

HP OpenView Select Identity

Connector for IBM Informix[®] Dynamic Server 9.4 Administration

Installation and Configuration Guide

**Connector Version: 2.5
Select Identity Version: 3.3.1**



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- Commons-beanutils.
- Commons-collections.
- Commons-logging.
- Commons-digester.
- Commons-httpclient.

- Element Construction Set (ecs).
- Jakarta-poi.
- Jakarta-regexp.
- Logging Services (log4j).

Additional third party software used by Select Identity includes

- JasperReports developed by SourceForge.
- iText (for JasperReports) developed by SourceForge.
- BeanShell.
- Xalan from the Apache XML Project.
- Xerces from the Apache XML Project.
- Java API for XML Processing from the Apache XML Project.
- SOAP developed by the Apache Software Foundation.
- JavaMail from SUN Reference Implementation.
- Java Secure Socket Extension (JSSE) from SUN Reference Implementation.
- Java Cryptography Extension (JCE) from SUN Reference Implementation.
- JavaBeans Activation Framework (JAF) from SUN Reference Implementation.
- OpenSPML Toolkit from OpenSPML.org.
- JGraph developed by JGraph.
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Installing the Connector

The IBM Informix Dynamic Server Administration connector — hereafter referred to as the Informix Admin connector — enables HP OpenView Select Identity to administer the database server by provisioning database user information in system schemas.

The connector is a two-way connector. Changes made to system user attributes in the database can also be propagated back to Select Identity. The connector communicates with an agent that resides on the Informix server; the agent uses a JDBC 2.0 compliant driver to communicate with the database. The agent pushes changes made in Informix to the Select Identity database (this is called **reverse synchronization** and explained later).

The Informix Admin connector is packaged in the following files and folders, which are located on the Select Identity Connector CD:

- INFORMIX DYNAMIC SERVER - Admin/
Admin-InformixConnector.rar — **The binaries for the connector**
- INFORMIX DYNAMIC SERVER - Admin/AdminInformixSchema.zip — **The mapping files** (admininformix.xml and admininformix.xsl) **for the connector**
- INFORMIX DYNAMIC SERVER - Admin/Agent Installers/
Informix-Admin-AgentInstaller-Win.zip — **A ZIP file that contains the installation executable for the connector agent**

- INFORMIX DYNAMIC SERVER - Admin/Agent Installers/
Informix-Admin-AgentInstaller-Unix.tar — A TAR file that contains the installation executable for the connector agent
- INFORMIX DYNAMIC SERVER - Admin/Manual Agent/
Informix-Admin-Agent-Win.zip — A ZIP file that contains agent binaries and files (for manual installation)
- INFORMIX DYNAMIC SERVER - Admin/Manual Agent/
Informix-Admin-Agent-Unix.tar — A TAR file that contains agent binaries and files (for manual installation)

Operations Supported by the Connector

The Informix Admin connector is intended for use in a wide variety of usage scenarios. Specifically, it can perform the following operations on the Informix system:

- Add, update, and remove users
- Retrieve user attributes
- Enable and disable users
- Verify a user's existence
- Change user passwords
- Retrieve all entitlements
- Retrieve a list of supported user attributes
- Assign and unassign entitlements to and from users

In addition, the connector's agent can send user changes made in Informix to Select Identity. When changes are pushed from the agent to the Select Identity server, this is referred to as **reverse synchronization**. Specifically, the agent can add, modify, and delete users in Select Identity based on user additions, modifications, and deletions in Informix. See [Connector Behavior on page 65](#) for more information.

When a user is added, modified, or deleted in the database, reverse notification tables capture the changes. The agent's reverse synchronization component then sends the changes to Select Identity's Web Service in SPML.

Additional steps are required to configure the agent for reverse synchronization. (Note that installing and configuring the agent is mandatory in order for the connector to support reverse synchronization.)

System Requirements

The Informix Admin connector is supported in the following environment:

| Select Identity Version | Application Server | Database |
|-------------------------|---------------------------------|-----------------|
| 3.3 | WebLogic 8.1.4 on Windows 2003 | SQL Server 2000 |
| | WebLogic 8.1.4 on Solaris 9 | Oracle 9i |
| | WebLogic 8.1.4 on HP-UX 11i | Oracle 9i |
| 3.3.1 | WebLogic 8.1.4 on Windows 2003 | SQL Server 2000 |
| | WebLogic 8.1.4 on Solaris 9 | Oracle 9i |
| | WebLogic 8.1.4 on HP-UX 11i | Oracle 9i |
| | WebSphere 5.1.1 on HP-UX 11i | Oracle 9i |
| | WebSphere 5.1.1 on Windows 2003 | Oracle 9i |

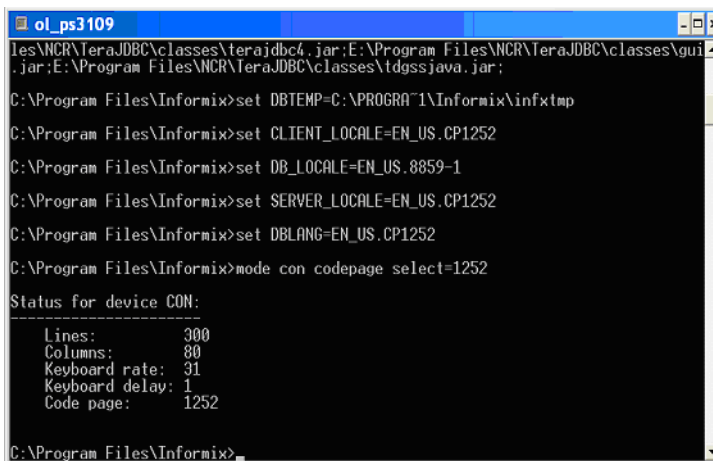
For Select Identity 3.3, the connector is supported with IBM Informix Dynamic Server 9.4 running on Windows 2000, Windows 2003, and Solaris 9.

For secure communication, this connector supports secure JDBC for database communication. See [Configuring Informix to Support Secure JDBC on page 38](#) for configuration information.

The Informix Admin connector is internationalized and able to operate with languages that are supported by the Java Unicode specification. If you wish to

use the connector on non-English platforms, make sure that the following prerequisites are met:

- The Select Identity server should be configured for internationalization. Refer to the *HP OpenView Select Identity Installation and Configuration Guide* for more information.
- The Informix database does not require any special configuration for supporting internationalization, though the locale should be set to support local language characters. Ensure that when initializing the Informix server instance, no error occurs (especially when setting the Code page). Here is a snapshot of a successful configuration:



```

ol_ps3109
les\NCR\TeraJDBC\classes\terajdbc4.jar;E:\Program Files\NCR\TeraJDBC\classes\gui
.jar;E:\Program Files\NCR\TeraJDBC\classes\tdgssjava.jar;
C:\Program Files\Informix>set DBTEMP=C:\PROGRAM~1\Informix\infxtmp
C:\Program Files\Informix>set CLIENT_LOCALE=EN_US.CP1252
C:\Program Files\Informix>set DB_LOCALE=EN_US.8859-1
C:\Program Files\Informix>set SERVER_LOCALE=EN_US.CP1252
C:\Program Files\Informix>set DBLANG=EN_US.CP1252
C:\Program Files\Informix>mode con codepage select=1252
Status for device CON:
-----
Lines:          300
Columns:        80
Keyboard rate:  31
Keyboard delay: 1
Code page:     1252
C:\Program Files\Informix>

```

See [Internationalization Support](#) on page 40 for more information.


Deploying on the Web Application Server

To install the Informix Admin connector on the Select Identity server, complete these steps:

- 1 Create a subdirectory in the Select Identity home directory where the connector's RAR file will reside. For example, you could create the `C:\Select_Identity\connectors` folder on Windows. (A connector subdirectory may already exist.)
- 2 Copy the `Admin-InformixConnector.rar` file from the Select Identity Connector CD to the connector subdirectory.
- 3 Create a schema subdirectory in the Select Identity home directory where the connector's mapping files will reside. For example, you could create the `C:\Select_Identity\schemas` folder. (This subdirectory may already exist.)
- 4 Extract the contents of the `AdminInformixSchema.zip` file (on the Select Identity Connector CD) to the schema subdirectory. The XSL file is extracted into the `Admin Informix Schema` subdirectory, and the XML file is extracted into the `Admin Informix Schema/com/truologica/truaccess/connector/schema/spml` subdirectory.
- 5 Copy the JDBC 2.0 compliant driver to the application server. For Informix, you must copy the JDBC driver file (`ifxjdbc.jar`). Obtain these files from your database administrator.
- 6 Add the JDBC driver and schema subdirectory to the application server's class path, such as by editing the `myStartWL.cmd` (on Windows) or `myStartWL.sh` (on UNIX) file.
- 7 If deploying the connector on WebLogic, complete the following steps.
 - a Start the application server if it is not currently running.
 - b Log on to the WebLogic Server Console.
 - c Navigate to **My_domain Deployments Connector Modules**.
 - d Click **Deploy a New Connector Module**.
 - e Locate and select the `Admin-InformixConnector.rar` file from the list. It is stored in the connector subdirectory.
 - f Click **Target Module**.
 - g Select the **My Server** (your server instance) check box.

- h** Click **Continue**. Review your settings.
 - i** Keep all default settings and click **Deploy**. The Status of Last Action column should display **Success**.
- 8** If deploying the connector on WebSphere, complete the following steps:
- a** Start the application server, if necessary.
 - b** Log on to the WebSphere Application Server Console.
 - c** Navigate to **Resources** **Resource Adapters**.
 - d** Click **Install RAR**.
 - e** In the **Server path** field, enter the path to the `Admin-InformixConnector.rar` file. It is stored in the subdirectory created in [Step 1](#).
 - f** Click **Next**.
 - g** In the **Name** field, enter a name for the connector.
 - h** Click **OK**.
 - i** Click the **Save** link (at the top of the page).
 - j** On the **Save to Master Configuraton** dialog, click the **Save** button.
 - k** Click **Resources** **Resource Adapters**.
 - l** Click the new connector.
 - m** Click **J2C Connection Factories** in the **Additional Properties** table.
 - n** Click **New**.
 - o** In the **Name** field, enter the name of the factory for the connector. For the Informix Admin connector, enter `eis/Admin-InformixConnector`.
 - p** Click **OK**.
 - q** Click the **Save** link.
 - r** On the **Save to Master Configuraton** dialog, click the **Save** button.
 - s** Restart WebSphere.
- 9** Modify the mapping file, if necessary. This file is described in detail in [Understanding the Mapping Files on page 48](#).

- 10 To configure reverse synchronization on the server, you must create an XSL file based on the XML mapping file. The XSL file maps user attributes on Informix to attributes in Select Identity. See [Understanding the Mapping Files on page 48](#) for more information.

 Note that the agent must be installed and configured for the Informix Admin connector to support reverse synchronization.

After installing the connector, refer to [Configuring the Connector on page 40](#) for information about registering and configuring this connector in Select Identity.

Installing the Agent on the Database Server

After you install the Informix Admin connector on the Select Identity server, you can install the agent on the database server. This is optional; the connector can provision users in Informix without the agent. However, the agent enables you to send data back to Select Identity (reverse synchronization).

You can install the agent using the installation wizard or by manually copying files to the server.



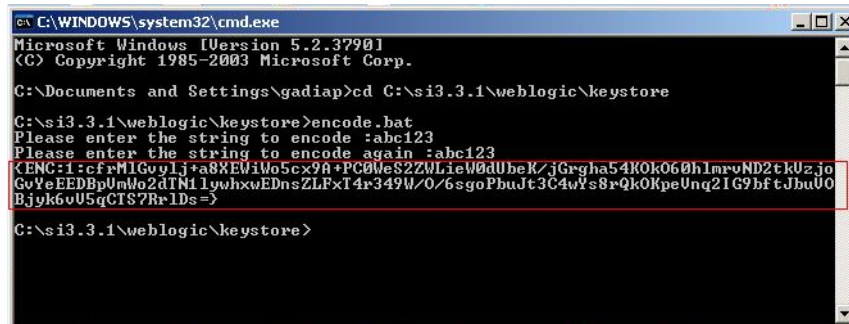
You must copy the mapping files from the Select Identity server to the system where you will install the agent (on the database server). The agent installation requires that the mapping files are available on the local system.

Also, the user that is specified during the agent installation must have administrator privileges on the database.

Encrypting the Select Identity Administrator's Password

The Select Identity administrative account is used to log in to Select Identity when the agent sends data from the resource to the Select Identity server (reverse synchronization). To avoid displaying of the password in clear-text in the agent configuration files, you must encrypt the password and use this encrypted password in the agent configuration. Select Identity provides an encryption utility, which is described here.

To encrypt the password that is sent to the Select Identity server, run `encode.bat` (on Windows) or `encode.sh` (on UNIX), which is provided in the `weblogic/keystore` subdirectory in the Select Identity home directory. This utility prompts you for the password to encrypt and will generate the encrypted password. Be sure to copy the entire encrypted password (including the curly brackets) in the field, as shown here:



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\gadiap>cd C:\si3.3.1\weblogic\keystore

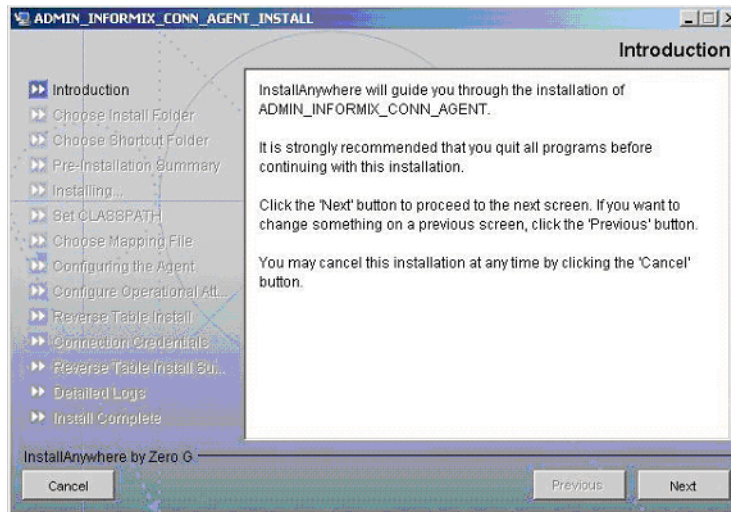
C:\si3.3.1\weblogic\keystore>encode.bat
Please enter the string to encode :abc123
Please enter the string to encode again :abc123
{ENC:1:cfrM1Gvylj+a8XEWiWo5cx9A+PC0WeS2Z0LieW0dUbeK/jGrgha54K0k060hlmrvND2tkUzjo
GuVeEEDBpUmWo2dTN1lywhxwEDnsZLFxT4r349W/O/6sgoPbuJt3C4vYs8rQk0KpeUng21G9bftJbuU0
Bjyk6vU5qCTS?Rr1Ds=>}

C:\si3.3.1\weblogic\keystore>
```

Installation Using the Wizard on Windows

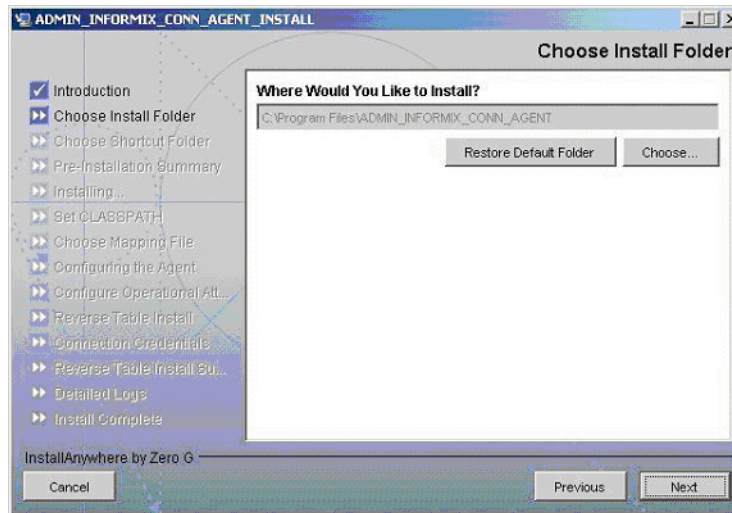
Complete the following steps to run the installation wizard, which installs the agent on Windows:

- 1 Extract the contents of the Informix-Admin-AgentInstaller-Win.zip file, which is located in the Agent Installers directory on the CD.
- 2 Run `install.exe`, which is located in the `target_dir\CDROM_Installers\Windows\Disk1\InstData\NoVM`. The following dialog displays:



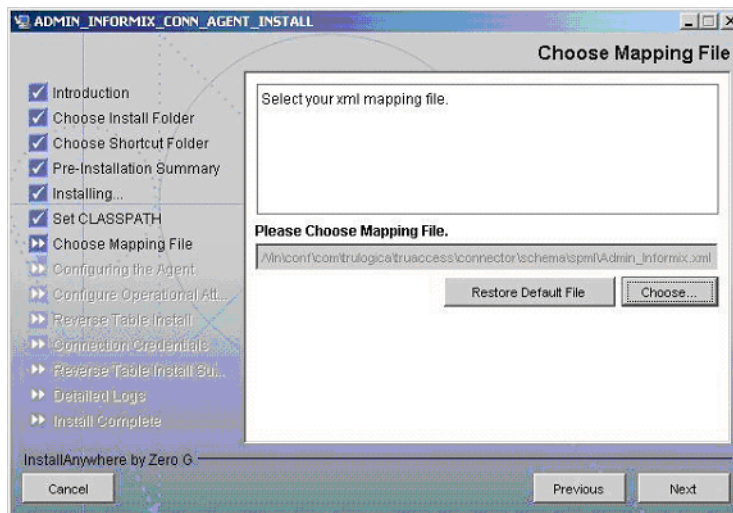
- 3 Click **Next** to proceed.

- 4 Specify an installation directory on the Choose Install Folder dialog then click **Next**. By default, the agent is installed in `C:\Program Files\ADMIN_INFORMIX_CONN_AGENT`.



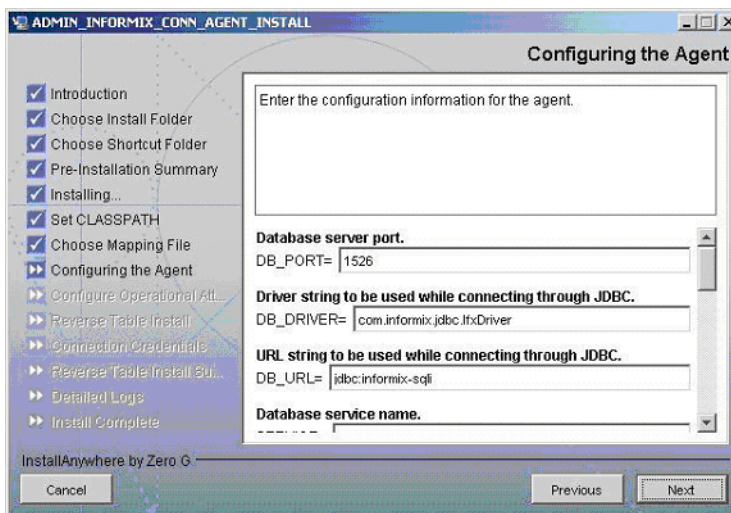
- 5 Select the location(s) where the product icons will be installed, then click **Next**.
- 6 Verify the pre-installation summary. If you wish to make changes, click **Previous** and edit the chosen options. To install the agent, click **Install**.
- 7 On the Set CLASSPATH dialog, click **Next** after you verify that the database driver file (`ifxjdbc.jar`) are in the database server's system CLASSPATH.

- Click the **Choose** button and select the `admininformix.xml` mapping file that was copied from the Select Identity server. This will copy the mapping file to the `install_dir/conf/com/truologica/truaccess/connector/schema/spml` directory, where `install_dir` is the installation folder selected in **Step 4** above.



Then, click **Next**.

- 9 On the Configuring the Agent dialog, specify the requested configuration information:



The following provides an explanation of the configuration options:

| Option | Description | Example Value |
|--------------------|---|---------------------------------|
| DB_PORT | The port on which the database server is listening. | 1526 |
| DB_DRIVER | The JDBC driver for the database connection. | com.Informix.Jdbc.IfxDriver |
| DB_URL | The JDBC URL string used for the database communication. | jdbc:informix-sqli |
| SERVICE | The database name. | SI_DB |
| SERVER_SECURE | Whether communication between the agent and Select Identity must be secure. By default, non-secure communication is used. | |
| CONCERO_SERVER_URL | The URL of the Select Identity Web Service. | http://host:port/lmz/webservice |

| Option | Description | Example Value |
|---------------|--|-------------------|
| SECURE_JDBC | Whether the SECURE JDBC settings are configured on the Informix server. This option should be set to 1 if SECURE JDBC settings exist. The default value is 0. | 0 |
| PollDelay | The polling delay for reverse polling (in seconds). | 10 |
| AGENT_PORT | The port on which the agent listens for user provisioning requests from Select Identity. | 5601 |
| MAPPING_FILE | The XML mapping file. | admininformix.xml |
| SPML_DELAY | The delay (in milliseconds) between successive SPML requests sent from the agent. Increase this delay if the network or Select Identity server is performing slowly. | 10000 |
| NO_OF_RETRIES | The number of times the agent will retry sending SPML requests in case of failure. | 10 |
| RETRY_DELAY | The delay (in milliseconds) between each retry. | 10000 |
| DB_INSTANCE | The name of the Informix instance. | ol_si1 |



To edit any of these values after installation, you can edit the `properties.ini` file, which resides in `install_dir\conf`.

After specifying these values, click **Next**.

- 10 Provide the operational attributes that are sent to the Select Identity server during reverse synchronization requests. Here is an explanation of the attributes:

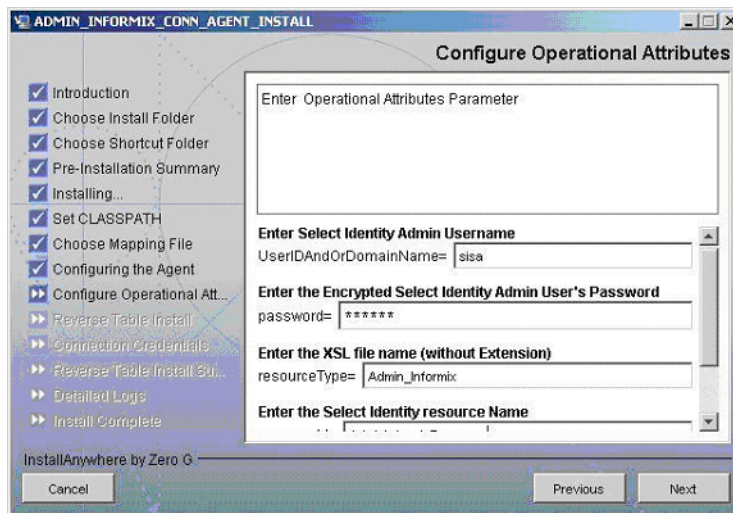
| Parameter | Sample Values | Description |
|---|------------------------|--|
| urn:oasis:names:tc:SPML:1:0#UserIDAndOrDomainName | Sisa | User ID of the administrative user on Select Identity. |
| urn:trulogica:concerro:2.0#password | Abc123 | Password of the administrative user. This password should be generated using the encryption utility provided with Select Identity; see Encrypting the Select Identity Administrator's Password on page 14 for details. |
| urn:trulogica:concerro:2.0#reverseSync | true | Set to <code>true</code> if you want to enable reverse synchronization. |
| urn:trulogica:concerro:2.0#resourceType | AdminInformix | The name of the XSL file (without the <code>.xsl</code> extension) that is used during reverse synchronization. |
| urn:trulogica:concerro:2.0#resourceId | AdminInformix-Resource | The name of the Select Identity resource that is created for the Informix connector. |



To edit any of these values after installation, you can edit the `opAttributes.properties` file, which resides in `install_dir\conf`.

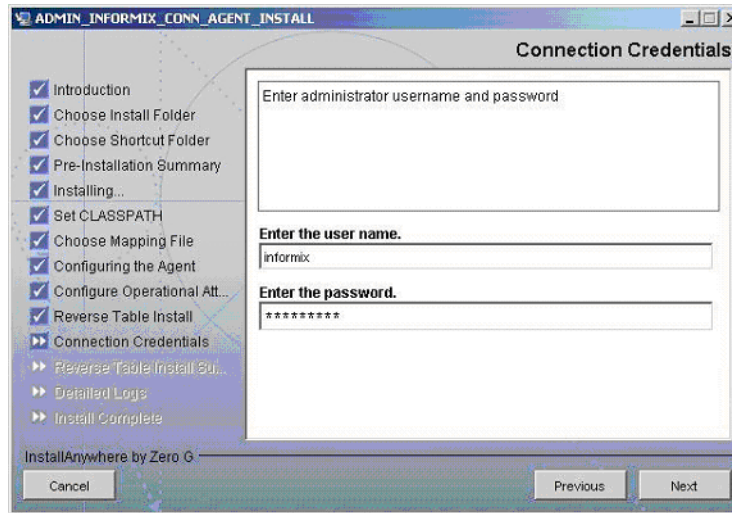
After specifying the values, click **Next**.

- 11 To enable reverse synchronization, you must install the reverse notification tables. (See [Operations Supported by the Connector](#) on page 9 for an explanation of reverse synchronization.) Select the **Install reverse notification tables Now** option to install the tables. Then, click **Next** and proceed to the next step.



If you choose not to install the reverse notification tables, skip to [Step 15 on page 23](#). (You can manually install the tables later, if necessary. This is described in [Installing the Reverse Notification Tables](#) on page 34.)

- 12 If you selected the **Install reverse notification tables now** option on the Reverse Table Install dialog, specify authentication information for the database user. Then, click **Next**. The tables are installed for the schema specified by the mapping file.



- 13 Review the installation summary for the tables. If you wish to make changes, or if the table installation failed, click **Previous** and edit the chosen options, such as the credentials. You can also select the **Show Logs** option to review the table installation log files. Then, click **Next**.
- 14 If you selected the **Show Logs** option, the Detailed Logs dialog is displayed. Review the log entries and click **Next**.
- 15 When the installation wizard completes, click **Done** on the Install Complete dialog to close the installation program.

Installation Using the Wizard on UNIX

Complete the following steps to run the installation wizard, which installs the agent on UNIX:

- 1 Extract the contents of the Informix-Admin-AgentInstaller-Unix.tar file, which is located in the Agent Installers directory on the CD, to a directory that will serve as the agent's home directory. (Use `tar xvf` to extract the contents

of the TAR file.) This will create the required directory structure in the Informix-Admin-AgentInstaller-Unix subdirectory of the home directory.

- 2 Set the JAVA_HOME_14 environment variable to the directory where the JDK 1.4 is installed. Also, add the JVM to the system PATH variable.
- 3 Add the JDBC 2.0 compliant driver file (ifxjdbc.jar) for the database to the CLASSPATH.
- 4 Start the wizard by running the following command:

```
agent_home/Informix-Admin-AgentInstaller-Unix/install.bin
```

The following displays:

```
=====
Extracting the installation resources from the installer
archive...
Configuring the installer for this system's environment...
Launching installer...
Preparing CONSOLE Mode Installation...
=====
(created with InstallAnywhere by Zero G)
-----
Choose Install Folder
-----

Where would you like to install?

Default Install Folder: /ADMIN_INFORMIX_CONN_AGENT
ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT:
```

- 5 Specify the installation location of the agent. Enter a path and press ENTER, or simply press ENTER to accept default path. The following displays:

```
=====
Choose Link Location
-----

Where would you like to create links?

->1- Default: /
2- In your home folder
3- Choose another location...
4- Don't create links

ENTER THE NUMBER OF AN OPTION ABOVE, OR PRESS <ENTER> TO ACCEPT
THE DEFAULT:
```


- 6** Select where you would like the agent shortcut location to be created. Select the number of the desired option as shown and press ENTER, or simply press ENTER to accept the default. The following displays:

```
=====
Pre-Installation Summary
-----

Please Review the Following Before Continuing:

Product Name:
ADMIN_INFORMIX_CONN_AGENT

Install Folder:
/install_dir

Link Folder:
/

Disk Space Information (for Installation Target):
Required: xxx bytes
Available: yyy bytes

PRESS <ENTER> TO CONTINUE:
```

- 7** Verify the pre-installation summary and press ENTER. The following displays:

```
=====
Installing...
-----

[=====|=====|=====|=====]
[-----|-----|-----|-----]
=====

Configuring the Agent
-----

Enter the port number where database server listens. Hit <ENTER>
to accept default.
Enter DB_PORT : (DEFAULT: 1526 ):
```

- 8** Specify the database port number and press ENTER to continue. Or, simply press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the driver string (Driver string to be used by Java
program to connect to the database).

Enter the database driver : (DEFAULT: Informix.Jdbc.IfxDriver):
```

- 9** Enter the database driver and press ENTER to continue. Or, simply press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the driver URL (URL to be used by Java program to connect
to the database).

Enter the database URL : (DEFAULT: jdbc:informix-sqli):
```

- 10** Enter the JDBC URL and press ENTER to continue. Or, simply press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the database service name.

Enter the service name : (DEFAULT: ): OPENVIEW
```

- 11** Enter the database name and press ENTER to continue. Or, press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the Informix Instance name.

Enter the Informix Instance Name : (DEFAULT: ) : ol_sil
```

- 12** Enter the instance name and press ENTER to continue. The following displays:

```
=====
Configuring the Agent
-----

Enable Server Secure (Y/N) ?

Enable Server Secure : (DEFAULT: N) : y
```

- 13** To enable secure communication, enter y and press ENTER to continue. Or, press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

SECURE_JDBC Enabled (Y/N) ?

SECURE JDBC ENABLED: (DEFAULT: N) : n
```

- 14** If SECURE JDBC settings are configured on the Informix Dynamic Server, enter `y` and press ENTER to continue. If the settings is not configured, accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the URL where spml is to be sent by reverse sync.

Enter the concero server URL : (DEFAULT: ): http://
localhost:7001/lmz/webservice
```

- 15** Enter the URL of the Select Identity Web Service, which is where SPML requests are sent and press ENTER to continue. Or, press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the interval (in seconds) at which polling is desired for
reverse sync.

Enter poll delay : (DEFAULT: 10):
```

- 16** Enter the polling interval (in seconds) that is used by the agent to check for changes on the resource that must be sent to the Select Identity server (during reverse synchronization), then press ENTER. Or, simply press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter the port where the agent should listen.

Enter the agent port : (DEFAULT: ):6000
```

- 17** Enter the listening port number for the agent and press ENTER. Or, simply press ENTER to accept the default and continue. The following displays:

```
=====
Configuring the Agent
-----

Enter the time (in milli seconds) for which the agent should
wait before sending SPML.

Enter the spml delay : (DEFAULT: 100):
```

- 18** Specify the delay (in milliseconds) that the agent will wait before sending SPML requests to the Select Identity server and press ENTER. Or, simply press ENTER to accept the default and continue. The following displays:

```
=====
Configuring the Agent
-----

Enter the Number of Retries to send SPML
Number of Retries to send SPML : (DEFAULT: 3): 5
```

- 19** Specify the number of times agent will attempt to send SPML requests after a failure to the Select Identity server, and press ENTER. Or, simply press ENTER to accept the default and continue. The following displays:

```
=====
Configuring the Agent
-----

Enter the time (in milliseconds) This is Delay Between Retries
(Number of mSec the agent will wait before going to next Retry)
Enter the spml retry delay : (DEFAULT: 100): 10000
```

- 20** Specify the delay (in milliseconds) for which agent should wait before attempting to send SPML requests again after a failure to the Select Identity server, and press ENTER. Or, simply press ENTER to accept the default and continue. The following displays:

```
=====
Configuring the Agent
-----

Enter Directory Path of the XML mapping file. (e.g. If the
mapping file is "/osd5/trulogica/xxx.xml", enter "/osd5/
trulogica/" including slashes)
Directory Path of the XML mapping file. (DEFAULT: ): /opt/
```

- 21** Enter the path to the mapping file (include trailing slashes but do not include the file name) and press ENTER. Or, simply press ENTER to accept the default. The following displays:

```
=====
Configuring the Agent
-----

Enter name of the XML mapping file. (Enter extension also.)
Name of the XML mapping file. (Enter extension also.) (DEFAULT:
) : admininformix.xml
```

- 22** Enter the name of the mapping file and press ENTER. Or, simply press ENTER to accept the default. The following displays:

```
=====
XML Mapping Path
-----

This is your directory path of Mapping File
"/opt/"

This is the Mapping File
"admininformix.xml"

Is it Correct Path?(Y/N) (DEFAULT: Y): y
```

- 23** Press ENTER to accept the default (y) or enter n and press ENTER to change the values. If you enter y, the following displays:

```
=====
Configure Operation Attribute Parameter
-----

Enter Select Identity Admin Username
Select Identity Admin Username : (DEFAULT: ): sisa
```

- 24** Specify the Select Identity administrator's user name and press ENTER. The following displays:

```
=====
Configure Operation Attribute Parameter
-----

Please Enter the Encrypted Select Identity Admin User's
Password: abc123
```

- 25** Enter the administrator's password then press ENTER. The following displays:

```
=====
Configure Operation Attribute Parameter
-----

Enter the XSL file name (without Extension)
XSL file name (without Extension): (DEFAULT: ) admininformix
```

- 26** Enter the name of XSL file on Select Identity server. Make sure that the extension (.xsl) is not specified. Then, press ENTER. The following displays:

```
=====
Configure Operation Attribute Parameter
-----

Enter the Select Identity resource name

Select Identity resource name : (DEFAULT: ):
AdminInformixResource
```

- 27** Enter the name of the Select Identity Informix resource then press ENTER. The following displays:

```
=====
Configure Operation Attribute Parameter
-----

Do you want to Enable Reverse Sync(true/false)?

Enable Reverse Sync? (Y/N) (DEFAULT: Y): y
```

- 28** Specify whether you want to enable reverse synchronization; enter **n** or **y** then press ENTER. The following displays:

```
=====
Reverse Notification Tables Install
-----

The values you just entered have been copied to file /
ADMIN_INFORMIX_CONN_AGENT\conf\properties.ini. If you want to
change anything please edit the file.

Do you want to install reverse notification triggers now? (Y/N)
(DEFAULT: Y) : y
```

- 29** To enable reverse synchronization, you must install the reverse triggers. (See [Operations Supported by the Connector on page 9](#) for an explanation of reverse synchronization.) Enter **y** and press ENTER to install the triggers (or simply press ENTER to accept the default), or enter **n** and press ENTER to bypass this installation.

If you enter **y**, the following displays:

```
=====
Connection Credentials
-----

Enter user name.
Enter user name : (DEFAULT: ): TEST
```

- 30** To specify credentials to install the triggers in the database, specify a user name and press ENTER. Or, leave this prompt blank and press ENTER. The following displays:

```
=====
Connection Credentials
-----

This installation requires a password to continue.
Enter password : : password
```

- 31** If you specified a user name, enter a password and press ENTER. The following displays:

```
=====
command
-----

calling the command "//ADMIN_INFORMIX_CONN_AGENT/AdminSetup.sh"
-userName "TEST" -password password
PRESS <ENTER> TO CONTINUE: y
```

- 32** Press ENTER to continue. The trigger pre-installation summary displays, indicating whether the installation of the triggers succeeded or failed:

```
=====
Reverse Trigger Install Summary
-----

Reverse Trigger Install SUCCESS. Please see the logs for
details.
PRESS <ENTER> TO CONTINUE: y
```

- 33** Press ENTER to continue. The following displays:

```
=====
View Logs
-----

Do you want to see detailed logs? (Y/N) (DEFAULT: Y): y
```

- 34** If you wish to view the installation log file, enter **y** and press ENTER. Otherwise, enter **n** and press ENTER.
- 35** To exit the installation wizard, press ENTER.

Manual Installation

Instead of using the installation wizard, you can install the agent files and reverse notification tables manually. The following sections describe how to do this.

Installing the Agent

Complete the following steps to manually copy the agent files to the target server:

1 *On Windows:*

Extract the contents of the `Informix-Admin-Agent-Win.zip` file, which resides in the `Manual Agent` subdirectory on the CD, to a target location for the agent on the Informix system. The extracted files will reside in the `Informix-Admin-Agent-Win` directory.

On UNIX:

Extract the contents of the `Informix-Admin-Agent-Unix.tar` file, which resides in the `Manual Agent` subdirectory on the CD, to a target location for the agent on the Informix system. (Use `tar xvf` for extracting the contents of the TAR file.) The extracted files will reside in the `Informix-Admin-Agent-Unix` directory.

- 2** Copy the mapping file created in [Step 9 on page 13](#) to the `agent_home/conf/com/truologica/truaccess/connector/schema/spml` directory.
- 3** Modify the `properties.ini` file, which resides in the `agent_home/conf` subdirectory, to specify parameters for the agent. The parameters are listed in the following table.

| Parameter | Sample Values | Description |
|-----------|-------------------------------------|--|
| DB_PORT | 1526 | The port on which the database server is listening. |
| DB_DRIVER | com.Informix .Jdbc. IfxDriver | JDBC driver for the database connection. |
| DB_URL | jdbc:informix -sqli | JDBC URL string used for the database communication. |

| Parameter | Sample Values | Description |
|--------------------|--|--|
| SERVICE | SI_DB | Database name. |
| SERVER_SECURE | | Whether communication between the agent and Select Identity must be secure. By default, non-secure communication is used. |
| CHECK_LOGIN | true | The Login Check flag. |
| MAX_LOGIN_RETRIES | 3 | The number of times the agent will attempt to log in to the database. |
| CONCERO_SERVER_URL | http:// <i>host:port/lmz/</i> webservice | URL of the Select Identity Web Service. |
| SECURE_JDBC | 0 | Whether the SECURE JDBC settings are configured on the Informix server. This option should be set to 1 if SECURE JDBC settings exist. The default value is 0. |
| PollDelay | 10 | The polling delay for reverse polling (in seconds). |
| AGENT_PORT | 5601 | The port on which the agent listens for user provisioning requests from Select Identity. |
| MAPPING_FILE | admininformix.xml | The XML mapping file. |
| SPML_Delay | 10000 | The delay (in milliseconds) between successive SPML requests sent from the agent. Increase this delay if the network or Select Identity server is performing slowly. |

| Parameter | Sample Values | Description |
|---------------|---------------|--|
| NO_OF_RETRIES | 10 | The number of times the agent will retry sending SPML requests in case of failure. |
| RETRY_DELAY | 10000 | The delay (in milliseconds) between each retry. |
| DB_INSTANCE | ol_si1 | The name of the Informix instance. |

- 4 Copy the Informix JDBC driver file (`ifxjdbc.jar`) to the system CLASSPATH. Obtain these files from the Informix system, the Select Identity server, or your system or database administrator.

See [Installing the Reverse Notification Tables on page 34](#) for steps to configure reverse synchronization. See [Starting the Agent on page 37](#) for information about starting the agent.

Installing the Reverse Notification Tables

Perform these steps if you want to synchronize changes made to users in Informix with Select Identify. Reverse synchronization relies on reverse notification tables configured on the database. When you start the agent, reverse synchronization is enabled.

- 1 Copy the XML mapping file created in [Step 10 on page 14](#) to the `agent_home/conf/com/truologica/truaccess/connector/schema/spml` directory.
- 2 Edit the `properties.ini` file, which resides in the `agent_home/conf` subdirectory, to specify parameters for reverse synchronization. See [Step 3 on page 32](#) for details on this file.
- 3 Run the `agent_home/Adminsetup.cmd` file (on Windows) or `Adminsetup.sh` file (on UNIX) from the command line. This installs reverse notification tables as specified by the mapping file and creates snapshot tables. If the tables exist, table creation fails, indicating the error.

- 4 Modify the `opattributes.properties` file, which resides in the `agent_home/conf/` subdirectory and provides operational attributes that are sent to the Select Identity server during reverse synchronization requests. The file must contain the following:

| Parameter | Sample Values | Description |
|--|------------------------|--|
| <code>urn:oasis:names:tc:SPML:1:0#UserIDAndOrDomainName</code> | Sisa | User ID of the administrative user on Select Identity. |
| <code>urn:trulogica:conceroc:2.0#password</code> | Abc123 | Password of the administrative user. This password should be generated using the encryption utility provided with Select Identity; see Encrypting the Select Identity Administrator's Password on page 14 for details. |
| <code>urn:trulogica:conceroc:2.0#reverseSync</code> | true | Set to <code>true</code> if you want to enable reverse synchronization. |
| <code>urn:trulogica:conceroc:2.0#resourceType</code> | AdminInformix | The name of the XSL file (without the <code>.xsl</code> extension) that is used during reverse synchronization. |
| <code>urn:trulogica:conceroc:2.0#resourceId</code> | AdminInformix-Resource | The name of the Select Identity resource that is created for the Informix Admin connector. |

If you wish to delete the reverse notification tables, complete the steps in [Uninstalling the Agent on page 57](#). These steps assume that *agent_home/conf/properties.ini* is configured as mentioned in [Installing the Agent on the Database Server on page 14](#).

Installed Files

The following provides a listing of the directories and files installed for the agent:

| Directories and Files | Description |
|-----------------------|---|
| <i>agent_home/</i> | <p>Contains the following files:</p> <ul style="list-style-type: none"> • <i>AddToStartupGroup.cmd/sh</i> — Adds icons to startup group; this file is present only if the agent was installed using the wizard • <i>CopyFile.cmd/sh</i> — Used by agent to copy files; this file is present only if the agent was installed using the wizard • <i>DelFile.cmd/sh</i> — Used by agent to delete files; this file is present only if the agent was installed using the wizard • <i>Adminsetup.cmd/sh</i> — Installs the reverse notification tables • <i>sqlapp.cmd/sh</i> — Used by agent to communicate with the database • <i>SQLConnectorConsole.cmd/sh</i> — Starts the agent • <i>AdminUninstall.cmd/sh</i> — Uninstalls the reverse notification tables |

| Directories and Files | Description |
|---|--|
| <code>agent_home/conf/</code> | <p>Contains the following files:</p> <ul style="list-style-type: none"> • <code>properties.ini</code> — Provides configuration settings for the agent • <code>opAttributes.properties</code> — Provides configuration settings for reverse synchronization • <code>log4j.properties</code> — Provides settings for logging. |
| <code>agent_home/conf/com/</code> | Contains the <code>truologica/truaccess/connector/schema/spml</code> directory structure where the XML mapping file is stored |
| <code>agent_home/lib/</code> | Contains JAR files used by the agent. |
| <code>agent_home/logs</code> | Contains log files produced by the agent. |
| <code>agent_home/Uninstall_ADMIN_INFORMATION_CONN_AGENT/</code> | Contains files for uninstalling the agent. This subdirectory is created only if the agent is installed using the installation wizard. |

Starting the Agent

To start the agent, run `SQLConnectorConsole.cmd` (on Windows) or `SQLConnectorConsole.sh` (on UNIX), which resides in the agent's home directory. This program logs in to the database server using the user name and password of a user who has administrative privileges on the database.

If you wish, you can provide the following parameters to the command:

username — The user name of the user who has administrative privileges on the database.

password — The specified user's password.

Here is an example you can use on Windows:

```
agent_home/SQLConnectorConsole.cmd -userName si -password abc123
```

If you start the agent before or without configuring reverse synchronization (the reverse notification tables), a message is displayed stating that reverse notification is disabled.

Configuring Informix to Support Secure JDBC

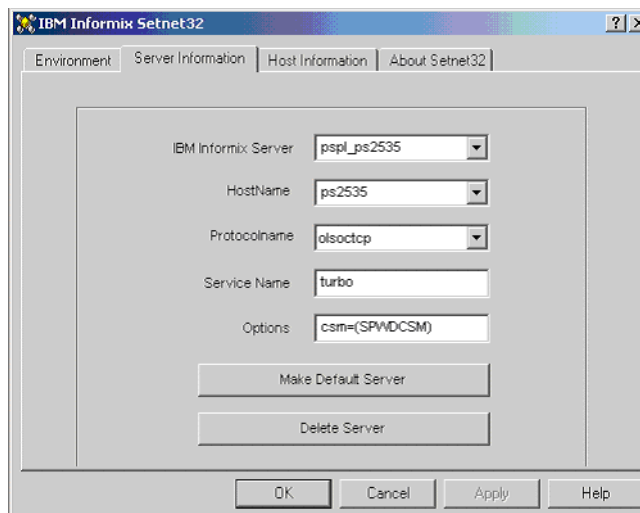
Complete the following steps to configure the Informix server to support secure JDBC:

- 1 On the Informix server, create a file named `conscsm.cfg` that contains the following text:

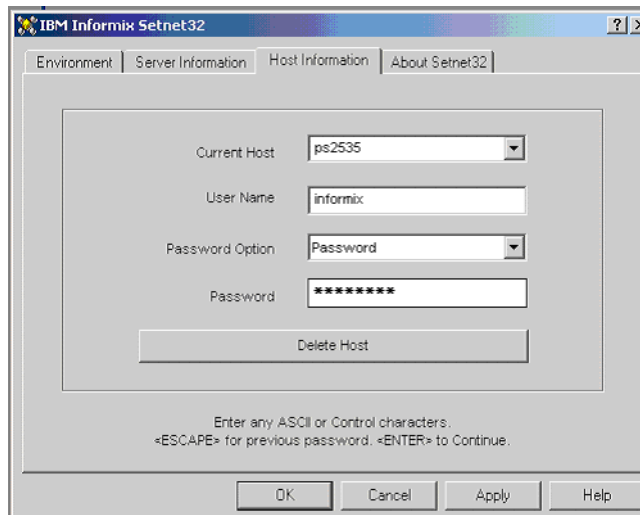
```
SPWDCSM("%INFORMIX_HOME%\bin\libixspw.dll", "", "p=1")
```

- 2 Select **Start Programs IBM Informix Connect version Setnet32**.

- 3 On the Server Information tab, specify `csm=(SPWDCSM)` in the Options field:



- 4 On the Host Information tab, provide the appropriate login information.



The screenshot shows the IBM Informix Setnet32 dialog box with the Host Information tab selected. The dialog has four tabs: Environment, Server Information, Host Information, and About Setnet32. The Host Information tab contains the following fields and controls:

- Current Host: A dropdown menu with the value "ps2535".
- User Name: A text input field containing "informix".
- Password Option: A dropdown menu with the value "Password".
- Password: A text input field containing "*****".
- Delete Host: A button located below the Password field.

Below the fields, there is a note: "Enter any ASCII or Control characters. <ESCAPE> for previous password. <ENTER> to Continue." At the bottom of the dialog are four buttons: OK, Cancel, Apply, and Help.

- 5 Click **OK**.
- 6 If prompted, click **OK** to confirm the creation of the new host.

Configuring the Connector

After you deploy the connector on the application server, you must configure Select Identity to use the connector by deploying it in the Select Identity client. The following provides an overview of the procedures you must complete in order to deploy your connector. It also provides connector-specific information you must provide when configuring Select Identity to use the connector.

Internationalization Support

If you installed the connector on non-English platforms, familiarize yourself with the information in this section before deploying and configuring the connector. Internationalization support provided by the connector includes the following capabilities and limitations:

- When entering user attributes to provision (in the Select Identity client), you can enter local language characters except for the following attributes:
 - UserName
 - Password
 - Email

The following shows Chinese characters used in attribute values:

| 用户属性 | |
|------------------|--------------------------------------|
| FirstName | 中文 |
| UserName | OraEvf003 |
| Password | ***** [No expiration] |
| GUID | E19A27C5-C66E-4F60-11DD-363488491677 |
| Email | yilei.zhang@hp.com |
| Business Phone | null |
| Home Phone | null |
| Address 1 | 地址1 |
| Country | 中国ABC |
| Gen_Ora_118N_KEY | OraEvf003 |

- Reverse synchronization of local language characters is supported. When provisioning users on the LDAP resource, you can enter local language characters as input data. These characters are reconciled with Select Identity through SPML communication. However, the following user attributes must contain English characters:
 - UserName
 - Password
 - Email
- The attribute names on the resource cannot contain non-English characters. Thus, you cannot include non-English characters in the mapping file. The following shows attributes contained in a mapping file; only English attribute names are shown.

| Resource Name=Gen_Ora_118N | | | | |
|----------------------------|------------|------------|---------------------------|---------------|
| << < 页 1 / 1 > >> | | | | 总记录数: 10 |
| Name | Min Length | Max Length | Attribute Mapped To | Authoritative |
| Address | 0 | 255 | Addr1 | N |
| Country | 0 | 255 | Country | N |
| E-Mail | 0 | 255 | Email | N |
| FirstName | 0 | 255 | FirstName | N |
| Gen_Ora_118N_ENTITLEMENTS | 1 | 255 | Gen_Ora_118N_ENTITLEMENTS | Y |
| Gen_Ora_118N_KEY | 1 | 255 | Gen_Ora_118N_KEY | Y |
| Password | 0 | 255 | Password | N |
| PhOffice | 0 | 255 | PhBus | N |
| UserName | 0 | 255 | UserName | N |
| phHome | 0 | 255 | PhHome | N |

- Non-English entitlements are not supported by the connector.

- All configuration and property file names must be in English.
- The exception messages from the resource are in English only.
- The log messages are in English only.
- The Select Identity resource name, which is included in the reverse synchronization configuration of the agent, must be in English.

Connector Deployment

Complete the following steps to deploy and configure the connector:

- 1 Register the Informix Admin connector with Select Identity by clicking the **Deploy New Connector** button on the Connectors home page. Complete this procedure as described in the “Connectors” chapter of the *HP OpenView Select Identity Administrator Guide*.

After you deploy the connector, the connector properties will look similar to this:

| Connector Information | |
|-----------------------|-----------------------------|
| * Connector Name: | AdminInformixConnector |
| * Pool Name: | eis/Admin-InformixConnector |
| Mapper Available: | No |

- 2 Deploy a resource that uses the newly created connector. On the Resources home page, click the **Deploy New Resource** button. You must specify all parameters except the JDBC data source.

Complete the steps in this procedure as described in the “Resources” chapter of the *HP OpenView Select Identity Administrator Guide*. When configuring the resource, refer to the following table for parameters specific to this connector:

- ▶ Copy or move the XML and XSL files to the proper locations. For example, if `C:\si3.3\weblogic\sysarchive` is a folder in the WebLogic CLASSPATH, the XSL should reside in `C:\si3.3\weblogic\sysarchive` and the XML should reside in `C:\si3.3\weblogic\sysarchive\com\trulogica\truaccess\connector\schema\spml`.

| Field Name | Sample Values | Description |
|-----------------------|----------------------|---|
| Resource Name | Admin-Informix | The name of the resource. |
| Resource Type | AdminInformix | The connector that was deployed in Step 1 on page 42 . |
| Authoritative Source* | No | Whether this resource is a system that is considered to be the authoritative source for user data in your environment. Specify Yes if the connector is enabled for reverse synchronization. If the resource is not authoritative, the resource can only modify user entitlements during reverse synchronization. |
| Associate to Group | Selected | Whether the system uses the concept of groups. For this connector, select this option. |
| Server Name | Ps0111 | Host name or IP address of the database server. You must specify this parameter if the agent was installed. |
| Server Port | 1526 | Port on which the database server is listening. Specify this parameter if the agent was installed. |
| Username | sa | The login name of the database administrative user. You must specify this parameter if the agent was installed. Note that the specified user must have administrator privileges. |
| Password | p4ssword | Password of the database administrative user. You must specify this parameter if the agent was installed. |

| Field Name | Sample Values | Description |
|-------------------------|-----------------------------|---|
| Agent Port | 5601 | The port where the agent listens for incoming connections. You must specify this parameter if the agent was installed. |
| SQL URL | jdbc:Informix-sqli | URL to use to communicate with the database over a JDBC connection. You must specify this parameter if the agent was installed. |
| Database / Service Name | testDB | The database name in which to provision users. Specify this parameter if the agent is installed. |
| Database Driver String | com.informix.jdbc.IfxDriver | Name of the JDBC driver to connect to the database. You must specify this parameter if the agent was installed. |
| Mapping File | admininformix.xml | The XML mapping file, which must reside in <code>install/conf/com/truologica/truaccess/connector/schema/spml</code> directory in order for the Select Identity server to find it. |
| JDBC Datasource String | | JNDI data source name that was created or identified on the Select Identity server that can connect to the target Informix database. Specify a value for this property if the agent was not installed. Note that the connection pool must be created by specifying a user with adminstartor privileges. For the Informix connector, leave this field blank. |

| Field Name | Sample Values | Description |
|--------------------------------|----------------------|--|
| Encryption Specification Algo | | Encryption algorithm specification string. Specify this parameter if you wish to use secure communication with Informix. |
| Encryption Algorithm | | Name of the encryption algorithm. Specify this parameter if you wish to use secure communication with Informix. |
| Encryption Specification Level | SECURITY | Encryption level specification string. Specify this parameter if you wish to use secure communication with Informix. |
| Encryption Level | PASSWORD | Encryption level. Specify this parameter if you wish to use secure communication with Informix. |

* Instead of creating an authoritative resource, you can create authoritative attributes (in the next step) for the attributes that will be synchronized. Entitlements are authoritative by default in a non-authoritative resource but other attributes are not.

After you deploy the resource for the Informix Admin connector, the Access Info page of the resource properties will look similar to this:

| Resource Access Information | |
|---------------------------------|-------------------------------|
| * Resource Name: | AdminInformixResource |
| * Mapping File: | Admin_Informix.xml ? (View) |
| JDBC Datasource String: | |
| Agent Port: | 5602 ? |
| Server Name: | localhost ? |
| Server Port: | 1526 ? |
| Username: | informix ? |
| Password: | ●●●●●●●● ? |
| SQL URL: | jdbc:Informix-sqli ? |
| DataBase/Service Name: | sidb ? |
| Database Driver String: | com.informix.jdbc.IfxDriver ? |
| Encryption Specification Algo: | |
| Encryption Algorithm: | |
| Encryption Specification Level: | |
| Encryption Level: | |
| Instance Name: | ol_silp2 ? |

- 3 Create attributes that link Select Identity to the connector. For each mapping in the connector's mapping file, create an attribute using the Attributes capability on the Select Identity client.

Refer to the "Attributes" chapter in the *HP OpenView Select Identity Administrator Guide* for more information.

- ▶ The attributes in the snapshot are sample values based on the sample XML file given above.

After you create the attributes for the Informix Admin connector, the View Attributes page for the resource will look similar to this:

| Resource Name-AdminInformixResource | | | | |
|-------------------------------------|------------|------------|------------------------------------|------------------|
| << < Page 1 of 1 >> | | | | Total Records: 4 |
| Name | Min Length | Max Length | Attribute Mapped To | Authorative |
| AdminInformixResource_ENTITLEMENTS | 1 | 255 | AdminInformixResource_ENTITLEMENTS | Y |
| AdminInformixResource_KEY | 1 | 255 | AdminInformixResource_KEY | Y |
| Password | 0 | 255 | Password | N |
| UserID | 0 | 255 | UserName | N |

- 4 Create a Service that will use the newly created resource. To do so, click the **Deploy New Service** button on the Services home page. Complete this procedure as described in “Services” of the *HP OpenView Select Identity Administrator Guide*. You will reference your new resource created in [Step 2](#) while creating this service.

If you are enabling reverse synchronization, configure the Service as follows:

- When selecting the Business Relationship, choose the ReconciliationDefaultProcess workflow for the RECONCILIATION:Add Service and RECONCILIATION:Delete Service Membership request events. For RECONCILIATION:Add Service, use the user addition view.
- In the user addition view, specify mandatory attributes that are guaranteed to be passed by the reverse synchronization request when adding a user. If you specify a mandatory attribute that is not passed by the resource, the user will be created in Select Identity but reverse synchronization will not succeed.
- When specifying the context, obtain the value from the add request issued by the resource. For example, if the context is Country and the value is US, the <addRequest> element in the reverse synchronization request should have an attribute called country and a value of US. If the context attribute is not present in the add user request, the user will be created in Select Identity but will not be assigned to a Service.

Understanding the Mapping Files

To enable the connector to provision users and entitlements in the schema on the Informix resource, you must create an XML mapping file. If you configured the agent to support reverse synchronization, you must also provide an XSL file that provides a reverse mapping of the Select Identity and resource fields mapped in the XML file.

This chapter provides an explanation of the XML and XSL mapping files. The following sections are provided:

- [Elements in the XML Mapping File on page 49](#)
- [Elements in the XSL Reverse Mapping File on page 53](#)

Refer to `admininformix.xml` and `admininformix.xsl`, which were extracted from the `AdminInformixSchema.zip` file, for a sample XML and XSL files for this connector.

Elements in the XML Mapping File

Here is an explanation of the format of the XML mapping file. For a sample mapping file, see the `admininformix.xml` that was extracted from the `AdminInformixSchema.zip` file.

- **<Schema>**, **<providerID>**, and **<schemaID>**

Provides standard elements for header information.

- **<objectClassDefinition>**

Defines the actions that can be performed on the specified object as defined by that name attribute (in the `<properties>` element block) and the Select Identity-to-resource field mappings for the object (in the `<memberAttributes>` block). For example, the object class definition for users defines that users can be created, read, updated, deleted, reset, and expired in Informix.

- **<properties>**

Defines the operations that are supported on the object. This can be used to control the operations that are performed through Select Identity. The following operations can be controlled:

- Create (CREATE)
- Read (READ)
- Update (UPDATE)
- Delete (DELETE)
- Enable (ENABLE)
- Disable (DISABLE)
- Reset password (RESET_PASSWORD)
- Expire password (EXPIRE_PASSWORD)
- Change password (CHANGE_PASSWORD)
- Assign entitlements (LINK)
- Unassign entitlements (UNLINK)
- Retrieve entitlements (GETALL)

The operation is assigned as the name of the <attr> element and access to the operation is assigned to a corresponding <value> element. You can set the values as follows:

- true — the operation is supported by the connector
- false — the operation is not supported by the connector
- bypass — the operation is not supported by the connector

Here is an example:

```
<objectClassDefinition description="" name="User">
  <properties>
    <attr name="GETCHILDREN">
      <value>true</value>
    </attr>
    <attr name="DELETE">
      <value>true</value>
    </attr>
    <attr name="EXPIREPASSWORD">
      <value>true</value>
    </attr>
    <attr name="GETALL">
      <value>true</value>
    </attr>
  ...
```

- **<memberAttributes>**
Defines the attribute mappings. This element contains <attributeDefinitionReference> elements that describe the mapping for each attribute. Each <attributeDefinitionReference> can be followed by an <attributeDefinition> element that specifies details such as minimum length, maximum length, and so on.

Each <attributeDefinitionReference> element contains the following attributes:

- Name — the name of the reference.
- Required— if this attribute is required in the provisioning (set to true or false).
- Conzero:tafield — the name of the Select Identity resource attribute. In general, the attribute assigned to tafield should be the same as the physical resource attribute, or at least the

connector attribute. For example, it is recommended to have the following:

```
<attributeDefinitionReference name="FirstName"
required="false" concero:tafield="[givenname]"
concero:resfield="givenname" concero:init="true"
concero:isMulti="true"/>
```

instead of this:

```
<attributeDefinitionReference name="FirstName"
required="false" concero:tafield="[FirstName]"
concero:resfield="givenname" concero:init="true"
concero:isMulti="true"/>
```

- **Concero:resfield** — the name of the physical resource attribute from the resource schema. If the resource does not support an explicit schema (such as UNIX), this can be a tag field that indicates a resource attribute mapping.

Also, the attribute name may be case-sensitive; for example, if the attribute is defined in all uppercase letters on the resource, be sure to specify it in all uppercase letters here.

- **Concero:isKey** — An optional attribute that, when set to true, specifies that this is the key field to identify the object on the resource. Only one `<attributeDefinitionReference>` can be specified where `isKey="true"`. This key field does not need to be the same as the key field of the identity object in Select Identity.

Note that for a key field mapping where `isKey="true"` and `tafield` is not assigned the `UserName` attribute, `UserName` should not be used in any other mapping. That is, `UserName` can be assigned to `tafield` only in cases where it is mapped to the key field in the resource. Example:

```
<attributeDefinitionReference name="UserName"
required="true" concero:tafield="[UserName]"
concero:resfield="uid" concero:isKey="true"
concero:init="true"/>
```

- **Concero:init** — An optional attribute that identifies that the attribute is initialized with the value of the attribute passed in from Select Identity.

Here is an example:

```
<memberAttributes>
  <attributeDefinitionReference concero:isKey="true"
    concero:resfield="adminproperty=USER,attribute=NAME"
    concero:tafield="UserId" encrypt="false"
    encryptionAlgorithm="" fk="" iTK="true" isPassword="false"
    name="adminpropertyUSERattributeNAME" required="true"
    supportedOperations="UNLINK, LINK, GETATTRIBUTES,
    GETPARENT, GETCHILDREN, GETALL, RESETPASSWORD,
    CHANGEPASSWORD, EXPIREPASSWORD, DISABLE, ENABLE, CREATE,
    DELETE, UPDATE" type="java.lang.String"/>
  ...
```

The interpretation of the mapping between the connector field (as specified by the `Concero:tafield` attribute) and the resource field (as specified by the `Concero:resfield` attribute) is determined by the connector. The Informix Admin connector has code to interpret the mappings in one way, as follows:

- The connector attribute names are specified in `tafield`. The value of attribute `xyz` is taken from the `UserModel` during provisioning.
- Composite attributes can be specified in the Informix Admin connector mapping file. To do this, specify `attr1 {xxxx} attr2` as the connector attribute. This specifies that the value of the `attr1` and `attr2` attributes should be combined with the string `xxxx` to form a mapping for the specified resource field. The Informix Admin connector has code to handle these composite mappings.

You must specify static text (strings) in composite attributes with brackets (`{ }`). Also, if no string separates two connector attributes, you must add a space that is within brackets, like this: `attr1{ }attr2`.

- **<attributeDefinition>**

Defines the properties of each object's attribute. For example, the attribute definition for the Directory attribute defines that it must be between one and 50 characters in length and can contain the following letters, numbers, and characters: a-z, A-Z, 0-9, @, +, and a space.

Here is an example:

```
<attributeDefinition
  description="adminpropertyENTITLEMENTattributeNAME"
  name="adminpropertyENTITLEMENTattributeNAME"
```

```

type="java.lang.String">
<properties>
  <attr name="minLength">
    <value>0</value>
  </attr>
  <attr name="maxLength">
    <value>255</value>
  </attr>
  <attr name="defaultValue">
    <value/>
  </attr>
  <attr name="pattern">
    <value><![CDATA[[a-zA-Z0-9@]+]]></value>
  </attr>
</properties>
</attributeDefinition>

```

- **<concerto:entitlementMappingDefinition>**

Defines how entitlements are mapped to users.

- **<concerto:objectStatus>**

Defines how to assign status to a user.

- **<concerto:relationshipDefinition>**

Defines how to create relationships between users.

Refer to `admininformix.xml`, which was extracted from the `AdminInformixSchema.zip` file, for a sample XML file for this connector.

Elements in the XSL Reverse Mapping File

If the agent is installed on the resource and you wish to enable reverse synchronization, you must create an XSL file to map all attributes that are specified in the XML mapping file. See the `admininformix.xsl` file that was extracted from the `AdminInformixSchema.zip` file for a full sample.



Note that the elements in the XSL file are case sensitive.

You must define the user's ID field on the resource and in Select Identity. In the following example, `RES_USERID` is the user ID resource attribute for the user on the resource. The `RES_PASSWORD` is the corresponding password

attribute on the resource. The following provides an example for setting these attributes:

```
<xsl:variable name="RES_USERID"
select="'adminproperty=USER,attribute=USERNAME'"/>
<xsl:variable name="RES_PASSWORD"
select="'adminproperty=USER,attribute=PASSWORD'"/>
```

SI_USERID is the Select Identity attribute for the user ID, and **SI_PASSWORD** is the Select Identity attribute for the password. The following shows how to set these attributes:

```
<xsl:variable name="SI_USERID" select="'USERNAME'"/>
<xsl:variable name="SI_PASSWORD" select="'PASSWORD'"/>
```

For each resource attribute, you must define a corresponding Select Identity attribute, which defines the attribute in Select Identity to which the resource attribute is mapped. The following example defines the **RES_ATTR0** resource attribute and the **SI_ATTR0** attribute in Select Identity:

```
<xsl:variable name="RES_ATTR0" select="'xxxxxxxxxxxx'"/>
<xsl:variable name="SI_ATTR0" select="'xxxxxxxxxxxx'"/>
```

Then, define the resource attribute, such as in this example for **RES_ATTR0**:

```
<xsl:when test="$ATTRNAME = $RES_ATTR0">
  <xsl:call-template name="AttributeBuilder">
    <xsl:with-param name="DSMLELEMENT" select="$DSMLELEMENT"/>
    <xsl:with-param name="ATTRNAME" select="$SI_ATTR0"/>
    <xsl:with-param name="ATTRVALUE" select="$ATTRVALUE"/>
    <xsl:with-param name="MODIFYFLAG" select="$MODIFYFLAG"/>
  </xsl:call-template>
</xsl:when>
```

Refer to the `admininformix.xsl` file, which was extracted from the `AdminInformixSchema.zip` file, for a sample XSL file for this connector.

Uninstalling the Connector

If you need to uninstall a connector from Select Identity, make sure that the following are performed:

- All resource dependencies are removed.
- The connector is deleted through the Connectors home page on the Select Identity client.

Uninstalling the Connector from WebLogic

Perform the following to delete a connector:

- 1 Log on to the WebLogic Server Console.
- 2 Navigate to *My_Domain* **Deployments** **Connector Modules**.
- 3 Click the delete icon next to the connector that you want to uninstall.
- 4 Click **Yes** to confirm the deletion.
- 5 Click **Continue**.

Uninstalling the Connector from WebSphere

Complete the following steps to uninstall the connector on WebSphere:

- 1 Log on to the WebSphere Application Server Console.
- 2 Navigate to **Resources** **Resource Adapters**.
- 3 Select the connector to uninstall.
- 4 Click **Delete**.
- 5 Click the **Save** link (at the top of the page).
- 6 On the Save to Master Configuration dialog, click the **Save** button.

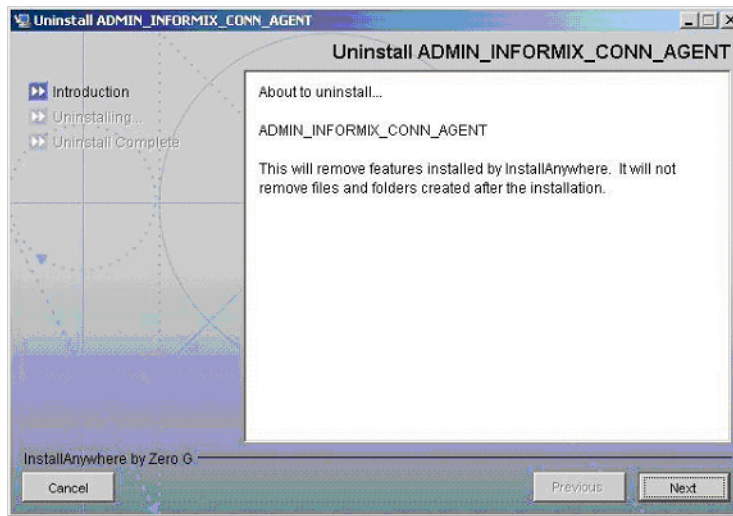
Uninstalling the Agent

The following sections describe how to remove the agent, which you can do using a wizard or manually.

Using a Wizard to Remove the Agent on Windows

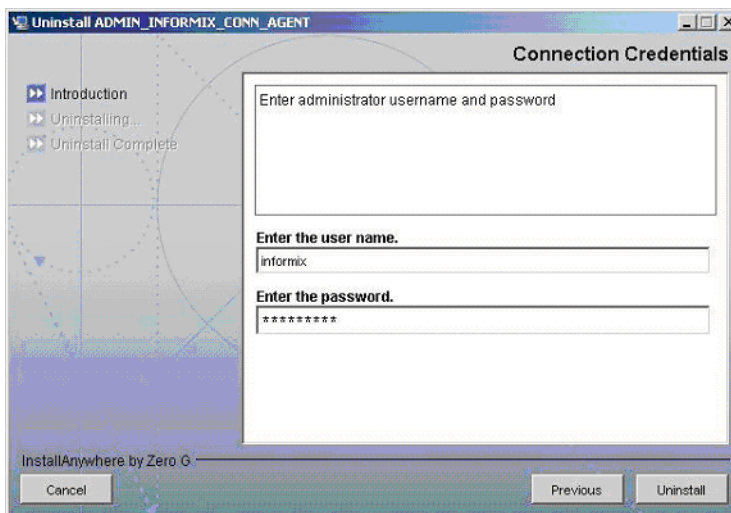
Perform the following steps to delete the agent on the Windows server:

- 1 Select **Programs > ADMIN_INFORMIX_CONN_AGENT > Uninstall Agent** from the Start menu. The wizard displays.



- 2 Click **Next** on the introductory dialog.

- 3 Provide the database credentials to uninstall the reverse notification tables, if they were installed. Then, click **Uninstall**.



- 4 Click **Continue** when the pop-up dialog indicates that the reverse notification tables were successfully uninstalled.
- 5 Click **Done** on the Uninstall Complete dialog to close the wizard.

Using a Wizard to Remove the Agent on UNIX

Perform the following steps to delete the agent on the UNIX server:

- 1 Start the wizard by running the following command:

```
agent_home/Uninstall_ADMIN_INFORMIX_CONN_AGENT/  
Uninstall_ADMIN_INFORMIX_CONN_AGENT
```

The following displays:

```
=====
Preparing CONSOLE Mode Installation...
=====
(created with InstallAnywhere by Zero G)
-----
```

```
=====
Uninstall ADMIN_INFORMIX_CONN_AGENT
-----
```

About to uninstall...

ADMIN_INFORMIX_CONN_AGENT

This will remove features installed by InstallAnywhere. It will not remove files and folders created after the installation.

PRESS <ENTER> TO CONTINUE:

- 2** Press ENTER to continue. The following displays:

```
=====
Get User Input
-----
```

Enter requested information

Enter user name : (DEFAULT:): TEST

- 3** Enter the database user name and press ENTER. The following displays:

```
=====
Get User Input
-----
```

Enter requested information

Enter password : (DEFAULT:): password

- 4** Enter the user's password and press ENTER. The installer removes the reverse notification tables (if installed) and displays a success or failure message, as follows:

```
=====
Executed the command
-----
```

```
"/ADMIN_INFORMIX_CONN_AGENT/Adminuninstall.sh" -userName "TEST"
-password "password"
```

Reverse Notification Tables Uninstall Summary

Reverse Notification Tables Uninstall SUCCEEDED.

- 5** To view the log file, select the Show Logs and press ENTER.
- 6** Press ENTER to exit the wizard.

Manually Removing the Agent

Perform the following steps to manually remove the agent:

- 1 Make sure that the `agent_home\conf\properties.ini` file retains the same values used during the installation of the reverse notification tables.
- 2 Make sure that the XML mapping file during the installation of the agent is available in the `agent_home\conf\com\trulogica\truaccess\connector\schema\spml` folder.
- 3 Run the `Adminuninstall.cmd` file (on Windows) or `Adminuninstall.sh` file (on UNIX).
- 4 Provide the database login credentials when prompted.
- 5 Delete the agent files and directory structure, if you wish.



Troubleshooting

This appendix describes common problems encountered during the installation and use of the connector and its agent.

Connector Installation

This section lists the common problems encountered during installation and use of the connector.

- After redeploying the connector, Select Identity does not display the current connector information.

Possible Cause: The application is using a cached connector file.

Solution: Restart the application server.

- Select Identity does not display the most current mapping file information.

Possible Cause: The application server is using a cached mapping file.

Solution: Restart the application server.

- The mapping file of an existing resource is changed and, when you attempt to modify the resource to add a new mapping file, the following error displays:

```
Application cannot be modified at this time
```

Possible Cause: Major differences may exist between the old and new mapping files.

Solutions:

- Create a new resource with the new mapping file.
- Unmap all attributes in the current resource and modify the resource to reference the new mapping file. You cannot use this second solution, however, if users were provisioned using this resource.
- Select Identity can successfully add a user but the new user is not shown in the resource's database table.

Possible Causes:

- The mapping file lacks the Create operation for the Key attribute.
- The Create operation for the User entity is not added in the XML file.
- The XML parser files may be missing from the `BEA_HOME/jdk_1.4.1/jre/lib/endorsed` folder (on WebLogic).
- A database exception occurred.

Solutions:

- Add the create operation to the mapping file or add the relevant JARs to the path.
- If a database exception occurred, refer to the logs for details of the exception. Common exceptions include size mismatches for columns and foreign key constraint violations. Refer to the database documentation for more information on the database exceptions.

Agent and Reverse Notification Tables Installation

This section lists the common problems encountered while installing and configuring reverse synchronization.

- A `NullPointerException` occurs

Possible Cause: The specified mapping file is not available in the class path.

Solution: Make sure that the file is placed in the `Install/conf` directory. Ensure the name of the file specified in `properties.ini` is spelled correctly. Note that it is case sensitive. Also, check the format of the mapping file.

- The following error messages is displayed:

Can't create view dbo.DBA_USERS Message received from the database: There is already an object named ... Cannot proceed.

Possible Cause: You are attempting to reinstall the agent without removing previously installed database tables.

Solution: Uninstall the agent as documented in [Uninstalling the Connector on page 55](#). This removes previously installed tables. Then, run the agent installation wizard again.

- The following error message is displayed:

Database error: Triggers and Referential constraint cannot co-exist.

Possible Cause: Informix Database will not allow the installation of triggers on the tables that have ON CASCADE DELETE as Y for referential constraints.

Solution: Set the CASCADE DELETE option to N for the referential constraints.

- The following error message is displayed even if proper login credentials are provided:

Error in Login Invalid Login Credentials.

Possible Cause: The Informix Dynamic Server is configured for SECURE JDBC and this has not been configured in the `properties.ini` file.

Solution: Set the SECURE_JDBC flag to 1 in the INI file.

Agent Execution

This section lists the common problems encountered while running the agent.

- An exception similar to the following is displayed:

```
java.net.BindException: Address in use: JVM_Bind
```

Possible Cause: The listening port on the agent's system is in use, possibly by another invocation of the agent.

Solution: Stop the older invocation and run the agent again.

- An error message similar to the following is displayed:

Invalid Object `schema.tableName`

Possible Cause: The schema specified in the mapping file is incorrect.

Solution: Check the mapping file.

- The agent console shows a Log4jFactory exception when started.

Possible Cause: The agent cannot find the `log4j-1.2.8.jar` in the classpath.

Solution: Add the JAR to the class path.

- The following error is displayed:

```
SQLException occurred while adding element into SNAPSHOT_TAB.  
Message received from the database: ORA-00942: table or view  
does not exist
```

Possible Cause: The agent is installed without the reverse notification tables.

Solution: Install the tables by re-running the installation, then run the agent.



Connector Behavior

For forward provisioning, keep the following notes in mind:

- The connector only supports adding and assigning users to the database if the user exists on the target system (a Windows or UNIX user). The connector attempts to log in using the user name and password provided. If credentials are provided for a user who does not exist on the system, the connector returns an Invalid Userid exception. The same error is thrown if the password is incorrect.
- The connector does not display the Informix CONNECT entitlement in Select Identity. It implicitly grants this entitlement to user when performing an ADD request and revokes the entitlement when issuing a DELETE request.
- At any given time, an Informix user can have only one entitlement (C, R, or D). The connector simulates this behavior.
 - When a user has the RESOURCE entitlement and DBA is assigned, the agent sends an UNLINK request of RESOURCE to Select Identity. Thus, the user is only assigned DBA in Select Identity and on the Informix resource.
 - When the user has the DBA entitlement and RESOURCE is assigned to the user, the connector returns an error stating 'Only one Entitlement can be assigned to a user.'

- The Reset Password operation is not supported because the connector cannot reset the password of a system user.
- There is no STATUS attribute for a user on Informix, where the information of whether the user is enabled or disabled can be stored. Hence, the Enable All Services and Disable All Services request returns success.
- Roles can be created on Informix and the connector will retrieve them as entitlements.
- The Connect to Database entitlement is implicitly added to the user when the user is added to the DB2 database.
- Some entitlements on DB2 are interrelated where one entitlement needs to be linked or unlinked before others can be. The connector behaves in a similar way and returns an error if a link or unlink operation for an entitlement is attempted without the interrelated entitlement. For example, when the DBADM entitlement is assigned to a user along with other Entitlements, no other entitlements can be unlinked until DBADM is unlinked.

For reverse synchronization, keep the following points in mind:

- The agent sends an ADD request to the Select Identity server when a user is granted the CONNECT privilege on Informix. A DELETE request is sent when the CONNECT privilege is revoked for that user.
- The agent synchronizes the event of assigning DBA to a user with the RESOURCE entitlement by sending an UNLINK request to the Select Identity server.