaver Administrator**.

  - Open URL e.g. [http://localhost:50000/nwa](http://localhost:50000/nwa). Log on as **Administrator**

- Navigate to destination maintenance:
  - In the **SAP NetWeaver Administrator (NWA)** choose **Configuration Management → Connectivity → Destinations**.

- Open destination **SLD_DataSupplier**:

  - Choose **Edit**.

  - Choose **Edit**.

  - Choose **Edit**.

  - Choose **Edit**.

  - Choose **Edit**.

  - Choose **Edit**.

- Enter the connection to the central SLD, here SID = “LD1”:

  - **Connection and Transport**: URL of the

  - **HTTP Destination SLD_DataSupplier**

  - **Connection**

  - **Logon Data**

  - **URL**: [http://iwdfvm3034:50000](http://iwdfvm3034:50000)
receiving SLD’s AS e.g. = http://iwdfvm3034:50000 then choose Logon Data.

- Logon Data: User Name and Password = SAP_DS_<SID> / password

- Save the changes and use button Ping to test it.

Result: Your SLD is connected to LD1.

Test the self-registration: in the NWA choose Back, when still you’re on destination “data supplier”.

Choose Configuration Management \(\rightarrow\) Infrastructure \(\rightarrow\) SLD Data Supplier Configuration…

- Choose Collect and Send Data.

Result: Your system should be shown in your list of Technical Systems.

You’ll see a message.

- Set target Namespace(s) to be updated (you can have data added to one, some or all namespaces in your SLD):

- In the SLD choose Administration \(\rightarrow\) Data Suppliers
- Select your newly created namespace, e.g. sld/test_00

- In a system based on AS ABAP the SLD Data Supplier connection is set up in transaction RZ70 – System Landscape Directory: Local Administration.

- Note that even in a dual stack, both AS need to be set up separately to register at the SLD.

Your technical system now reports its data including changes to its software state to the central SLD.

2.3 Manually Create SLD Content – Define a Business System

Create SLD Data manually Based on CIM data, CR-Content and Technical Systems, in the SLD higher levels of data can be created. One example is a Business System, used to assign systems to messages for SAP NetWeaver PI.

- Create a Business System:
  - On SLD Home open Landscape / Business Systems
  - Choose New Business System....
In the 4-step wizard add the following data:

- **Type = AS Java**

**Note:** Data of a Technical System is required and your AS Java can be used.

- **System = your technical system (e.g. LD1 on IWDF...)**

**Note:** Technical System data is not removed when the data supplier is reconfigured. In the next exercise you will learn about the connection to the central SLD, which keeps technical system info up-to-date.

- **Logical System Name = empty for Java-based systems** (used for AS ABAP only)

  - Confirm with **Next**.

Enter the Business System Name e.g. = MyBusinessSystem_00, where XX is your group number.

  - Confirm with **Next**.

Application Systems need to be assigned to an Integration Server.
This can be done later. Confirm with Finish.

Result: Your Business System is displayed on SLD Home ➔ Landscape / Business Systems

Your SLD now contains CIM data, Software Catalog, Technical Systems’, and manually created data.

Result

Your SLD contains imported, registered and manually created data now.
Part 3 – Distribute SLD Content

Introduction to Part 3
Different content is needed in SLDs with different roles; for each content and purpose, specific distribution mechanisms are used:
- Technical Systems data: Used mainly in Solution Manager and PI or Web Dynpro Java development. So its distributed using **SLD bridge forwarding**
- Manually created Data is transported from
  - Development to productive SLD using **manual Export/Import** to achieve controlled, one-way distribution
  - **Manual Export/Import** can also be combined with the enhanced Change and Transport System (CTS+)
- Optionally, SLD data can be synchronized completely into a Backup-SLD using **full automatic synchronization**

Steps in Part 3

3.1 Forward Technical Systems Data – Define Forwarding of SLD Data Supplier Data

Forwarding SLD Data Supplier Data

Technical system data sent to an SLD using a data supplier can be forwarded to other SLDs. This is used especially to provide systems managing systems with required data. Manually created data is not included. There are no dependencies between sender and receiver.

- Configure the **forwarding** of SLD Data Supplier Data:
  - In **SLD Home** choose **Administration → Server / Data Suppliers**
  - Under **Update other SLDs** choose **Add**.
  - Enter the following:
    - SLD’s **URL** e.g. = **http://iwdf**...
    - **User** = **SLD_DS_<SID>**
    - **Password**
    - **Confirm with Add**.

**Result:** Your system is shown in the central SLD (here its SID = ‘LD1’).
Configuration ➔ Collect and Send Data.

Note: you cannot use user SLD_DS_LD1 to check the content of LD1. This technical user is only used to send data – checking the content of LD1 will possible in exercise 4.3.

Your SLD now forwards Technical Systems’ data to the central SLD. This mechanism is used e.g. to update SAP Solution Manager’s local SLD.

3.2 Manually Export and Import Content – e.G. Distribute Business System Information

Export and Import SLD Data

All types of SLD data can be exported from one SLD (completely or in selected types or items) and imported into another. Prerequisite is that the receiving SLD contains – at least – the same CIM version.

- Navigate to your Business System:
  - On SLD Home go to Landscape / Business Systems

- Export your Business System:
  - Select your Business System
  - Choose Export.

A ZIP-file is created.

- Download the ZIP-file and Save.

Note: There is a BUG in the download in some states: Change the file extension to “ZIP” if necessary.

Note, that the Technical System data is required in the receiving system, but not automatically added to the export file of Business System data and need to be taken care of separately.

- Remove Business System data:
  - For testing purposes choose Back to Business Systems and Remove your Business System:

… and confirm.
Import SLD Data:

- In the SLD choose Administration → Content / Import

  ![Content Import/Export]

  - Choose the select the file in the file explorer using Browse...

  ![Browse...]

  - Navigate to your export file and Open it.

  ![Open]

  - Start to Import the file.

  ![Import]

  - Check the content: If it is empty, repeat the export steps, otherwise Continue Import.

  ![Continue Import]

Result: Your Business System will be shown in the list again. You’ll get a message.

The same ZIP file can be imported into other SLDs as well, when the other SLD’s model version is sufficient and the
Technical Systems’ data are available.

3.3 Configure Your System to Manage Exports with CTS+

Source systems access CTS functions to manage configuration on the source system plus representation of sending and receiving transport requests. All types of SLD data can be exported from one SLD also using CTS+. This requires configuration on the source systems and their connection on the CTS system.

- **Create an export user:**
  
  Open the AS Java start page on [http://localhost:50000](http://localhost:50000)
  
  Choose the User Management.

- **Create a new user:**
  
  Choose Create User.

- **Enter the user’s data:**
  
  - Logon ID = **ALM263_XX**
  
  - Initial Password = **abcd1234**
    (Note that the password needs to match user on CTS+ system)
  
  - Last Name = **XX**
  
  - Security Policy = **Technical User**
    (no password change at 1st log on required)
  
  - Now choose Assigned Groups
    (the last tab – scroll to the right if necessary)

**Note:** This user needs to be available on the CTS+ host system (M36) also.
Assign a Group to the user:
- Filter for "SLD_ADMIN".
  Choose Group SAP_SLD_Administrator
- Choose Add.
- Save

Prepare your system to work as a source:
Create a destination to the CTS Server:
- In the NWA open Configuration Management → Connectivity → Destinations
- Choose Create...


In the 1st step on your local system create a destination named sap.com/com.sap.tc.di.CTSserver of type RFC

Note that this name is predefined and case sensitive.
Add the connection data for the transport system:

- **load balancing** = **No**
- **host of the transport system** = e.g. iwdfvm3040
- **System Number** = **10**
- **System ID of the transport system** = **M36**

Choose **Next**.

---

Enter **Logon Data**:

- **Authentication** = **Technical User**
- **Client** = **001**
- **User Name** must be existing, e.g. = **ALM263_XX** + **Password**

- **Destination Name** = **This Destination** (other fields are empty)

Choose **Finish**

Logon with your newly created user **ALM263_XX** to the SLD using a new window.

Open URL **http://localhost:50000/sld**.

Choose Namespace sld/test_XX.
Repeat the Export steps in SLD Home → Landscape → Business Systems:

Result: You will see that the tab Transport is active; a transport request has been generated.
You will get a message.

Your SLD is now integrated into the transport management of a bigger IT landscape.

Result

Your SLD data is now distributed to other SLD systems in the landscape. Go on with the next part of the exercises.
Part 4 (Optional) – Distribute SLD Data by Full Automatic Synchronization

Introduction to (optional) Part 4
As of SAP NetWeaver AS Java 7.1 SLD systems can be configured to automatically synchronize their content either in one direction or bi-directionally. The first option can be used to provide a target SLD with all data from the source SLD without retrieving its content. This might be useful if in very big landscapes SLD data of regions shall be gathered centrally. The latter option is especially useful to create a backup SLD. In any case, this feature needs to be used carefully, since all changes including deletions are distributed immediately and without further user interaction.

- Technical Systems data: Used mainly in Solution Manager and PI or Web Dynpro Java development. So its distributed using SLD bridge forwarding
- Manually created Data is transported from
  - Development to productive SLD using manual Export/Import to achieve controlled, one-way distribution
  - Manual Export/Import can also be combined with the enhanced Change and Transport System (CTS+)
- Optionally, SLD data can be synchronized completely into a Backup-SLD using full automatic synchronization

Steps in Part 4

4.1 Configure SLD Object Server Settings – Required by Full Automatic Synchronization

System Landscape Directory has an Object Server Name for example used for (unique) naming of development objects and as identification in sync. Two prerequisites need to be fulfilled, when full automatic synchronization and a switching between SLDs with the role “name server” is used: For naming purposes the Object Server Name must be the same in both SLDs; for synchronization it must be different: Therefore in this scenario you must set 2 Object Server Names, internal and external.

Navigate to SAP NetWeaver SLD Home
Open URL http://localhost:50000/sld in a browser window

Check server details:
On your SLD on SLD Home choose Administration.

Navigate to the Object Server settings:
Choose Server / Settings.

Administrate and configure the server

- SLD Running

Server

Log
View server log and set logging and tracing parameters
Details
View detailed information about the server
Settings
View and change server parameters
Data Suppliers
Configure data supplier targets
Choose tab **Server Configuration**

- Start function **Object Server: Configure**.

Create 2 **Object Server Names**, internal and external (for continuous availability setup). Enter values as follows:
- **Object Server Name** e.g. = *MyOBJServ_XX*.
- **Object Server Name (External)** = *MyOBJServ*.

For details on the **Object Server** parameter see SAP Note 935245.

**Note**: Different internal **Object Server names** for both SLDs are required. As of SAP NetWeaver 7.1 EHP1, SP2 you use identical external object server names for name reservation purposes also from the backup system SLD 2.

You'll get a warning that a SLD restart is needed. **Note** that this does not mean to restart the AS Java.

To restart the SLD

- Choose **Administration**:

  **View and change server parameters**.

- Choose **Stop SLD**

- Choose **Start SLD**

The SLD **Object Server** is configured for use in a Full Automatic Synchronization (also if used as a Name Server). **Object Server Name** is usually configured as host name when name service is not used. This will work as well, then.

**4.2 Backup SLD – Configure the Full Automatic Synchronization**

Exchanging data between SLD systems using full automatic synchronization. All types of SLD data can be sent from one SLD to another or changes can be exchanged mutually between them. **Note** that using specific users is important for data management in SLD.
Navigate to Content Synchronization maintenance of SLD:

On the SLD Home, choose Administration.

Create a new Sync connection

- Choose Content / Content Synchronization

In the SLD content synchronization maintenance, choose Add...

In the Content Synchronization Wizard

Set following options:

- keep Source = Remote
- select the Bidirectional option
- Choose Next

Add a sync user available on the remote SLD:

- Enter Remote SLD URL e.g. = http://iwdfvm3034:50000
- Enter user SLD_LD1_SYNC and the password
Make rank settings:
- Select a namespace, e.g. sld/test_00 (mostly it will be sld/active).
- Set source rank = 100

(in case of a conflict of data – occurs, when same data is changed at the same time – a higher rank number defines that this SLD’s data will “win”)

Optionally (if time permits) create and use a sync user TE2_XX_SYNC, where XX = your group number.

Note that this also is a technical user, no password change is required.

Find your system’s IP configuration:
- Open a SLD Home → Landscape / Technical Systems.
- Choose your system tewdf....
- On tab General read the IP address and make a note to have it available in the next step.

- Note: After the sync, many systems will be shown.
Set up local SLD connection:

- **Local URL** = SLD’s *IP Address* (10.64....) or host name

- Use newly created user **TE2_XX_SYNC / pwd. (administrator)** user will work, specific users are preferable.

- Choose a namespace

- Choose **rank = XX**; XX is between 1 and 100, 100 being the highest rank.

- Choose **Next**.

You’ll see a summary (shown here for a different system).

- **Confirm** with **Finish**.

You will see the content synchronization maintenance.

To get a **status** of the new sync connection, choose **Status / Full Sync (Active)**
4.3 Use a Switch between Main-SLD and Backup-SLD

<table>
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<th>Creating a hot-backup SLD system</th>
<th>When combining the Full Automatic Synchronization with use of a virtual IP address / virtual host name you can create a hot-backup SLD. All clients access the virtual host so that switching only happens in the background.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign a virtual IP address</td>
<td>Get a reserved IP address in your landscape. Make all data suppliers and SLD client applications use this access the SLD. You can then easily</td>
</tr>
<tr>
<td>to your SLD systems</td>
<td></td>
</tr>
<tr>
<td>Check the result</td>
<td>You can type the virtual IP address plus the port number of SLD and Backup-SLD (ports must be identical) plus &quot;/sld&quot; into a browser – you will get access to the SLD system the virtual IP address is assigned to (this must be only one at each point in time). For details see the blog &quot;How to Ensure that SLD Data is Available during Maintenance&quot; (<a href="http://www.sdn.sap.com/irj/scn/weblogs?blog=/pub/wlg/13709">http://www.sdn.sap.com/irj/scn/weblogs?blog=/pub/wlg/13709</a>)</td>
</tr>
</tbody>
</table>

**Note** that we can only simulate this approach here, so log of and log on again to check the effect: In the real world, such a program would switch the assignment of a virtual IP address / host name between main and backup-SLD system.

**Result**

You can use each of the SLD systems as a hot-backup SLD.
Related Content

How-to Handle Data in the SAP NetWeaver System Landscape Directory: Basic information

SLD Knowledge Center @ SDN: Guides and documentation links on SLD

SLD Resources @ SDN: Blogs and Demos on SLD