

IBM Security Identity Manager  
Version 6.0

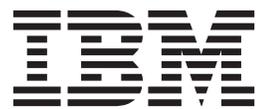
*SAP NetWeaver Adapter Installation  
and Configuration Guide*





IBM Security Identity Manager  
Version 6.0

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and Configuration Guide*



**Note**

Before using this information and the product it supports, read the information in "Notices" on page 61.

**Edition notice**

**Note:** This edition applies to version 6.0 of IBM Security Identity Manager (product number 5724-C34) and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Preface

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### About this publication

The *SAP NetWeaver Adapter Installation and Configuration Guide* provides the basic information that you can use to install and configure the IBM® Security Identity Manager SAP NetWeaver Adapter.

IBM Security Identity Manager was previously known as Tivoli® Identity Manager.

The adapter enables connectivity between the IBM Security Identity Manager server and SAP NetWeaver Application Server ABAP (SAP NetWeaver AS ABAP).

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### Access to publications and terminology

This section provides:

- A list of publications in the “IBM Security Identity Manager library.”
- Links to “Online publications.”
- A link to the “IBM Terminology website.”

#### IBM Security Identity Manager library

For a complete listing of the IBM Security Identity Manager and IBM Security Identity Manager Adapter documentation, see the online library ([http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.isim.doc\\_6.0/ic-homepage.htm](http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.isim.doc_6.0/ic-homepage.htm)).

#### Online publications

IBM posts product publications when the product is released and when the publications are updated at the following locations:

##### IBM Security Identity Manager library

The product documentation site ([http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.isim.doc\\_6.0/ic-homepage.htm](http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.isim.doc_6.0/ic-homepage.htm)) displays the welcome page and navigation for the library.

##### IBM Security Systems Documentation Central

IBM Security Systems Documentation Central provides an alphabetical list of all IBM Security Systems product libraries and links to the online documentation for specific versions of each product.

##### IBM Publications Center

The IBM Publications Center site (<http://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>) offers customized search functions to help you find all the IBM publications you need.

#### IBM Terminology website

The IBM Terminology website consolidates terminology for product libraries in one location. You can access the Terminology website at <http://www.ibm.com/software/globalization/terminology>.

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## Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

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## Technical training

For technical training information, see the following IBM Education website at <http://www.ibm.com/software/tivoli/education>.

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## Support information

IBM Support provides assistance with code-related problems and routine, short duration installation or usage questions. You can directly access the IBM Software Support site at <http://www.ibm.com/software/support/probsub.html>.

Appendix A, “Support information,” on page 55 provides details about:

- What information to collect before contacting IBM Support.
- The various methods for contacting IBM Support.
- How to use IBM Support Assistant.
- Instructions and problem-determination resources to isolate and fix the problem yourself.

**Note:** The **Community and Support** tab on the product information center can provide additional support resources.

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## Statement of Good Security Practices

IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, misappropriated or misused or can result in damage to or misuse of your systems, including for use in attacks on others. No IT system or product should be considered completely secure and no single product, service or security measure can be completely effective in preventing improper use or access. IBM systems, products and services are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM DOES NOT WARRANT THAT ANY SYSTEMS, PRODUCTS OR SERVICES ARE IMMUNE FROM, OR WILL MAKE YOUR ENTERPRISE IMMUNE FROM, THE MALICIOUS OR ILLEGAL CONDUCT OF ANY PARTY.

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## Chapter 1. Overview of the adapter

An adapter provides an interface between a managed resource and the IBM Security Identity Manager server.

Adapters might reside on the managed resource. The IBM Security Identity Manager server manages access to the resource by using your security system. Adapters function as trusted virtual administrators on the target platform. They perform tasks, such as creating, suspending, and restoring user accounts, and other administrative functions that are performed manually. The adapter runs as a service, independently of whether you are logged on to the IBM Security Identity Manager server.

The SAP NetWeaver Adapter uses the functionality of Tivoli Directory Integrator to enable communication between the IBM Security Identity Manager server and the SAP NetWeaver Application Server ABAP server.

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### Features of the adapter

The adapter automates administrative tasks on SAP NetWeaver AS ABAP.

- Creating users and groups
- Modifying users' attributes
- Changing user account passwords
- Suspending, restoring, and deleting user accounts
- Reconciling users and user attributes

In some cases, the standard features and functionality of SAP may not satisfy business requirements. The adapter supports configurable extension and customization for you to map the adapter to your desired requirements. The primary mechanism enabling this is XSL stylesheets, which can be installed with the adapter.

---

### Architecture of the adapter

IBM Security Identity Manager communicates with the SAP NetWeaver Adapter to manager SAP NetWeaver AS ABAP user accounts.

You can perform the following actions on an account:

- Add
- Change Password
- Delete
- Modify
- Restore
- Search
- Suspend

The SAP NetWeaver Adapter consists of Tivoli Directory Integrator AssemblyLines. When an initial request is made by IBM Security Identity Manager Server to the

adapter, the AssemblyLines are loaded into the IBM Security Identity Manager. As a result, subsequent service requests do not require those same AssemblyLines to be reloaded.

The AssemblyLines use the Tivoli Directory Integrator SAP User connector and RFC functional component to enable user management-related tasks on the SAP NetWeaver AS ABAP. It does this enablement remotely by using the login ID and password of a user that has administrator privileges.

The following figure describes the components that work together to complete the user account management tasks in a Tivoli Directory Integrator environment.

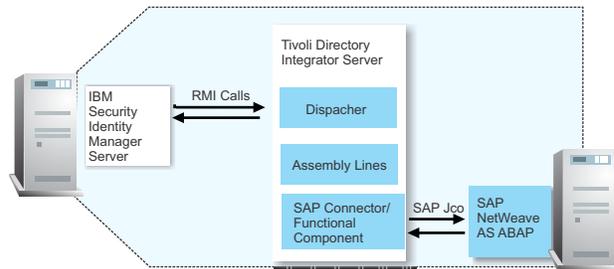


Figure 1. The architecture of the SAP NetWeaver Adapter

For more information about Tivoli Directory Integrator, see the *Quick Start Guide* in the IBM Security Identity Manager product documentation.

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## Supported configurations

The SAP NetWeaver Adapter supports a number of different configurations and is designed to operate with IBM Security Identity Manager.

The fundamental components of the SAP NetWeaver Adapter environment are:

- An IBM Security Identity Manager Server
- An IBM Tivoli Directory Integrator
- The SAP NetWeaver Adapter

Forming part of each configuration, the SAP NetWeaver Adapter must physically reside on the machine that is running the IBM Tivoli Directory Integrator Server.

The SAP Java™ Connector (JCo) component must also be installed on the same Java Runtime Environment (JRE) as used by IBM Tivoli Directory Integrator. See the appropriate SAP JCo guides for instructions on how to install and configure the SAP JCo Runtime Environment.

### Single server configuration

In a single server configuration, install the IBM Security Identity Manager server, the IBM Tivoli Directory Integrator server, and the SAP NetWeaver Adapter on one server to establish communication with the SAP NetWeaver Application Server ABAP server. The SAP NetWeaver Application Server ABAP server is installed on a different server as described Figure 2 on page 3.



Figure 2. Example of a single server configuration

### Multiple server configuration

In multiple server configuration, the IBM Security Identity Manager server, the SAP NetWeaver Adapter, and the SAP NetWeaver Application Server ABAP server are installed on different servers. Install the IBM Tivoli Directory Integrator server and the SAP NetWeaver Adapter on the same server as described Figure 3.

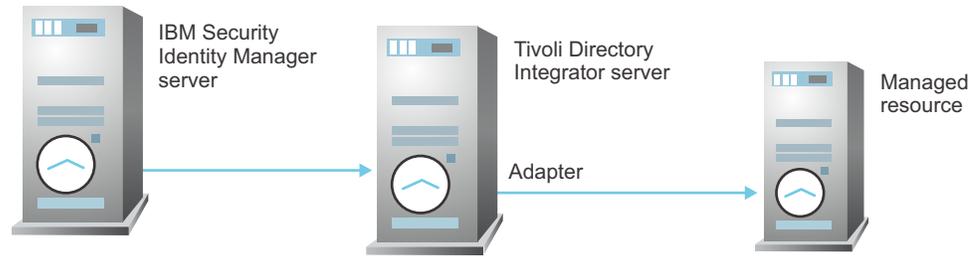


Figure 3. Example of multiple server configuration

The SAP NetWeaver Adapter is both highly configurable and highly customizable. Note that support can only extend to the configuration of the adapter such as adding mapping for additional attributes and XSL stylesheets. Support cannot extend to customization by way of changes, additions or modifications to its IBM Tivoli Directory Integrator Assembly Line scripts for example.



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## Chapter 2. Preparation for installing the adapter

Installing and configuring the adapter involves several steps that you must complete in an appropriate sequence. Review the road maps before you begin the installation process.

---

### Preinstallation road map

Before you install the adapter, you must prepare the environment.

Perform the tasks that are listed in Table 1.

*Table 1. Preinstallation road map*

Task	For more information
Verify that your environment meets the software and hardware requirements for the adapter.	See "Prerequisites."
Obtain the necessary information for the installation and configuration.	See "Installation worksheet for the adapter" on page 6.
Obtain the installation software.	Download the software from Passport Advantage® website. See "Software download for SAP NetWeaver adapter" on page 7.

---

### Installation roadmap

To install the adapter, you must complete a sequence of tasks.

*Table 2. Installation roadmap*

Task	For more information
Install the adapter.	See "Installation procedure" on page 10.
Import the adapter profile.	See "Importing the adapter profile into the IBM Security Identity Manager server" on page 16.
Verify the profile installation.	See "Verification of the SAP NetWeaver Adapter profile installation" on page 16.
Create a service.	See "Creating an SAP NetWeaver Adapter service" on page 17.
Verify the adapter installation.	See "Verification of the SAP NetWeaver Adapter installation" on page 14.
Configure the adapter.	See "SAP NetWeaver Adapter configuration" on page 23.

---

### Prerequisites

Verify that your environment meets all the prerequisites before installing the adapter.

Table 3 identifies the software and operating system prerequisites for the adapter installation.

Ensure that you install the adapter on the same workstation as the IBM Tivoli Directory Integrator server.

Table 3. Prerequisites to install the adapter

Prerequisite	Description
Operating System	The SAP NetWeaver Adapter can be used on any operating system that is supported by Tivoli Directory Integrator.
Network Connectivity	TCP/IP network
System Administrator authority	To complete the adapter installation procedure, you must have system administrator authority.
IBM Tivoli Directory Integrator Server	Version 7.1 fix pack 5 or later Version 7.1.1
IBM Security Identity Manager server	Version 6.0
IBM Security Identity Manager Adapter (also known as the Dispatcher)	For Tivoli Directory Integrator Server 7.1, obtain the dispatcher installer from the IBM Passport Advantage Web site: <a href="http://www.ibm.com/software/howtobuy/passportadvantage/pao_customers.htm">http://www.ibm.com/software/howtobuy/passportadvantage/pao_customers.htm</a> .
SAP NetWeaver Application Server ABAP with SAP Basis Component	See the <i>Adapter for SAP NetWeaver AS ABAP Release Notes</i> <sup>®</sup> .
SAP JCo	3.0.9

For information about the prerequisites and supported operating systems for Tivoli Directory Integrator, see the *IBM Tivoli Directory Integrator 7.1: Administrator Guide*.

## Installation worksheet for the adapter

The following table identifies the information that you need before installing the adapter.

Table 4. Required information to install the adapter

Required information	Description
Administrator account on the managed resource for running the SAP NetWeaver Adapter.	An administrator account on the managed resource that has administrative rights. For example, you want to manage Resource1 and the SAP NetWeaver Adapter is installed on Resource1, then Admin1 account must have a <b>Role</b> containing the following SAP authorization objects: <ul style="list-style-type: none"> <li>• S_RFC</li> <li>• S_RFCACL</li> <li>• S_TABU_DIS</li> <li>• S_USER_GRP</li> <li>• S_USER_AGR</li> <li>• S_USER_PRO</li> <li>• S_USER_SYS</li> </ul>

---

## Software download for SAP NetWeaver adapter

Download the software through your account at the IBM Passport Advantage website.

Go to IBM Passport Advantage.

See the *IBM Security Identity Manager Download Document* for instructions.

**Note:**

You can also obtain additional adapter information from IBM Support.



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## Chapter 3. SAP NetWeaver Adapter installation

Use the preparation and other procedure information to install the adapter.

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### Installation preparation

Before you install the adapter, ensure sure that you complete the preliminary steps.

- Verify that your site meets all the prerequisite requirements.
- Obtain a copy of the installation software.
- Obtain system administrator authority.

You must also perform the following tasks:

#### Download the SAP Java Connector (JCo)

The adapter requires access to the SAP Java Connector (JCo) API at run time. This API must be downloaded from the SAP support portal.

Access to this website requires authentication with a valid SAP support ID (S-ID). Contact your SAP marketing representative to obtain one of these IDs.

#### Check JCo dependencies in current Tivoli Directory Integrator environment

The version of JCo used by the adapter is updated to 3.0.9. The adapter no longer works with JCo 2.1.x. If the adapter is used in the same Tivoli Directory Integrator JVM instance as the SAP connectors that are provided with Tivoli Directory Integrator, you need to have both 3.0.9 and 2.1.x versions of the JCo installed. If the adapter is used in a single Tivoli Directory Integrator JVM instance, remove the existing JCO 2.1.x package and then install the JCo 3.0.9 package.

#### Remove JCo 2.1.x from Tivoli Directory Integrator

If there are no dependencies on an earlier version of JCo such as Version 2.1.8 by other connectors in the Tivoli Directory Integrator environment, the following files can be removed.

##### Windows

```
ITDI_HOME/jars/3rdparty/others/sapjco.jar
ITDI_HOME/libs/sapjcorfc.dll
ITDI_HOME/libs/librfc32.dll
```

##### Unix/Linux

```
ITDI_HOME/jars/3rdparty/others/sapjco.jar
```

#### Create a SAP Service User Account on the target SAP NetWeaver Application Server ABAP

The adapter requires a service account on the target SAP NetWeaver Application Server ABAP to perform account provisioning operations. Log on to the target SAP NetWeaver Application Server ABAP. Create a user account of type "SERVICE", which can be used by the adapter when it is communicating with SAP.

The SAP user account that is used by IBM Security Identity Manager to connect to your SAP system must have authorization to perform the following user administration tasks:

1. Add, Modify, Delete, Lock, Unlock, and Search SAP user accounts.
2. Retrieve supporting data through the SAP system database tables.

At a minimum, this account requires assignment of roles that contain the following SAP authorization objects:

- S\_RFC
- S\_RFCACL
- S\_TABU\_DIS
- S\_USER\_GRP
- S\_USER\_AGR
- S\_USER\_PRO
- S\_USER\_SYS
- P\_ORGIN(If HR linking extensions are used)

Within the Authorization Objects, assign the wildcard "\*" so that all Activities are possible.

#### **CUA Configuration settings**

If the adapter is to be deployed against a CUA master server, use transaction SCUM on the target CUA master system to set the following distribution parameters.

- Logon data -> Initial password == "Everywhere"
- Lock -> Unlock globally == "Global"
- Lock -> Lock globally == "Global"

---

## **Installation procedure**

To install the SAP NetWeaver Adapter, extract the zip file from the distribution package and follow the installation instructions.

### **Dispatcher installation**

If this installation is the first adapter that is based on IBM Tivoli Directory Integrator, you must install the Dispatcher before you install the adapter.

Install the dispatcher on the IBM Tivoli Directory Integrator server where you want to install the adapter. Obtain the dispatcher installer from the IBM Passport Advantage website. For information about Dispatcher installation, see the *Dispatcher Installation and Configuration Guide*.

Start the IBM Security Identity Manager Adapter (Dispatcher) Service.

### **Installing the adapter style sheets**

The SAP NetWeaver Adapter requires a set of style sheets, which are used by the adapter's IBM Tivoli Directory Integrator assembly lines.

#### **About this task**

The adapter style sheets must be copied from the SAP NetWeaver Adapter package to an `xs1` directory as follows:

#### **Procedure**

1. If the Dispatcher is installed on *solution* directory (for example, `timsol`), navigate to that directory. Otherwise, navigate to the `ITDI_HOME` directory.
2. Create a directory with the name `xs1`, if one does not already exist.

3. Copy the files from the `tdi/xsl` directory of the adapter package to the `xsl` directory of the IBM Tivoli Directory Integrator *solution* directory, or `ITDI_HOME` directory, depending on your Dispatcher installation.

## Installing the adapter JAR files

The SAP NetWeaver Adapter ships with additional IBM Tivoli Directory Integrator components.

### About this task

These are specific to the SAP NetWeaver Adapter, not general-purpose IBM Tivoli Directory Integrator components. Install these components as follows:

### Procedure

1. Copy `tdi/connectors/*.jar` from the adapter package to the `ITDI_HOME/jars/connectors` directory.
2. Copy `tdi/functions/*.jar` from the adapter package to the `ITDI_HOME/jars/functions` directory.

## Installing the SAP Java Connector (JCo)

After the JCo package has been downloaded, unpack the contents and then follow these instructions.

### Procedure

#### • Windows:

1. Copy the `sapjco3.jar` file into `ITDI_HOME/jars/3rdparty/others`.
2. Copy the `sapjco3.dll` file into `ITDI_HOME/libs`. On Windows, JCo 3 requires additional Microsoft Visual C++ 2005 libraries to be installed. Installation details for the package that contains these libraries are specified in Microsoft Knowledge Base article 973544.
3. Restart the IBM Security Identity Manager Adapter service.

#### • UNIX or Linux:

1. Create a symbolic link to the `sapjco3.jar` file in `ITDI_HOME/jars/3rdparty/others`:

```
ln -s <sapjco_install_dir>/sapjco3.jar
    ITDI_HOME/jars/3rdparty/others/sapjco3.jar
```
2. Add the SAP JCo installation directory to the dynamic library path:

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:<sapjco_install_dir>
export LIBPATH=$LIBPATH:<sapjco_install_dir>
```
3. Restart the Dispatcher. For assistance, see “Start, stop, and restart of the SAP NetWeaver Adapter service” on page 21.

**Note:** The goal of the above steps is to ensure that the `sapjco3` libraries are included in the executable path and/or the loadable library path. The environment variable for dynamic library path and the command for restarting the Dispatcher may vary on different UNIX operation systems.

#### • zLinux 64bit architecture (s390x)

- 1.

#### • zLinux 64bit architecture (s390x)

1. Create a symbolic link to the `sapjco3.jar` file in `ITDI_HOME/jars/3rdparty/others`:

- ```
ln -s <sapjco_install_dir>/sapjco3.jar
    ITDI_HOME/jars/3rdparty/others/sapjco3.jar
```
2. Add the SAP JCo installation directory to the dynamic library path:
 

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:<sapjco_install_dir>
export LIBPATH=$LIBPATH:<sapjco_install_dir>
```
  3. SAP JCo is supported on zLinux only for 64 bit architecture. The IBM Tivoli Directory Integrator is packaged only with the 31 bit version of Java, and it must be additionally configured to run with the 64 bit version of Java . Note that the steps below will change the JVM for the complete IBM Tivoli Directory Integrator instance, not only for the Dispatcher.
    - a. Stop the Dispatcher:
 

```
/etc/init.d/ITIMAd stop
```
    - b. Install the IBM Java 1.5 64 bit release (for example `ibm-java2-s390x-5.0.9.rpm`)
  4. Change the IBM Tivoli Directory Integrator JRE to become 64 bit:
 

```
mv ITDI_HOME/jvm/jre ITDI_HOME/jvm/jre32
ln -s JAVA_1.5_64BIT_HOME/jre ITDI_HOME/jvm/jre
```
  5. Start the Dispatcher:
 

```
/etc/init.d/ITIMAd start
```

## Adapter profile for installation

There are two adapter profiles included in the SAP NetWeaver Adapter distribution package: `SapNWProfile.jar` and `SapGRCNWProfile.jar`.

The difference between the two profiles is that the `SapGRCNWProfile.jar` contains additional attributes that allow the adapter to be configured with either SAP GRC Access Control 5.3 or SAP GRC Access Control 10.0.

If only the SAP NetWeaver Adapter is to be used, then use `SapNWProfile.jar`.

If SAP GRC is to be used as part of the SAP NetWeaver account provisioning process, then use `SapGRCNWProfile.jar`.

If IBM Security Identity Manager contains an existing SAP NW profile and the SAP NW GRC profile is to be imported, the SAP NW GRC profile will overwrite the SAP NW profile. The SAP NW GRC profile contains both the SAP GRC attributes and the SAP NW attributes in the one profile. It is not possible for both a SAP NW profile and SAP NW GRC profile to exist in the same IBM Security Identity Manager instance. After determining which adapter profile to import, refer to the section "Importing the adapter profile into the IBM Security Identity Manager server" on page 16.

## Enabling Unicode

To support multibyte character encoding, you must configure the Dispatcher JVM properties.

### About this task

The Dispatcher process is a running instance of the IBM Tivoli Directory Integrator server.

The IBM Tivoli Directory Integrator is a Java application that is running its own JVM. You can supply standard JVM properties to the Dispatcher such as:

- Encoding
- Memory allocation initial size
- Memory allocation maximum size

As an example, to set up the dispatcher encoding to UTF-8, perform the following steps:

## Procedure

### • On Windows operating systems

1. Stop the IBM Tivoli Directory Integrator (Security Adapters) service.
2. Navigate to the adapter *timsol* directory.
3. Open the *ibmdiservice.props* file with a text editor.
4. Set the value of the *jvcmcoptions* property to the Java property value that you want to change to. For example, if you want the Dispatcher JVM to run with UTF-8 encoding, then set *jvcmcoptions=- Dfile.encoding=UTF-8*.

**Note:** When you set multiple properties, separate two properties with a space.

5. Save and close the *ibmdiservice.props* file.
6. Start the IBM Tivoli Directory Integrator (Security Adapters) service.

### • On UNIX or Linux operating systems

1. Navigate to the *ITDI\_HOME* installation directory.
2. Run the following command:

```
vi ibmdisrv
```

3. Modify the string value in the following format:

```
"$JRE_PATH/java" -cp "/opt/IBM/TDI/V7.1/jars/3rdparty/IBM/db2jcc_license_c.jar" "-Dlog4j.configuration=file:etc/log4j.properties" -jar "/opt/IBM/TDI/V7.1/IDILoader.jar" com.ibm.di.server.RS "$@"
```

For example, if you want the JVM to use UTF-8 encoding, then modify the command as:

```
"$JRE_PATH/java" -cp "/opt/IBM/TDI/V7.1/jars/3rdparty/IBM/db2jcc_license_c.jar" "-Dfile.encoding=UTF-8" "-Dlog4j.configuration=file:etc/log4j.properties" -jar "/opt/IBM/TDI/V7.1/IDILoader.jar" com.ibm.di.server.RS "$@"
```

4. Restart the dispatcher service. Run one of the following commands to restart the process:
  - On AIX® operating systems:  
/opt/IBM/TDI/V7.1/timsol/ITIMAd restartsrc
  - On Linux, Solaris, and HP-UX operating systems:  
/opt/IBM/TDI/V7.1/timsol/ITIMAd restart

### • Enabling UTF-8 encoding for the Dispatcher and adapter log file is suggested.

Logging capabilities are provided by IBM Tivoli Directory Integrator. Encoding settings can be enabled as follows:

1. Open the file *ITDI\_HOME/solution/etc/log4j.properties* in a text editor.
2. After the line *log4j.appender.Default.file=logs/ibmdi.log*, add the following setting:

```
log4j.appender.Default.file.encoding=UTF-8
```

3. The resulting entry looks like the following example:

```

log4j.appender.Default=org.apache.log4j.FileAppender
log4j.appender.Default.file=logs/ibmdi.log
log4j.appender.Default.file.encoding=UTF8
log4j.appender.Default.layout=org.apache.log4j.PatternLayout
log4j.appender.Default.layout.ConversionPattern=%d{ISO8601} %-5p [%c] - %m%n
log4j.appender.Default.append=false

```

- Restart the IBM Tivoli Directory Integrator Adapter (Dispatcher) service.

## CUA configuration settings

If the adapter is to be deployed against a CUA master server, use the transaction SCUM on the target CUA master system to set the distribution parameters.

You must set the following distribution parameters:

- Logon data -> Initial password == "Everywhere"
- Lock -> Unlock globally == "Global"
- Lock -> Lock globally == "Global"

---

## Verification of the SAP NetWeaver Adapter installation

After the adapter is installed, you must verify the adapter components on the IBM Tivoli Directory Integrator server.

These adapter components must exist on the IBM Tivoli Directory Integrator server.

*Table 5. Adapter components*

| Directory                             | Adapter component                        |
|---------------------------------------|------------------------------------------|
| <i>ITDI_HOME</i> /jars/connectors     | SapNWUserConnector.jar, SapNWSupport.jar |
| <i>ITDI_HOME</i> /jars/functions      | SapNWRfc.jar                             |
| <i>ITDI_HOME</i> /jars/3rdparty/other | sapjco3.jar                              |
| <i>ITDI_HOME</i> /libs                | sapjco3.dll                              |

Table 5. Adapter components (continued)

| Directory              | Adapter component                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ITDI_HOME/solution/xsl | <ul style="list-style-type: none"> <li>• sapnw_bapi_errors.properties</li> <li>• sapnw_bapi_user_actgroups_assign.xsl</li> <li>• sapnw_bapi_user_actgroups_delete.xsl</li> <li>• sapnw_bapi_user_change.xsl</li> <li>• sapnw_bapi_user_change_licensedata.xsl</li> <li>• sapnw_bapi_user_create.xsl</li> <li>• sapnw_bapi_user_delete.xsl</li> <li>• sapnw_bapi_user_disablepassword.xsl</li> <li>• sapnw_bapi_user_getdetail_postcall.xsl</li> <li>• sapnw_bapi_user_getdetail_precall.xsl</li> <li>• sapnw_bapi_user_getlist_postcall.xsl</li> <li>• sapnw_bapi_user_getlist_precall.xsl</li> <li>• sapnw_bapi_user_locactgroups_assign.xsl</li> <li>•</li> <li>• sapnw_bapi_user_locactgroups_read_postcall.xsl</li> <li>• sapnw_bapi_user_locactgroups_read_precall.xsl</li> <li>• sapnw_bapi_user_lock.xsl</li> <li>• sapnw_bapi_user_locprofiles_assign.xsl</li> <li>• sapnw_bapi_user_locprofiles_read_postcall.xsl</li> <li>• sapnw_bapi_user_locprofiles_read_precall.xsl</li> <li>• sapnw_bapi_user_profiles_assign.xsl</li> <li>• sapnw_bapi_user_profiles_delete.xsl</li> <li>• sapnw_bapi_user_system_assign.xsl</li> <li>• sapnw_bapi_user_unlock.xsl</li> </ul> |

If the adapter is installed correctly, these dispatcher components exist on the IBM Tivoli Directory Integrator server.

Table 6. Dispatcher components

| Directory                      | Dispatcher component                                                                                                                                                                                                                            |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ITDI_HOME\jars\3rdparty\IBM    | <ul style="list-style-type: none"> <li>• rmi-dispatcher.jar</li> <li>• rmi-dispatcher-client.jar</li> <li>• itdiAgents-common.jar</li> <li>• itdiAgents.jar</li> </ul>                                                                          |
| ITDI_HOME\jars\3rdparty\others | <ul style="list-style-type: none"> <li>• antlr-2.7.2.jar</li> <li>• jakarta-regexp-1.4.jar</li> </ul>                                                                                                                                           |
| adapter_solution_directory     | <ul style="list-style-type: none"> <li>• ITIM_RMI.xml</li> <li>• ITDIAsService.exe (IBM Tivoli Directory Integrator on Windows operating system)</li> <li>• ITIMAd (IBM Tivoli Directory Integrator on non-Windows operating system)</li> </ul> |
| ITDI_HOME                      | itim_listener.properties                                                                                                                                                                                                                        |

If this installation is to upgrade a connector, send a request from IBM Security Identity Manager and verify that the version number in the ibmdi.log matches the version of the connector.

---

## Importing the adapter profile into the IBM Security Identity Manager server

You must import the adapter profile into the IBM Security Identity Manager server before you use the adapter.

### About this task

An adapter profile defines the types of resources that the IBM Security Identity Manager server can manage. The profile is used to create a service on the IBM Security Identity Manager server and to communicate with the adapter.

Before you import the adapter profile, verify that the following conditions are met:

- The IBM Security Identity Manager server must be installed and running.
- You must have root or Administrator authority on the IBM Security Identity Manager server.

The adapter profile is included in the JAR file for the adapter, `SapNWProfile.jar`

To import the adapter profile, complete these steps:

### Procedure

1. Log in to the IBM Security Identity Manager server with an account that has the authority to perform administrative tasks.
2. Import the adapter profile or the service type by using the import service type feature for your IBM Security Identity Manager product. Refer to the online help or the product documentation for specific instructions about importing service types.

### What to do next

If you receive an error that is related to the schema when you import the adapter profile, refer to the `trace.log` file for information about the error. The `trace.log` file location is specified with the `handler.file.fileDir` property that is defined in the IBM Security Identity Manager `enRoleLogging.properties` file. The `enRoleLogging.properties` file is installed in the IBM Security Identity Manager `\data` directory.

---

## Verification of the SAP NetWeaver Adapter profile installation

If the SAP NetWeaver Adapter profile is not already installed on your system, you must import the adapter profile.

After you install the adapter profile, verify that the adapter profile was successfully installed. If the adapter profile is not installed correctly, the adapter might not function as it is intended to function.

To verify that the adapter profile was successfully installed, create a service using the SAP NetWeaver Adapter profile.

If you are unable to create a service using the SAP NetWeaver Adapter profile or open an account on the service, the adapter profile is not installed correctly. The adapter profile may need to be imported again.

---

## Creating an SAP NetWeaver Adapter service

You must create a service for the SAP NetWeaver Adapter before the IBM Security Identity Manager Server can use the adapter to communicate with the managed resource.

### About this task

To create or change a service, you must use the service form to provide information for the service. Service forms might vary depending on the adapter.

### Procedure

1. Log in to the IBM Security Identity Manager Server using an account that has the authority to perform administrative tasks.
2. Create the service using the information for your IBM Security Identity Manager product. See the online help or the product documentation for specific instructions about creating a service. The SAP NetWeaver Adapter service form contains the following fields:

## ADAPTER DETAILS TAB

This tab describes service details.

### Service name

Specify a name that defines this service on the IBM Security Identity Manager Server.

**Note:** Slash (/) and backslash (\) characters are not allowed in the service name.

### Description

Optional: Specify a description for this service.

### IBM Tivoli Directory Integrator location

Optional: Specify the URL for the IBM Tivoli Directory Integrator instance. Valid syntax is `rmi://ip-address:port/ITDIDispatcher`, where *ip-address* is the IBM Tivoli Directory Integrator host and *port* is the port number for the Dispatcher. For example, you might specify the URL as `rmi://localhost:1099/ITDIDispatcher`. For information about changing the port number, see the *Dispatcher Installation and Configuration Guide*.

### Service prerequisite

Prerequisite services names.

### Owner

Service owner.

## SAP CONNECTION DETAILS TAB

This tab describes connection details.

### Target Client

The SAP instance client number. This field is mandatory if no value is supplied for **Optional RFC Connection Parameters**.

### Login ID

The SAP User account login ID that adapter uses to connect to the SAP instance. This field is mandatory if no value is supplied for **Optional RFC Connection Parameters**.

**Password**

Password for SAP User account. This field is mandatory if no value is supplied for **Optional RFC Connection Parameters**.

**SAP System (DNS hostname or IP)**

Host name of the SAP server host computer only if DNS is set up correctly. Otherwise, use the IP address. This field is mandatory if no value is supplied for **Optional RFC Connection Parameters**.

**SAP Systems Number**

The SAP server system number. This field is mandatory if no value is supplied for **Optional RFC Connection Parameters**.

**SAP Logon Language**

The language ISO identifier to be used by the adapter. This parameter is optional.

**SAP Gateway (DNS hostname or IP)**

Host name of the SAP gateway host computer only if DNS is set up correctly. Otherwise, use the IP address. This host is typically the same host that contains the SAP server. This parameter is optional.

**Optional RFC Connection Parameters**

This attribute allows for alternative SAP connectivity parameters to be specified. The value of this attribute is a formatted string of name-value pairs. Each pair must be separated by a single pipe (|) character. The name parts must be in lowercase characters. The general format of the value of this attribute is shown in this example:

```
<name1>=<value1> <name2=value2> ... <nameN>=<valueN>
```

For example, the following string value would set the SAP Message Server to messageserver.com with System ID PR0 and Group SPACE:

```
mshost=messageserver.com|r3name=PR0|group=SPACE
```

The names and values are those supported directly by the SAP RFC API. A summary of the names is supplied in the following table:

*Table 7. Names supported by SAP RFC API*

| Name       | Description                                                                                                                    |
|------------|--------------------------------------------------------------------------------------------------------------------------------|
| client     | SAP client                                                                                                                     |
| user       | User name for logon. Set to \$MYSAPSS02\$ if you are using SSO logon. Set to \$X509CERT\$ if you are using X509 certificates.  |
| alias user | Alias for user name                                                                                                            |
| passwd     | Password of the user. If you are using SSO or X509 certificates, supply base64 encode value of SSO ticket or X509 certificate. |
| lang       | Log on language to be used                                                                                                     |
| sysnr      | System number of the target SAP system                                                                                         |
| ashost     | Host name of the target SAP application server                                                                                 |
| mshost     | Host name of message service                                                                                                   |
| gwhost     | Host name of the SAP gateway service                                                                                           |
| gwserv     | Gateway service name                                                                                                           |
| r3name     | R/3 name                                                                                                                       |
| group      | Name of SAP application server group                                                                                           |

Table 7. Names supported by SAP RFC API (continued)

| Name          | Description                                  |
|---------------|----------------------------------------------|
| tpname        | Program Id of external RFC server program    |
| tphost        | Host name of external RFC server program     |
| trace         | Set to 1 to enable RFC API trace logging     |
| codepage      | SAP code page                                |
| getsso2       | Set to 1 to obtain SAP SSO ticket            |
| mysapsso2     | SAP Cookie version 2 as logon ticket         |
| x509cert      | X509 certificate as logon ticket             |
| snc_mode      | Set to 1 to enable secure network connection |
| snc_partnname | SNC name                                     |
| snc_qop       | SNC strength, 1 - 9                          |
| snc_myname    | SNC name. Overrides partner name             |
| snc_lib       | Path name to SNC library implementation      |
| extiddata     | External authentication (PAS) data           |
| extidtype     | External authentication type                 |

#### Enable TDI Debugging

Flag to enable IBM Tivoli Directory Integrator debugging trace output.

## SAP ROLE DETAILS TAB

This tab describes the role end date.

#### Role Default End Date : Date/Time

This is the default Role End Date.

## ADD ADVANCED MAPPING TAB

Settings of this tab apply only when the adapter is processing add operation requests.

The following attribute of this tab is an optional service attribute. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Add User Basic XSL Stylesheets

## MODIFY ADVANCED MAPPING TAB

Settings of this tab apply only when the adapter is processing modify operation requests.

The following attributes of this tab are all optional service attributes. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Modify User Basic XSL Stylesheets
- Modify User Basic Lookup Request Stylesheet
- Modify User Basic Lookup Response Stylesheet

## DELETE ADVANCED MAPPING TAB

Settings of this tab apply only when the adapter is processing delete operation requests.

The following attributes of this tab are all optional service attributes. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Delete User Basic XSL Stylesheets
- Delete User Basic Lookup Request Stylesheet
- Delete User Basic Lookup Response Stylesheet

## **SUSPEND ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing suspend operation requests.

The following attributes of this tab are all optional service attribute. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Suspend User Basic XSL Stylesheets
- Suspend User Basic Lookup Request Stylesheet
- Suspend User Basic Lookup Response Stylesheet

## **RESTORE ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing restore operation requests.

The following attributes of this tab are all optional service attribute. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Restore User Basic XSL Stylesheets
- Restore User Basic Lookup Request Stylesheet
- Restore User Basic Lookup Response Stylesheet

## **CHANGE PASSWORD ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing password operation requests.

The following attributes of this tab are all optional service attributes. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Change Password Basic XSL Stylesheets
- Change Password Basic Lookup Request Stylesheet
- Change Password Basic Lookup Response Stylesheet

## **RECONCILIATION ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing reconciliation and search operation requests.

The following attributes of this tab are all optional service attribute. For more details, see “SAP NetWeaver Adapter configuration” on page 23.

- Search User Basic Select Request XSL Stylesheets
- Search User Basic Select Response Stylesheet
- Search User Basic Iterate Request XSL Stylesheets
- Search User Basic Iterate Response Stylesheet

## **DISPATCHER ATTRIBUTES TAB**

This tab describes Dispatcher attributes.

### **Assembly Line File System Path**

Specify the file path from where the dispatcher loads the assembly lines. If you do not specify a file path, the dispatcher loads the assembly lines received from IBM Security Identity Manager. For example, you can specify the following file path to load the assembly lines from the profiles directory of the Windows operating system: C:\Files\IBM\TDI\V7.1\profiles or you can specify the following file path to load the assembly lines from the profiles directory of the UNIX and Linux operating system: /opt/IBM/TDI/V7.1/profiles

### **Max Connection Count**

Specify the maximum number of assembly lines that the dispatcher can execute simultaneously for the service. For example, enter 10 when you want the dispatcher to execute maximum ten assembly lines simultaneously for the service. If you enter 0 in the **Max Connection Count** field, the dispatcher does not limit the number of assembly lines that are executed simultaneously for the service.

### **Disable Assembly Line Cache**

Select the checkbox to disable the assembly line caching in the dispatcher for the service. The assembly lines for the Add, Modify, Delete, and Test operations are not cached.

---

## **Connection test**

After the service has been created, click **Test** to ensure that the connection to both IBM Tivoli Directory Integrator Server and SAP NetWeaver AS ABAP can be established.

Configuration information for the adapter is reported in the IBM Tivoli Directory Integrator log file (ibmdi.log) as a result of a successful test.

---

## **Start, stop, and restart of the SAP NetWeaver Adapter service**

To start, stop, or restart the adapter, you must start, stop, or restart the Dispatcher.

The adapter does not exist as an independent service or a process. The adapter is added to the Dispatcher instance, which runs all the adapters that are installed on the same Tivoli Directory Integrator instance.

See the topic about starting, stopping, and restarting the dispatcher service in the *Dispatcher Installation and Configuration Guide*.



---

## Chapter 4. First steps after installation

There are configuration options, security and other tasks that you can perform after installing the adapter.

---

### SAP NetWeaver Adapter configuration

These sections describe the configuration options for the SAP NetWeaver Adapter.

- “Customizing the adapter profile”
- “XSL style sheets” on page 24
- “Adapter attributes and object classes” on page 31
- “Special attributes” on page 33
- “Adapter configuration properties” on page 34

See the *IBM Security Dispatcher Installation and Configuration Guide* for additional configuration options such as:

- JVM properties
- Dispatcher filtering
- Dispatcher properties
- Dispatcher port number
- Logging configurations
- Secure Sockets Layer (SSL) communication

### Customizing the adapter profile

To customize the adapter profile, you must modify the SAP NetWeaver Adapter JAR file. You might customize the adapter profile to change the account form or the service form. Use the Form Designer or `CustomLabels.properties` file to change the labels on the forms. Each adapter has a `CustomLabels.properties` file for that adapter.

#### About this task

The JAR file is included in the SAP NetWeaver Adapter compressed file that you downloaded from the IBM website.

The following files are included in the SAP NetWeaver JAR file:

- `CustomLabels.properties`
- `ersapnwaccount.xml`
- `ersapnwservice.xml`
- `SapNWAssemblyLines.xml`
- `schema.dsml`
- `service.def`

#### Procedure

1. To edit the JAR file, log on to the workstation where the SAP NetWeaver Adapter is installed.
2. Copy the JAR file into a temporary directory.

3. Extract the contents of the JAR file into the temporary directory. The following example applies to the SAP NetWeaver Adapter profile. Type the name of the JAR file for your operating system. Run the following command.

```
#cd /tmp
#jar -xvf SapNWProfile.jar
```

The **jar** command extracts the files into the SAPNWProfile directory.

4. Edit the file that you want to change. After you edit the file, you must import the file into the IBM Security Identity Manager server for the changes to take effect.
5. To import the file, create a JAR file by using the files in the /tmp directory. Run the following commands:

```
#cd /tmp
#jar -cvf SapNWProfile.jar SAPNWProfile
```

6. Import the JAR file into the IBM Security Identity Manager application server. For more information about importing the JAR file, see “Importing the adapter profile into the IBM Security Identity Manager server” on page 16.
7. Stop and start the IBM Security Identity Manager server.
8. Stop and start the SAP NetWeaver Adapter service. For information about stopping and starting the SAP NetWeaver Adapter service, see “Start, stop, and restart of the SAP NetWeaver Adapter service” on page 21.

## XSL style sheets

The adapter can be configured by modifying the XSL style sheet advanced mappings.

Before the adapter runs an SAP RFC, it queries the CUA status of the target SAP system. If the CUA status is true, then the adapter runs the CUA XSL transformations that are in the following lists. If the SAP system is NON-CUA, status false, then the adapter runs the NON-CUA XSL transformations. These transformations are in the following lists.

**Note:** In some cases the default XSL transformations are the same for both CUA and NON-CUA systems.

The adapter functions without requiring any advanced mapping XSL transformations to be configured. The default values for each advanced mapping in the following lists are used. However, any advanced mappings that are configured by the user, override the listed default XSL transformations.

### ADD ADVANCED MAPPING TAB

Settings of this tab apply only when the adapter is processing add operation requests.

#### Add User Basic XSL Stylesheets

This attribute is a multi-valued attribute where each value is separated by a single space ( ' ') character. The values are file names that represent the order in which the adapter runs XSL transformations on the user account data. The data is sent from IBM Security Identity Manager during an **add** operation request. The XSL results are run as RFC calls against the target SAP system.

The values are the names of the XSL files that are deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

CUA:

```
xsl/sapnw_bapi_user_create.xsl
xsl/sapnw_bapi_user_disablepassword.xsl
xsl/sapnw_bapi_user_system_assign.xsl
xsl/sapnw_bapi_user_change_licensedata.xsl
xsl/sapnw_bapi_user_locactgroups_assign.xsl
xsl/sapnw_bapi_user_locprofiles_assign.xsl
```

NON-CUA:

```
xsl/sapnw_bapi_user_create.xsl
xsl/sapnw_bapi_user_disablepassword.xsl
xsl/sapnw_bapi_user_change_licensedata.xsl
xsl/sapnw_bapi_user_actgroups_assign.xsl
xsl/sapnw_bapi_user_profiles_assign.xsl
```

## **MODIFY ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing **modify** operation requests.

### **Modify User Basic XSL Stylesheets**

This attribute is a multi-valued attribute where each value is separated by a single space ( ' ') character. The values are file names that represent the order in which the adapter runs XSL transformations on the user account data. The data is sent from IBM Security Identity Manager during a **modify** operation request. The XSL results are run as RFC calls against the target SAP system.

The values are the names of XSL files that are deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

CUA:

```
xsl/sapnw_bapi_user_change.xsl
xsl/sapnw_bapi_user_disablepassword.xsl
xsl/sapnw_bapi_user_system_assign.xsl
xsl/sapnw_bapi_user_change_licensedata.xsl
xsl/sapnw_bapi_user_locactgroups_assign.xsl
xsl/sapnw_bapi_user_locprofiles_assign.xsl
```

NON-CUA:

```
xsl/sapnw_bapi_user_change.xsl
xsl/sapnw_bapi_user_disablepassword.xsl
xsl/sapnw_bapi_user_change_licensedata.xsl
xsl/sapnw_bapi_user_actgroups_assign.xsl
xsl/sapnw_bapi_user_profiles_assign.xsl
```

### **Modify User Basic Lookup Request Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that produces an RFC request. The RFC request is run by the adapter to determine whether the account to be modified is present. If a value is supplied, the transformation is run regardless of the CUA status of the target SAP system. If CUA is used, the following XSL mappings are required:

xsl/sbu\_getdetail\_precall.xsl xsl/sbu\_locactgroups\_read\_precall.xsl

The value is the name of the XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

xsl/sapnw\_bapi\_user\_getdetail\_precall.xsl

### **Modify User Basic Lookup Response Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that will process the SAP response from running the RFC call that is based on the setting of **Modify User Lookup Request Stylesheet**. If a value is supplied, the transformation is run regardless of the CUA status of the target SAP system. If CUA is used, the following additional XSL mappings are required:

xsl/sbu\_getdetail\_postcall.xsl xsl/sbu\_locactgroups\_read\_postcall.xsl

The value is the name of XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

xsl/sapnw\_bapi\_user\_getdetail\_postcall.xsl

## **DELETE ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing delete operation requests.

### **Delete User Basic XSL Stylesheets**

This attribute is a multi-valued attribute where each value is separated by a single space ( ' ') character. The values are file names that represent the order in which the adapter runs XSL transformations on the user account data. The data is sent from IBM Security Identity Manager during a **delete** operation request. The XSL results are run as RFC calls against the target SAP system. If a value is supplied, the transformations are run regardless of the CUA status of target SAP system.

The values are the names of XSL files that are deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

xsl/sapnw\_bapi\_user\_delete.xsl

### **Delete User Basic Lookup Request Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that produces an RFC request. The RFC request is run by the adapter to determine whether the account to be deleted is present. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

xsl/sapnw\_bapi\_user\_getdetail\_precall.xsl

### Delete User Basic Lookup Response Stylesheet

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that processes the SAP response from the RFC call. The call is run based on the setting of **Delete User Lookup Request Stylesheet**. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_postcall.xsl
```

### SUSPEND ADVANCED MAPPING TAB

Settings of this tab apply only when the adapter is processing suspend operation requests.

#### Suspend User Basic XSL Stylesheets

This attribute is a multi-valued attribute where each value is separated by a single space ( ' ') character. The values are file names that represent the order in which the adapter runs XSL transformations on the user account data. The data is sent from IBM Security Identity Manager during a **suspend** operation request. The XSL results are run as RFC calls against the target SAP system. If a value is supplied, the transformations are run regardless of the CUA status of target SAP system.

The values are the names of XSL files that are deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

```
xsl/sapnw_bapi_user_lock.xsl
```

#### Suspend User Basic Lookup Request Stylesheet

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that produces an RFC request. The RFC request is run by the adapter to determine whether the account to be suspended is present. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_preca11.xsl
```

#### Suspend User Basic Lookup Response Stylesheet

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that processes the SAP response from the RFC call. The call is run based on the setting of **Suspend User Lookup Request Stylesheet**. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_postcall.xsl
```

## **RESTORE ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing restore operation requests.

### **Restore User Basic XSL Stylesheets**

This attribute is a multivalued attribute where each value is separated by a single space ( ' ') character. The values are file names that represent the order in which the adapter runs XSL transformations on the user account data. The data is sent from IBM Security Identity Manager during a **restore** operation request. The XSL results are run as RFC calls against the target SAP system. If a value is supplied, the transformations are run regardless of the CUA status of target SAP system.

The values are the names of XSL files that are deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

```
xsl/sapnw_bapi_user_unlock.xsl
```

### **Restore User Basic Lookup Request Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that produces an RFC request. The RFC request is run by the adapter to determine whether the account to be restored is present. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_preca11.xsl
```

### **Restore User Basic Lookup Response Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that processes the SAP response from the RFC call. The call is run based on the setting of **Restore User Basic Lookup Request Stylesheet**. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of the XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_postcall.xsl
```

## **CHANGE PASSWORD ADVANCED MAPPING TAB**

Settings of this tab apply only when the adapter is processing password operation requests.

### Change Password Basic XSL Stylesheets

This attribute is a multi-valued attribute where each value is separated by a single space ( ' ') character. The values are file names that represent the order in which the adapter runs XSL transformations on the user account data. The data is sent from IBM Security Identity Manager during a **password** operation request. The XSL results are run as RFC calls against the target SAP system. If a value is supplied, the transformations are run regardless of the CUA status of target SAP system.

The values are the names of XSL files that are deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

```
xsl/sapnw_bapi_user_change.xsl
```

### Change Password Basic Lookup Request Stylesheet

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that produces an RFC request. The RFC request is run by the adapter to determine whether the account to be modified is present. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of the XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_precall.xsl
```

### Change Password Basic Lookup Response Stylesheet

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that processes the SAP response from the RFC call. The call is run based on the setting of **Change Password Basic Lookup Request Stylesheet**. If a value is supplied, the transformation is run regardless of the CUA status of target SAP system.

The value is the name of the XSL file that is deployed with the adapter relative to the Dispatcher solution directory. If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_postcall.xsl
```

## RECONCILIATION ADVANCED MAPPING TAB

Settings of this tab apply only when the adapter is processing reconciliation and search operation requests.

### Search User Basic Select Request XSL Stylesheets

This attribute is a multi-valued attribute. The value is a list of XSL transformation file names that are separated by space (" "). Each transform is run in the defined order and produce an RFC request. Each RFC request is run by the adapter. If more than one transform and resulting RFC is run, the result of each RFC call is appended to an XML result document with a root tag named <bapiResults>. This result list is passed to the **Search User Basic Select Response XSL Stylesheets**. If only one XSL file name is

supplied, the resulting RFC is run, and its response will be passed directly to **Search User Basic Select Response XSL Stylesheets**.

Each XSL transform file must be deployed with the adapter in the `xsl` directory relative to the Dispatcher solution directory.

If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

```
xsl/sapnw_bapi_user_getlist_precall.xsl
```

### **Search User Basic Select Response Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that processes the SAP response or responses from the RFC calls. The calls are run based on the setting of **Search User Basic Select Request Stylesheet**. This transform produces the list of user names to be iterated during the reconciliation.

The XSL transform file must be deployed with the adapter in the `xsl` directory relative to the Dispatcher solution directory.

If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getlist_postcall.xsl
```

### **Search User Basic Iterate Request XSL Stylesheets**

This attribute is a multi-valued attribute. The value is a list of XSL transformation file names that are separated by space (" "). Each transform is run in the defined order and produce an RFC request. Each RFC request is run by the adapter. Each RFC that is run is responsible for returning parts of the user account details. If more than one transform and resulting RFC is run, the result of each RFC call is appended to an XML result document with a root tag named `<bapiResults>`. This result list is passed to the **Search User Basic Iterate Response XSL Stylesheets**. If only one XSL file name is supplied, the resulting RFC is run. The response is passed directly to **Search User Basic Select Response XSL Stylesheets**.

Each XSL transform file must be deployed with the adapter in the `xsl` directory relative to the Dispatcher solution directory.

If no value is supplied, the adapter runs the following XSL transformations and resulting RFC calls:

CUA:

```
xsl/sapnw_bapi_user_getdetail_precall.xsl  
xsl/sapnw_bapi_user_locactgroups_read_precall.xsl  
xsl/sapnw_bapi_user_locprofiles_read_precall.xsl
```

RFC

NON-CUA:

```
xsl/sapnw_bapi_user_getdetail_precall.xsl
```

### **Search User Basic Iterate Response Stylesheet**

This attribute is a single-valued attribute. The value is the file name of an XSL transformation that processes the SAP response or responses from the RFC calls. The calls are run based on the

setting of **Search User Basic Iterate Request Stylesheet**. The result of running this transform is sent to the IBM Security Identity Manager server.

The XSL transform file must be deployed with the adapter in the `xsl` directory relative to the Dispatcher solution directory.

If no value is supplied, the adapter runs the following XSL transformation and resulting RFC call:

```
xsl/sapnw_bapi_user_getdetail_postcall.xsl
```

## Adapter attributes and object classes

After you install the adapter profile, the SAP NetWeaver Adapter supports a standard set of attributes.

The following table lists the standard attributes supported by the SAP NetWeaver Adapter.

*Table 8. Supported account attributes*

| IBM Security Identity Manager Name | Attribute Name      | Description                              | Data Type                                                |
|------------------------------------|---------------------|------------------------------------------|----------------------------------------------------------|
| Academic title                     | ersapnwacademic     | Dr., Prof., and so on                    | SAP predefined value                                     |
| Account                            | ersapnwdaccount     | User account identification              | Character or numeric string, which is not SAP predefined |
| Authorization Profiles             | ersapnwprofile      | Authorization Profiles                   | SAP predefined value                                     |
| Authorization Roles                | ersapnwagname       | Role name                                | Character or numeric string                              |
| Building                           | ersapnwbuilding     | Building number                          | Character or numeric string                              |
| CATT Status                        | ersapnwcatt         | CATT test status                         | Yes or No                                                |
| Company                            | ersapnwcompany      | Company Name                             | String                                                   |
| Cost Center                        | ersapnwcostcenter   | User cost center                         | Character or numeric string                              |
| Country                            | ersapnwcountry      | Country key code of user                 | Character or numeric string, SAP country key             |
| Date Format                        | ersapnwdateformat   | Date format                              | SAP predefined value, 5 date format versions             |
| Decimal Notation                   | ersapnwdecimalpoint | Decimal notation, either period or comma | Character or numeric string                              |

Table 8. Supported account attributes (continued)

| IBM Security Identity Manager Name | Attribute Name             | Description                                                                                                                          | Data Type                                                              |
|------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Delete After Print                 | ersapnwprntdelete          | Delete after print                                                                                                                   | Character or numeric string                                            |
| Department                         | ersapnwdepartment          | Department                                                                                                                           | Character or numeric string                                            |
| Email Address                      | ersapnwemailaddress        | A user can have more than one email address. Refer to the E-mail section under "Special attributes" on page 33 for more information. | Character or numeric string                                            |
| Fax Number                         | ersapnwprimaryfaxnumber    | Telefax number                                                                                                                       | Character or numeric string                                            |
| Fax extension                      | ersapnwprimaryfaxextension | Fax number: extension                                                                                                                | Character or numeric string                                            |
| Function                           | ersapnwfunction            | Function of user                                                                                                                     | Character or numeric string                                            |
| Given Name                         | ersapnwgivenname           | First name                                                                                                                           | Character or numeric string                                            |
| Group                              | ersapnwusergroups          | User group                                                                                                                           | SAP predefined value                                                   |
| Insecure Communication Permitted?  | ersapnwsncflag             | Flag that allows non-secure communication                                                                                            | SAP Boolean                                                            |
| Internet User Alias                | ersapnwalias               | Internet user alias                                                                                                                  | String                                                                 |
| Language                           | ersapnwcommlang            | Language set in the user's address record                                                                                            | String                                                                 |
| Logon Language                     | ersapnwdefaultlang         | User's default login language                                                                                                        | String                                                                 |
| Output Device                      | ersapnwoutputdevice        | Device                                                                                                                               | SAP predefined value                                                   |
| Password                           | erpassword                 | Password to log into SAP system Required for all requests.                                                                           | SAP predefined value                                                   |
| Personal Time Zone                 | ersapnwtimezone            | Timezone                                                                                                                             | SAP predefined value, existing timezone remains if a conflict is noted |

Table 8. Supported account attributes (continued)

| IBM Security Identity Manager Name | Attribute Name               | Description                                | Data Type                                                      |
|------------------------------------|------------------------------|--------------------------------------------|----------------------------------------------------------------|
| Print Immediately                  | ersapnwprntimmediate         | Print immediately                          | Character or numeric string                                    |
| Room Number                        | ersapnwroom                  | Room number                                | Character or numeric string                                    |
| Set Parameter   value              | ersapnwparid                 | Parameter identification                   | SAP predefined value                                           |
| Start Menu                         | ersapnwmenu                  | SAP start menu                             | SAP predefined value                                           |
| SNC Name                           | ersapnwsncname               | Printable SNC name                         | String                                                         |
| Surname                            | ersapnwsurname               | Last name                                  | Input supplied                                                 |
| Telephone Number                   | ersapnwprimaryphonenumber    | Main telephone number                      | Character or numeric string                                    |
| Telephone Extension                | ersapnwprimaryphoneextension | Telephone number: extension                | Character or numeric string                                    |
| Title                              | ersapnwtitle                 | Form of address: Mr., Mrs., Ms             | Character or numeric string                                    |
| User Type                          | ersapnwtype                  | User type (A=online, C=CPIC, D=BDC, O=ODC) | SAP predefined value, between 1 and 4, defaults to dialog user |
| UserName                           | eruid                        | User's login ID                            | String                                                         |
| Valid From                         | ersapnwdatefrom              | Valid from date                            | Up to 6 data format versions                                   |

## Special attributes

The SAP NetWeaver Adapter supports some special attributes that are specific to the adapter.

### Email Address

The SAP email is a multi-valued attribute, which means a user can have more than one email address. You must designate one email address as the user's "Standard" email. In addition, you can designate an email address to be the "Home" email. If only one email address is to be assigned to the account, ensure that you set both the "Standard" email and "Home" email options.

To enter an email address on the IBM Security Identity Manager form, you must follow this syntax:

a|b|c|d  
a= X for Standard email, or space for not Standard.  
b= is the email address.  
c= X for home email, or space for not home.  
d= is the sequence number, must consist of three digits.

For example, to enter three email addresses for user Jon Doe:

```
X|jon.doe@company.com| |001 (standard email)
|jon.doe@home.com|X|002 (home email)
|jon.doe@other.com| |003 (other email)
```

Or, to enter one email address as the standard and home:

```
X|jon.doe@company.com|X|001
```

### CUA License Data

To edit license data for CUA systems, the adapter schema supports an attribute named "ersapnwlliccuadata". This attribute is a multivalued attribute that enables the management of CUA License Data. This attribute is exposed on the CUA Systems License Data tab. The ersapnwlliccuadata attribute consists of nine values that are delimited by pipes and contains no white space. Any data input by the CUA Systems License Data tab overwrites the CUA license data in SAP NetWeaver for the account.

The format of the ersapnwlliccuadata attribute is:

```
<CUA System Name>|<ersapnwllictype>|<ersapnwllicspecver>|<ersapnwllicsurchr>|
<ersapnwllicsubfrom>|<ersapnwllicsubto>|<ersapnwllicsysid>|<ersapnwllicclient>|
<ersapnwllicbname>|
```

The previous values have the following meanings:

- CUA System Name: CUA Logical system name
- ersapnwllictype: Contractual User Type
- ersapnwllicspecver: Assignment to special version
- ersapnwllicsurchr: Country surcharge
- ersapnwllicsubfrom: Substitute date from
- ersapnwllicsubto: Substitute date to
- ersapnwllicsysid: Chargeable user SAP system
- ersapnwllicclient: Chargeable user client
- ersapnwllicbname: Chargeable user name

CUA license data must be input in the CUA Systems License Data tab by using the format that is specified for the ersapnwlliccuadata attribute. Some examples of individual entries are:

```
AA1CLNT100|11||0|||AA2|300|HSMITH|
AA5CLNT110|01|91|0|||
```

## Adapter configuration properties

For guidance on setting IBM Tivoli Directory Integrator configuration properties for the operation of the SAP NetWeaver Adapter, see the *Dispatcher Installation and Configuration Guide*.

---

## Customizing the SAP NetWeaver Adapter

You can customize the adapter to suit your needs.

## About this task

You can increase the range of years on IBM Security Identity Manager for the "Valid From" and "Valid To" calendar widget.

### Procedure

1. Use your preferred LDAP browser to locate the following entry:  
`erformname=erITIMService,ou=formTemplates,ou=itim,<tenant>,<rootsuffix>`
2. Find the **erXML** attribute in the entry.
3. Update the **erXML** attribute to have the following **formElement**: Set the `MIN_YEAR` and `MAX_YEAR` to the year range you want the calendar to display (e.g. from 1900 to 2099). Use the **spanYearRange** option to show the year values between `MIN_YEAR` and `MAX_YEAR`.

```
<formElement direction="inherit" label="$ersapnwdatefrom"
name="data.ersapnwdatefrom">
<dateInput mixYear="MIN_YEAR" maxYear="MAX_YEAR"
spanYearRange="Yes" hoursAndMinutes="false"/>
</formElement>
```

```
<formElement direction="inherit" label="$ersapnwdateuntil"
name="data.ersapnwdateuntil">
<dateInput mixYear="MIN_YEAR" maxYear="MAX_YEAR"
spanYearRange="Yes" hoursAndMinutes="false"/>
</formElement>
```

For instance, the following example will have the calendar widget contains all the values from 1900 to 2099.

```
<formElement direction="inherit" label="$ersapnwdatefrom"
name="data.ersapnwdatefrom">
<dateInput mixYear="1900" maxYear="2099" spanYearRange="Yes"
hoursAndMinutes="false"/>
</formElement>
```

#### Note:

- It is NOT recommended to combine **spanYearRange** and a **maxYear** of 9999. Because this will significantly increase the amount of data that must be sent to the browser for the page to be displayed, and will hurt performance.
  - If you want to include years earlier than 1990, then use the **minYear** attribute. For example, `<dateInput minYear="1974"/>`.
  - Any customization done through the IBM Security Identity Manager UI (Form Editor Applet) MUST be done prior to adding any manual date attribute modifications. The Form Editor UI is not equipped to handle these additional date attribute customizations. When edited, the Form Editor UI will write out standard Date attributes regardless of any manual modification previously added. Thus, the manual updates must be redone, or their functionality will be not be effective.
4. Save the updated **erXML** attribute to the LDAP.

---

## Language pack installation for the SAP NetWeaver adapter

The adapters use a separate language package from the IBM Security Identity Manager.

See the IBM Security Identity Manager library and search for information about installing the adapter language pack.

---

## Support for SAP productive passwords

SAP provides support for the use of productive passwords with the standard Business Application Programming Interface (BAPI). A productive password is a single password that can be used on heterogeneous SAP systems.

You must satisfy these SAP prerequisites to allow the SAP NetWeaver Adapter to set productive passwords:

- SAP NetWeaver AS ABAP uses SAP Cryptographic Library as its security provider for Secure Network Communication (SNC).
- SAP NetWeaver AS ABAP is configured to use Secure Network Communication for RFC communications.
- The SAP user account that is used by the adapter to communicate with SAP NetWeaver AS ABAP has the authorization for object **S\_USER\_GRP** with activity **PP**.
- The adapter is configured to use Secure Network Communication for its communication with SAP NetWeaver AS ABAP.

Refer to SAP note 1287410. You must have S-user credentials that are provided by SAP to access this website.

## Secure Network Communication between the adapter and SAP NetWeaver AS ABAP

You can use these steps to configure secure communication between the adapter and SAP NetWeaver AS ABAP by using Secure Network Communication (SNC).

These configuration steps have been verified against the SAP versions that are listed in Table 9:

*Table 9. SAP version support*

| SAP release and version | Software component | Support package |
|-------------------------|--------------------|-----------------|
| 700                     | SAP_BASIS          | SAPKB70019      |
| 701                     | SAP_BASIS          | SAPKB70111      |
| 702                     | SAP_BASIS          | SAPKB70210      |
| 710                     | SAP_BASIS          | SAPKB71010      |
| 730                     | SAP_BASIS          | SAPKB73000      |
| 731                     | SAP_BASIS          | SAPKB73102      |

For information on required configuration changes to subsequent versions, review the SAP documentation for Secure Network Communication, SAP Cryptographic Library, and productive password support at [www.service.sap.com](http://www.service.sap.com).

### Installing the SAP Cryptographic Library

You can use these steps to install the SAP Cryptographic Library.

#### Procedure

1. Download the SAP Cryptographic Library from the SAP Service Marketplace and extract it to a temporary directory.
2. Copy the library and the command line tool to a local directory on the system that hosts the adapter. For example:

### Windows systems

```
C:\usr\sap\sapcrypto.dll  
C:\usr\sap\sapgenpse.exe
```

### UNIX systems

```
/usr/sap/libsapcrypto.so  
/usr/sap/sapgenpse
```

3. Copy the license ticket (ticket) to a subdirectory that is named sec. For example:

### Windows systems

```
C:\usr\sap\sec\ticket
```

### UNIX systems

```
/usr/sap/sec/ticket
```

4. For the user that runs the adapter, set the environment variable **SECUDIR** to this directory. For example:

### Windows systems

```
SECUDIR=C:\usr\sap\sec
```

### UNIX systems

```
SECUDIR=/usr/sap/sec
```

If the user is the SYSTEM user, set **SECUDIR** as a system variable.

5. Restart the adapter (RMI dispatcher service) so that the new environment variable is accessible by the adapter.

## Creating a Person Security Environment for the adapter

You can use these steps to create a Person Security Environment for the adapter.

### Procedure

1. Start a command line console and change to the directory that contains the **sapgenpse** tool.
2. Create a Person Security Environment for the adapter. Running this command:

```
sapgenpse get_pse [-p PSE_name] [-x PIN] [DN]
```

Where:

**-p** *PSE\_name*

Path and file name for Person Security Environment for the adapter.

**-x** *PIN*

PIN value that protects the Person Security Environment.

*DN*

Distinguished Name for the adapter. The Distinguished Name is used to build the Secure Network Communication name for the adapter. The Distinguished Name has the following elements:

- CN = *Common\_Name*
- OU = *Organizational\_Unit*
- O = *Organization*
- C = *Country*

For example:

```
sapgenpse get_pse -p adapter.pse -x passw0rd "CN=adapter,OU=IdM,O=IBM,C=US"
```

3. Use the following command (on one line) to open the adapter's Person Security Environment and create credentials:

```
sapgenpse seclogin [-p PSE_name] [-x PIN] [-o [NT_Domain]\user_ID]
```

Where:

- p** *PSE\_name*  
Path and file name for the Person Security Environment for the adapter.
- x** *PIN*  
PIN value that protects the Person Security Environment.
- 0** *[NT\_Domain\[user\_ID\*  
User for whom the credentials are created. Specify the user that runs the adapter service. Omitting this value specifies the current user.  
For example:  
`sapgenpse seclogin -p adapter.pse -x passwd -0 SYSTEM`

## Importing the public certificate of the adapter into the SAP NetWeaver AS ABAP Person Security Environment

You can use these steps to import the public certificate of the adapter into the SAP NetWeaver AS ABAP Person Security Environment.

### Procedure

- Export the public certificate of the adapter. Run the following command:  
`sapgenpse export_own_cert [-o output_file] [-p PSE_name] [-x PIN] [DN]`  
Where:  
**-o** *output\_file*  
Path and file name for the exported certificate.  
**-p** *PSE\_name*  
Path and file name for Person Security Environment for the adapter.  
**-x** *PIN*  
PIN value that protects the Person Security Environment.  
For example:  
`sapgenpse export_own_cert -o adapter.crt -p adapter.pse -x passwd`
- Start Trust Manager from SAP graphical user interface (transaction STRUST).
- Select (double-click) the SAP Person Security Environment under the SAPCryptolib folder.
- When prompted, enter the PIN value.
- Select **Certificate > Import** from the menu.
- Enter the path and file name of the public certificate of the adapter.
- Select the Base64 format and choose Enter. The certificate appears in the **Certificate** section of Trust Manager panel.
- Click **Add to Certificate List** button to add the certificate to the Person Security Environment.
- Save the data.

**Note:** For securing multiple SAP systems with a single Secure Network Communication certificate, repeat steps 2 - 9 for each SAP system. Use the same certificate from step 1 to upload to different SAP systems.

## Importing the SAP NetWeaver AS ABAP public certificate into the Person Security Environment of the adapter

You can use these steps to import the SAP NetWeaver AS ABAP public certificate into the Person Security Environment of the adapter.

## Procedure

1. In Trust Manager, select the SAP NetWeaver AS ABAP Secure Network Communication Person Security Environment.
2. Select (double-click) the certificate in the **Owner** field.
3. Select **Certificate -> Export** from the menu.
4. Specify the path and file name to save the file; select the Base64 format and choose Enter. Use a different file name for each SAP system.
5. Copy the exported certificate to the system that hosts the adapter.
6. On the adapter system, run the following command on one line to import the SAP NetWeaver AS ABAP public certificate into the Person Security Environment of the adapter:

```
sapgenpse maintain_pk [-a cert_file] [-p PSE_name] [-x PIN] [DN]
```

Where:

**-a cert\_file**

Path and file name for the SAP NetWeaver AS ABAP public certificate.

**-p PSE\_name**

Path and file name for Person Security Environment for the adapter.

**-x PIN**

PIN value that protects the Person Security Environment.

For example:

```
sapgenpse maintain_pk -a sap.crt -p adapter.pse
```

7. Run the following command to display all the certificate details that were updated in the .pse file.

```
sapgenpse maintain_pk -l -p PSE_name [-x PIN]
```

Where:

**-p PSE\_name**

Path and file name for Person Security Environment for the adapter.

**-x PIN**

PIN value that protects the Person Security Environment.

For example:

```
sapgenpse maintain_pk -l -p adapter.pse
```

**Note:** For securing multiple SAP systems with a single Secure Network Communication certificate, repeat steps 1 to 6 for each SAP system. To update the file entry of the certificates that were exported from different SAP systems to the existing .pse file, run step 6 for each of the certificates.

## Allowing the user account of the adapter to connect to SAP NetWeaver AS ABAP by using Secure Network Communication

You can allow the user account of the adapter to connect to SAP NetWeaver AS ABAP.

## Procedure

1. In the SAP graphical user interface, start **Table Maintenance** (transaction SM30).
2. Maintain the table **USRACLEXT**.
3. Select **New Entries**.
4. Enter the following data in the corresponding fields:

**User** Specify the user that the adapter uses to connect to SAP NetWeaver AS ABAP.

**Sequence Number**

Enter 000 unless the user has more than one Secure Network Communication name.

**SNC Name**

Specify the DN that is associated with the Person Security Environment of the adapter. For example:

p: CN=adapter,OU=IdM,O=IBM,C=US

5. Save the data.

**Note:** For securing multiple SAP systems with a single Secure Network Communication certificate, repeat steps 1 - 5 for each SAP system.

**Setting optional RFC connection parameters for the adapter**

To enable the adapter to use Secure Network Communication to communicate with SAP NetWeaver AS ABAP, you must add parameters to the service form.

**Procedure**

Add these parameters on one line to the **Optional RFC Connection Parameters** field in the service form:

```
snc_mode=1|snc_partnname=as_abap_snc_name|  
snc_qop=3|snc_myname=adapter_snc_name|snc_lib=path_to_snc_lib
```

Where:

**snc\_mode**

Secure Network Communication activation indicator. Use these values:

- 1 Secure Network Communication is disabled.
- 2 Secure Network Communication is activated.

**snc\_partnname**

Secure Network Communication name of the communication partner (SAP NetWeaver AS ABAP).

**snc\_qop**

Quality of protection level.

- 1 Secure authentication only.
- 2 Data integrity protection.
- 3 Data privacy protection.
- 9 Use the value from snc/data\_protection/max.

**snc\_myname**

Secure Network Communication name of the adapter.

For example (on one line):

```
snc_mode=1|snc_partnname=p:CN=GC8,OU=IdM,O=IBM,C=US|snc_qop=3|  
snc_myname=p:CN=adapter,OU=IdM,O=IBM,C=US|snc_lib=C:/usr/sap/sapcrypto.dll
```

**Note:** For securing multiple SAP systems with single Secure Network Communication certificate, pass same path value for snc\_lib in the service forms of all the SAP systems.

**Note:** These parameters directly correspond to SAP JCO properties for Secure Network Communication except that they do not have the **jco.client.** prefix. The adapter automatically prepends the string **jco.client.** before the adapter passes these parameters to SAP JCO.

For more information about the Secure Network Communication parameters, see the SAP Help Portal.



---

## Chapter 5. Uninstalling the SAP NetWeaver Adapter

You can remove the SAP NetWeaver Adapter with a sequence of steps.

### Procedure

1. Stop the IBM Security Identity Manager (Dispatcher) Service.
2. Remove the SAP NetWeaver Adapter JAR files.
  - a. Delete SapNWSupport.jar and SapNWUserConnector.jar from the *ITDI\_HOME/jars/connectors* directory.
  - b. Delete SapNWRfc.jar from the *ITDI\_HOME/jars/functions* directory.
3. Remove the adapter stylesheets from the *ITDI\_HOME/solution/xsl* directory.
4. Delete the adapter profile from the IBM Security Identity Manager server.

**Note:** The Dispatcher component must be installed on your system for adapters to function correctly in a IBM Tivoli Directory Integrator environment. When you delete the adapter profile for the SAP NetWeaver Adapter, do not uninstall the Dispatcher.



---

## Chapter 6. SAP NetWeaver Adapter upgrade

The adapter is upgraded by installing the new version of the adapter.

For installation steps, see “Installation procedure” on page 10.

---

### Upgrade of the adapter from version 5.1.4 or older

The version of SAP JCo used by the adapter has been upgraded. See the section about upgrading the SAP JCo for details.

The adapter service configuration forms have changed in the SAP NetWeaver Adapter GUI for XSL advanced mapping. The CUA and NON-CUA specific advanced mappings for Add and Modify operations have been removed.

The following Add Advanced Mapping options have been removed:

- Add User CUA XSL Stylesheets (Multi-valued)
- Add User NON-CUA XSL Stylesheets (Multi-valued)

These advanced mappings have been merged into the remaining mapping options for Add. Changes to your custom XSL transforms and add advanced mapping may be required. See “ADD ADVANCED MAPPING TAB” on page 19 for more details.

The following Modify Advanced Mapping options have been removed:

- Modify User CUA XSL Stylesheets (Multi-valued)
- Modify User NON-CUA XSL Stylesheets (Multi-valued)

These advanced mappings have been merged into the remaining mapping options for Modify. Changes to your custom XSL transforms and modify advanced mapping may be required. See “MODIFY ADVANCED MAPPING TAB” on page 19 for more details.

The following Reconciliation Advance Mapping options have been removed:

- Search User CUA Roles Request Lookup XSL Stylesheet
- Search User CUA Roles Response Lookup XSL Stylesheet
- Search User CUA Profiles Request Lookup XSL Stylesheet
- Search User CUA Profile Response Lookup XSL Stylesheet

These advanced mappings have been merged into the remaining mapping options for reconciliations. Changes to your custom XSL transforms and reconciliation advanced mapping may be required. See “RECONCILIATION ADVANCED MAPPING TAB” on page 20 for more details.

---

### SAP JCo upgrade

From version 6.0.8, the SAP NetWeaver Adapter only supports JCo version 3.0.9.

You must download the 3.0.9 version of the JCo for upgrading.

If you plan to deploy the adapter on a Windows platform, Microsoft Visual C++ 2005 libraries are also required. See the Microsoft Knowledge Base article 973544 for instructions on obtaining and installing the required Microsoft Visual C++ 2005 libraries.

---

## Chapter 7. Troubleshooting of the SAP NetWeaver Adapter installation

Troubleshooting is the process of determining why a product does not function as it is designed to function. You can use troubleshooting techniques to identify and resolve problems related to installing and using the SAP NetWeaver Adapter.

---

### Techniques for troubleshooting problems

*Troubleshooting* is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem. Certain common techniques can help with the task of troubleshooting.

The first step in the troubleshooting process is to describe the problem completely. Problem descriptions help you and the IBM technical-support representative know where to start to find the cause of the problem. This step includes asking yourself basic questions:

- What are the symptoms of the problem?
- Where does the problem occur?
- When does the problem occur?
- Under which conditions does the problem occur?
- Can the problem be reproduced?

The answers to these questions typically lead to a good description of the problem, which can then lead you to a problem resolution.

#### What are the symptoms of the problem?

When starting to describe a problem, the most obvious question is “What is the problem?” This question might seem straightforward; however, you can break it down into several more-focused questions that create a more descriptive picture of the problem. These questions can include:

- Who, or what, is reporting the problem?
- What are the error codes and messages?
- How does the system fail? For example, is it a loop, hang, crash, performance degradation, or incorrect result?

#### Where does the problem occur?

Determining where the problem originates is not always easy, but it is one of the most important steps in resolving a problem. Many layers of technology can exist between the reporting and failing components. Networks, disks, and drivers are only a few of the components to consider when you are investigating problems.

The following questions help you to focus on where the problem occurs to isolate the problem layer:

- Is the problem specific to one platform or operating system, or is it common across multiple platforms or operating systems?
- Is the current environment and configuration supported?

- Do all users have the problem?
- (For multi-site installations.) Do all sites have the problem?

If one layer reports the problem, the problem does not necessarily originate in that layer. Part of identifying where a problem originates is understanding the environment in which it exists. Take some time to completely describe the problem environment, including the operating system and version, all corresponding software and versions, and hardware information. Confirm that you are running within an environment that is a supported configuration; many problems can be traced back to incompatible levels of software that are not intended to run together or have not been fully tested together.

### **When does the problem occur?**

Develop a detailed timeline of events leading up to a failure, especially for those cases that are one-time occurrences. You can most easily develop a timeline by working backward: Start at the time an error was reported (as precisely as possible, even down to the millisecond), and work backward through the available logs and information. Typically, you need to look only as far as the first suspicious event that you find in a diagnostic log.

To develop a detailed timeline of events, answer these questions:

- Does the problem happen only at a certain time of day or night?
- How often does the problem happen?
- What sequence of events leads up to the time that the problem is reported?
- Does the problem happen after an environment change, such as upgrading or installing software or hardware?

Responding to these types of questions can give you a frame of reference in which to investigate the problem.

### **Under which conditions does the problem occur?**

Knowing which systems and applications are running at the time that a problem occurs is an important part of troubleshooting. These questions about your environment can help you to identify the root cause of the problem:

- Does the problem always occur when the same task is being performed?
- Does a certain sequence of events need to happen for the problem to occur?
- Do any other applications fail at the same time?

Answering these types of questions can help you explain the environment in which the problem occurs and correlate any dependencies. Remember that just because multiple problems might have occurred around the same time, the problems are not necessarily related.

### **Can the problem be reproduced?**

From a troubleshooting standpoint, the ideal problem is one that can be reproduced. Typically, when a problem can be reproduced you have a larger set of tools or procedures at your disposal to help you investigate. Consequently, problems that you can reproduce are often easier to debug and solve.

However, problems that you can reproduce can have a disadvantage: If the problem is of significant business impact, you do not want it to recur. If possible,

re-create the problem in a test or development environment, which typically offers you more flexibility and control during your investigation.

- Can the problem be re-created on a test system?
- Are multiple users or applications encountering the same type of problem?
- Can the problem be re-created by running a single command, a set of commands, or a particular application?

For information about obtaining support, see Appendix A, “Support information,” on page 55.

---

## Logging information format

Logs added to the log file for the adapter or the Dispatcher have a specific format.

```
<Log Level> [<Assembly Line_ProfileName>_<Request Id>]_
[<Connector Name>] - <message>
```

### Log Level

Specifies the logging level that you configured for the adapter. The options are DEBUG, ERROR, INFO, and WARN. For information about using the `log4j.properties` file to configure logging, see the *Dispatcher Installation and Configuration Guide*.

### Assembly Line

Specifies the name of the assembly line that is logging the information.

### ProfileName

Specifies the name of the profile. Profile names may vary based on the adapter that is running or the operating system.

### Request ID

Specifies the number of the request. The Request ID is used to uniquely identify a specific request.

### Connector Name

Specifies the adapter connector.

### Message

Specifies the informational message .

When the **Test** button on the SAP NetWeaver Adapter service form is clicked, service, environment and configuration values are sent to the IBM Tivoli Directory Integrator log during the test. The information collected during the test may assist in diagnosing issues.

---

## Runtime Problems

Use the error messages displayed during run time to solve problems.

This table describes the error messages displayed during run time and corresponding problem descriptions.

Table 10. Error messages and problem descriptions

| Error messages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Problem descriptions                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Test Connection Fails: CTGIMU107W</b><br/>The connection to the specified service cannot be established. Verify the service information, and try again.</p> <p><b>ibmdi.log</b><br/>CTGIMT401E An error occurred while starting the AssemblyLines/SapNWTest_SAP - TV2_test-no-requestid_9dbf1884-29b1-11b2-689a-00000a020011 agent. Error:<br/>java.lang.ExceptionInInitializerError: Error getting the version of the native layer:<br/>java.lang.UnsatisfiedLinkError: sapjco3 (Not found in java.library.path) operation on the IBM Tivoli Directory Integrator server. Error: {1}</p> | <p>Microsoft Visual C++ 2005 libraries are not installed, or permissions for .dll file are not correct. Verify installation steps and permissions.</p>                            |
| <p><b>Test Connection Fails: CTGIMU107W</b><br/>The connection to the specified service cannot be established. Verify the service information, and try again.</p> <p><b>ibmdi.log</b><br/>CTGDIS067E Unable to find configuration for AssemblyLine SapNWTest_SAP_R/ 3_NW_test-no-requestid_c41b1d60-28f8-11b2-e832-00001ff87342.]</p>                                                                                                                                                                                                                                                           | <p>The service name might contain special characters that IBM Tivoli Directory Integrator can not handle, for example “/”.</p>                                                    |
| <p><b>Test Connection Fails: CTGIMU107W</b><br/>The connection to the specified service cannot be established. Verify the service information, and try again.</p> <p><b>ibmdi.log</b><br/>CTGDIS809E handleException - cannot handle exception , script<br/>java.lang.NoClassDefFoundError:<br/>com.sap.conn.jco.ext.DestinationDataProvider</p>                                                                                                                                                                                                                                                | <p>SAP JCo is not installed, or permissions for .jar file are not correct. Verify installation steps and permissions.</p>                                                         |
| <p><b>Test Connection Fails: CTGIMU107W</b><br/>The connection to the specified service cannot be established. Verify the service information, and try again.</p> <p><b>ibmdi.log</b><br/>Caused by: java.io.FileNotFoundException:<br/>app/itdi611/solution/xsl/<br/>sapnw_bapi_errors.properties (No such file or directory)</p>                                                                                                                                                                                                                                                              | <p>Property and .xsl files are copied to the wrong directory during the adapter installation, or file permissions are not correct. Verify installation steps and permissions.</p> |

Table 10. Error messages and problem descriptions (continued)

| Error messages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Problem descriptions                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Test Connection Fails: CTGIMU107W</b><br/>                     The connection to the specified service cannot be established. Verify the service information, and try again.</p> <p><b>ibmdi.log</b><br/>                     CTGDIS809E handleException - cannot handle exception , script<br/>                     java.lang.ExceptionInInitializerError: Error getting the version of the native layer:<br/>                     java.lang.UnsatisfiedLinkError: sapjco3 (Not found in java.library.path)</p> | <p>Path for SAP JCo dynamic library is not correct. Correct it and restart IBM Security Identity Manager adapter service.</p>                                                                         |
| <p><b>Test Connection Fails: CTGIMU107W</b><br/>                     The connection to the specified service cannot be established. Verify the service information, and try again.</p> <p><b>ibmdi.log</b></p> <p>Exception Class:org.xml.sax.<br/>                     SAXParseExceptionorg.xml.sax.<br/>                     SAXParseException:<br/>                     Invalid byte 1 of 1-byte UTF-8 sequence.</p>                                                                                                | <p>Java property “-Dfile.encoding=UTF-8” needs to be added. Add the property as described in the Installation Guide and Release Notes, and restart IBM Security Identity Manager adapter service.</p> |

Table 10. Error messages and problem descriptions (continued)

| Error messages                                                                                                         | Problem descriptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Reconciliation doesn't return all SAP accounts.<br/>Reconciliation is successful but some accounts are missing.</p> | <p>For the adapter to reconcile a large number of accounts successfully, you might need to increase Websphere's JVM memory. To do so, complete the following steps on the WebSphere® host machine:<br/><b>Note:</b> The JVM memory should not be increased to a value higher than the System memory.</p> <ol style="list-style-type: none"> <li>1. Login to the WebSphere Administrative Console.</li> <li>2. From the left menu, select <b>Servers</b> and then <b>Application Servers</b>.</li> <li>3. A table displays the names of known application servers on your system. Click the link for your primary application server.</li> <li>4. On the <b>Configuration</b> tab, select <b>Process Definition</b>.</li> <li>5. Select the <b>Java Virtual Machine</b> property.</li> <li>6. Enter a new value for <b>Maximum Heap Size</b>. The default value is 256 MB.</li> </ol> <p>If the allocated JVM memory is not large enough, an attempt to reconcile a large number of accounts using the IBM Security Access Manager Adapter will result in log file errors, and the reconciliation process will not complete successfully. The Adapter log files will contain entries stating ErmPduAddEntry failed. The WebSphere_install_dir/logs/itim.log file will contain <b>java.lang.OutOfMemoryError</b> exceptions.</p> |

## Reconciliation of supporting data

All supporting data can be reconciled through the use of the search filter in the reconciliation query.

To reconcile supporting data only, use the following search filter:

```
(!(objectclass=ersapnwaccount))
```

The SAP systems can have tens of thousands of roles, profiles, and other support data entries. To reconcile accounts only, use the following search filter:  
(objectclass=ersapnwaccount)



---

## Appendix A. Support information

You have several options to obtain support for IBM products.

- “Searching knowledge bases”
- “Obtaining a product fix” on page 56
- “Contacting IBM Support” on page 56

---

### Searching knowledge bases

You can often find solutions to problems by searching IBM knowledge bases. You can optimize your results by using available resources, support tools, and search methods.

#### About this task

You can find useful information by searching the product documentation for IBM Security Identity Manager. However, sometimes you must look beyond the product documentation to answer your questions or resolve problems.

#### Procedure

To search knowledge bases for information that you need, use one or more of the following approaches:

1. Search for content by using the IBM Support Assistant (ISA).  
ISA is a no-charge software serviceability workbench that helps you answer questions and resolve problems with IBM software products. You can find instructions for downloading and installing ISA on the ISA website.
2. Find the content that you need by using the IBM Support Portal.  
The IBM Support Portal is a unified, centralized view of all technical support tools and information for all IBM systems, software, and services. The IBM Support Portal lets you access the IBM electronic support portfolio from one place. You can tailor the pages to focus on the information and resources that you need for problem prevention and faster problem resolution. Familiarize yourself with the IBM Support Portal by viewing the demo videos ([https://www.ibm.com/blogs/SPNA/entry/the\\_ibm\\_support\\_portal\\_videos](https://www.ibm.com/blogs/SPNA/entry/the_ibm_support_portal_videos)) about this tool. These videos introduce you to the IBM Support Portal, explore troubleshooting and other resources, and demonstrate how you can tailor the page by moving, adding, and deleting portlets.
3. Search for content about IBM Security Identity Manager by using one of the following additional technical resources:
  - IBM Security Identity Manager version 6.0 technotes and APARs (problem reports).
  - IBM Security Identity Manager Support website.
  - IBM Redbooks®.
  - IBM support communities (forums and newsgroups).
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include information that is outside the ibm.com domain. However, sometimes you can find useful problem-solving information about IBM products in newsgroups, forums, and blogs that are not on ibm.com.

**Tip:** Include “IBM” and the name of the product in your search if you are looking for information about an IBM product.

---

## Obtaining a product fix

A product fix might be available to resolve your problem.

### About this task

You can get fixes by following these steps:

### Procedure

1. Obtain the tools that are required to get the fix. You can obtain product fixes from the *Fix Central Site*. See <http://www.ibm.com/support/fixcentral/>.
2. Determine which fix you need.
3. Download the fix. Open the download document and follow the link in the “Download package” section.
4. Apply the fix. Follow the instructions in the “Installation Instructions” section of the download document.

---

## Contacting IBM Support

IBM Support assists you with product defects, answers FAQs, and helps users resolve problems with the product.

### Before you begin

After trying to find your answer or solution by using other self-help options such as technotes, you can contact IBM Support. Before contacting IBM Support, your company or organization must have an active IBM software subscription and support contract, and you must be authorized to submit problems to IBM. For information about the types of available support, see the Support portfolio topic in the *“Software Support Handbook”*.

### Procedure

To contact IBM Support about a problem:

1. Define the problem, gather background information, and determine the severity of the problem. For more information, see the Getting IBM support topic in the *Software Support Handbook*.
2. Gather diagnostic information.
3. Submit the problem to IBM Support in one of the following ways:
  - Using IBM Support Assistant (ISA):

Any data that has been collected can be attached to the service request. Using ISA in this way can expedite the analysis and reduce the time to resolution.

    - a. Download and install the ISA tool from the ISA website. See <http://www.ibm.com/software/support/isa/>.
    - b. Open ISA.

- c. Click **Collection and Send Data**.
- d. Click the **Service Requests** tab.
- e. Click **Open a New Service Request**.
- Online through the IBM Support Portal: You can open, update, and view all of your service requests from the Service Request portlet on the Service Request page.
- By telephone for critical, system down, or severity 1 issues: For the telephone number to call in your region, see the Directory of worldwide contacts web page.

## **Results**

If the problem that you submit is for a software defect or for missing or inaccurate documentation, IBM Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM Support website daily, so that other users who experience the same problem can benefit from the same resolution.



---

## Appendix B. Accessibility features for IBM Security Identity Manager

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

### Accessibility features

The following list includes the major accessibility features in IBM Security Identity Manager.

- Support for the Freedom Scientific JAWS screen reader application
- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are discernible by touch but do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices

The IBM Security Identity Manager library, and its related publications, are accessible.

### Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

### Related accessibility information

The following keyboard navigation and accessibility features are available in the form designer:

- You can use the tab keys and arrow keys to move between the user interface controls.
- You can use the Home, End, Page Up, and Page Down keys for more navigation.
- You can launch any applet, such as the form designer applet, in a separate window to enable the Alt+Tab keystroke to toggle between that applet and the web interface, and also to use more screen workspace. To launch the window, click **Launch as a separate window**.
- You can change the appearance of applets such as the form designer by using themes, which provide high contrast color schemes that help users with vision impairments to differentiate between controls.

### IBM and accessibility

See the IBM Human Ability and Accessibility Center For more information about the commitment that IBM has to accessibility.



---

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