

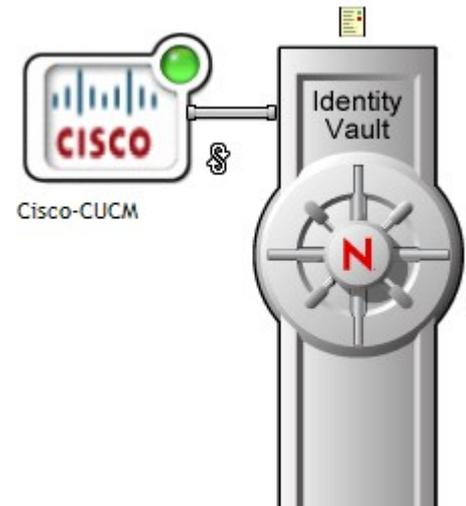


# Cisco CUCM Driver



*for Novell Identity Manager*

## Installation and Configuration Manual



driver version: 2.1

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## 1 About this document

This document explains how to install and configure the Cisco Unified Communication Management (CUCM) driver for Novell Identity Manager v2.1.

- Chapter 2, Overview on page 5
- Chapter 3, Preparations on page 9
- Chapter 4, Installation on page 12
- Chapter 4.3, Configuring the driver on page 18

### Audience

This guide is intended for administrators integrating the Cisco unified communication manager in an existing Identity Manager environment. You should have an understanding of DSML/SPML, SOAP, and HTML.

### Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please contact us via [info@skypro.ch](mailto:info@skypro.ch).

## 2 Overview

SOAP (Simple Object Access Protocol) is an XML-based protocol used for Internet communication between different applications and operating systems. The SOAP driver uses a combination of language and protocols to enable identity provisioning and data synchronization between an Identity Vault with Identity Manager and an HTTP-enabled application, such as the AXL web service of the CUCM.

The Cisco unified communication manager allows to manage users, devices and lines in a very complex way. The CUCM driver eliminates this complexity by only synchronizing user information. Nevertheless the Cisco AXL SOAP interface allows to synchronize almost all informations with the CUCM. This CUCM driver delivers basic functionality and can be extended to synchronize additional information like phone devices, lines or any other CUCM data at any time.

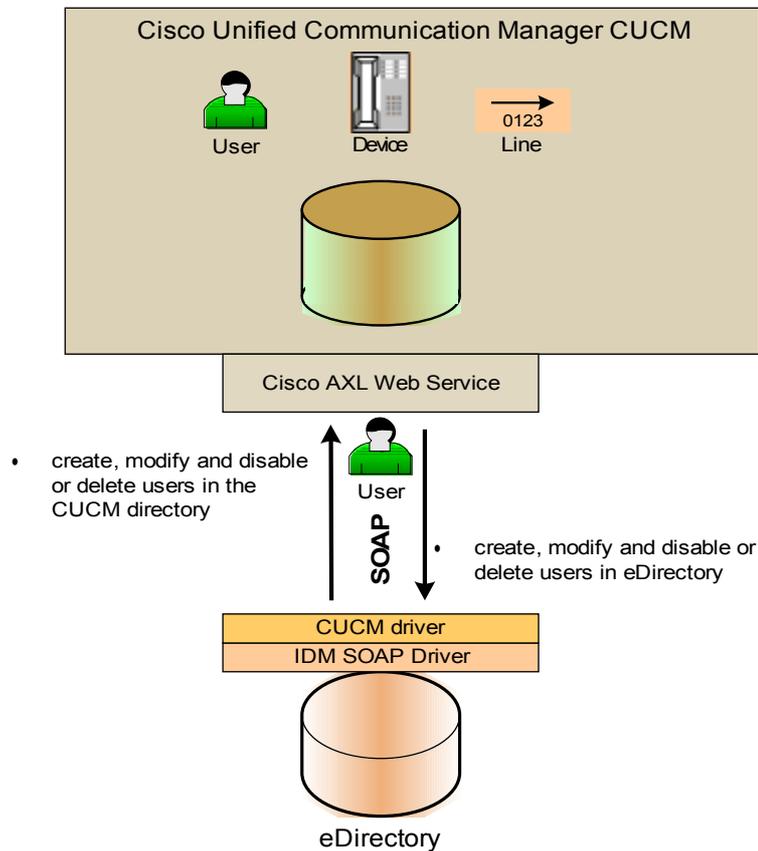


Image 1: CUCM driver schema

## 2.1 Driver concept

Based on the AXL SOAP communication interface of the Cisco unified communication manager (CUCM or in earlier versions called Cisco call manager) the CUCM driver for Novell Identity Manager provides an easy way to synchronize user data between the CUCM and the Novell eDirectory. The driver uses the standard SOAP protocol to exchange data between the CUCM and eDirectory. The driver is based on Novell's Identity Manager standard SOAP driver. So the CUCM driver for Novell Identity Manager actually consists of three parts:

1. Novell Identity Manager Engine
2. Novell Identity Manager SOAP driver
3. the CUCM driver package

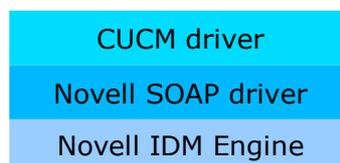


Image 2: CUCM driver parts

## 2.2 system requirements

The following requirements must be met for the driver in order to guarantee complete functionality:

1. Novell Identity Manager Version min. 3.5.1 Engine Patch 3 (20080307)
2. Novell Identity Manager SOAP driver min. 3.5.3
3. Cisco Unified Communication Manager min 6.0
4. Cisco AXL Web Service activated in:  
"Cisco Unified Serviceability -> Tools -> Service Activation: Cisco AXL Web Service"

## 2.3 driver package

After you have downloaded the driver packages extract the package to a directory (e.g. C:\SKyPRO\CUCM). The package contains the following files:

Licenses\SKyPRO-CUCMSoap.jar	additional SKyPRO SOAP classes
bcprov-jdk15-141.jar	Java classes for higher encryption technology
SKyPRO-CUCMSoapUtils.jar	additional SKyPRO SOAP utilities
CreateKeystore.bat	utility to create Java keystore file
CUCM Driver Installation.pdf	this manual
SKyPRO-CUCMdriver-v2_1.xml	the CUCM driver file
User Delete Notification.xml	mail template for delete notification

## 2.4 driver features

## 2.5 Event handling

The CUCM driver synchronizes user data between eDirectory and CUCM. All events are handled as followed:

*Image 3: CUCM event table*

### from eDirectory:

Users created in eDirectory will be created in CUCM. The matching rule is *uniqueID* from eDirectory to *userID* in CUCM. The attributes *uniqueID*, *Surname* and *Given Name* mustn't be empty. User objects have to be placed in a specific container to be synchronized. The container can be configured by a global config value (GCV).

All modification of attributes in the filter will be synchronized to CUCM.

If a user is renamed in eDirectory the *UserID* is only modified in CUCM if the attribute *uniqueId* has changed. This depends on the tool to be used to rename the user object. (e.g. ConsoleOne also changes *uniqueID* if a user is renamed)

If the attribute *Telephone Number* has been modified in eDirectory and the object is associated with a CUCM user, the attribute will be reset to the CUCM value.

If a user is deleted in eDirectory the driver can be configured to just delete the user in CUCM or delete and send a notification via email to a CUCM system administrator.

---

### ATTENTION!

*If the user objects are created by an other IDM driver, it is not guaranteed that the attribute **uniqueID** is set. If this attribute is empty, the object will not be synchronized!*

---

**to eDirectory:**

Users created in CUCM will be created in eDirectory in a specific container. The container can be configured by a GCV. The matching is done by *UserID* and *uniqueID*. Only users in the configured container are matched. At least the attributes *user ID*, *firstname* and *lastname* mustn't be empty.

Modification of *UserID* will be reset to the eDirectory value of *uniqueID*. Modifications to *first-name*, *lastname*, *password*, *department* and *mailid* will also be reset to the appropriate eDirectory value, if the object is associated.

If a user is deleted in CUCM the driver can be configured to only remove the association in eDirectory, notify and/or delete the user in eDirectory.

**2.6 data handling**

Following attributes will be synchronized by the driver:

Identity Vault				CUCM user		
Description (localized)	eDir attr. name	type	content	attribute	content	remarks
<i>object class</i>	<i>User</i>			<> <i>User</i>		
	<i>driver type</i>			SOAP		
	<i>Filter</i>			!		
<i>description</i>	<i>DirXML-Associations</i>			<i>UniqueID = user ID</i>		
user login ID	uniqueID		jsmith	> user ID	jsmith	reset to eDir value if associated
universal eDir password	Universal Password		A23hGt4	> password	A23hGt4	reset to eDir value if associated
	sumame		Smith	> lastname	Smith	reset to eDir value if associated
				> internal Caller ID (display)	John Smith	"Given Name" + " " + "sumame" reset to eDir value if associated
	Given Name		John	> firstname	John	reset to eDir value if associated
complete phone no	Telephone Number		+1 222 333 4455	< telephone Number	+1 222 333 4455	reset to CUCM value if associated
eMail adresse	Internet EMail Address		john.smith@skypro.ch	> mailid	john.smith@skypro.ch	reset to eDir value if associated
departement	OU		sales east	> department	sales east	reset to eDir value if associated

Image 4: Attribut DataFlow

Data authority for *userID*, *password*, *firstname*, *lastname*, *mailid* and *department* is eDirectory. So all changes in CUCM will be reset to the eDirectory value.

**ATTENTION!**

*Password changes in CUCM will be reset to the eDirectory password!*

### 3 Preparations

Before you install the CUCM driver, we have to make sure, your IDM system is ready to start a successful SOAP communication with the AXL web service.

1. You have either installed Identity Manager 3.5.1 including Engine Patch 3 (20080307) or Identity Manager 3.6. You can obtain the IDM 3.5.1 Engine Pack at <http://download.novell.com>
2. You have installed at least IDM SOAP driver 3.5.3 or later  
You can obtain the IDM 3.5.3 SOAP driver at <http://download.novell.com>
3. You have activated the the CUCM AXL web service
4. You have created the Java keystore file with the server certificate of the AXL web server
5. You have a valid userid and password to login to the AXL web service with sufficient rights to create, modify and delete end user in the CUCM

#### 3.1 How to check your IDM version

Start iManager an login as admin. Go to *Identity Manager Utilities* and select *Version Discovery*. Select your driver set and expand the driver set and your idm server.



Image 5: Identity Manager Version Discovery

After you have installed the CUCM driver you can check the SOAP driver version in the same way.

#### 3.2 Activate the AXL web service

Start you browser and go to the CUCM serviceability administration site. e.g.

<https://ccm-sdk.cisco.com:8443/ccmservice>

Login as Administrator and select *Tools/Service Activation*. Under *Database and Admin Services* activate the *Cisco AXL Web Service*.

Database and Admin Services		
	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco AXL Web Service	Activated
<input type="checkbox"/>	Cisco Bulk Provisioning Service	Deactivated
<input type="checkbox"/>	Cisco TAPS Service	Deactivated

Image 6: AXL Web Service Activation

You can check the AXL web service by calling its URL. e.g.

<https://ccm-sdk.cisco.com:8443/axl>

In the Authentication window please enter username and password of the Administrator account. A message confirms the successful connection with the AXL web service

## Cisco CallManager: AXL Web Service

The AXL Web Service is working and accepting requests. Use HTTP POST to send a request.

### 3.3 Create the Java keystore file

The SOAP driver uses HTTP via SSL to encrypt the data stream between the identity manager server and the AXL web service. To initiate a SSL connection the driver needs a java keystore file with the server certificate.

The certificate you use for the keystore file has to correspond with the server URL you call in the driver configuration as the URL of the remote DSML server.

#### 3.3.1 Export the server certificate

Start your browser and go to the CUCM administrator web site. e.g.

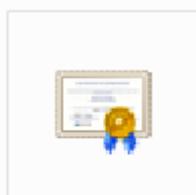
<https://ccm-sdk.cisco.com:8443/ccmadmin>

##### internet explorer:

In internet explorer 7 just right click anywhere within the web site and select *properties*. Click on the *certificate* button, select the *details* tab in the certificate properties and choose the function *export to file*. Save the certificate as DER file type and define a filename. (e.g. cucm.der). Verify the file and the location of the file.

##### mozilla firefox:

In mozilla firefox version 3 double click on the security icon on the right button of the firefox window. On the site properties select the *show certificate* button. Go to the details tab and select the *Export* function. Select the *DER* file format type and define name (e.g. cucm.der) and location of the file. Verify the file and the location of the file. Move the file to your direct-



cucm.der

ory, where you have unpacked the driver (e.g. C:\SKyPRO\CUCM)

### 3.3.2 create keystore file

After you have successfully exported the server certificate into a DER certificate file you use the java keytool to generate a java keystore file. The java keytool is a standard java tool that comes with the java run time engine (jre). Locate your java run time installation on your workstation or your server.

#### Windows workstation

In windows by default the jre is installed on

C:\Windows\Java\jre<version>

The *keytool.exe* is located in the *bin* subdirectory.

#### Windows Server

On a Windows Server with Novell Identity Manager installed you'll find the *keytool.exe* also in the directory:

C:\Novell\NDS\jre\bin

depending on where you have installed Novell eDirectory and Identity Manager.

#### Linux

On linux with installed Novell Identity Manager by default you'll find the *keytool* utility in the directory:

/opt/novell/jdk<version>/bin

To store the exported certificate in a java keystore file enter the command:

```
C:\Novell\NDS\jre\bin>keytool -import -file <DERfile> -trustcacerts -noprompt  
-keystore <KeystoreFile> -storepass <passwd>
```

Where the parameters have to be substituted with the following values.

<DERfile>	path to the DER file we have created e.g.: D:\Novell\Certificates\cucm.cer
<keystoreFile>	path to the keystore file we want to create e.g.: D:\Novell\Certificates\IDM.keystore
<passwd>	password for the keystore file (optional) e.g.: novell

For your convenience we provided you with the command file *CreateKeystore.bat* which contains the complete command to create the java keystore file. The tools assumes that you have unpacked the driver files to C:\SKYPRO\CUCM, that the *keytool.exe* file is located in C:\Novell\NDS\jre\bin and that the certificate you have exported was named *cucm.der* and moved to the directory where you have unpacked the files.

The keystore file, that is created by this batch file, is named *cucm.keystore*.

## 4 Installation

First unpack the downloaded cucm driver file *SKyPRO-CUCMdriver-v2\_1.tar* into a directory. Use *winnar.exe* or *winzip.exe* to unpack the file (e.g. C:\SKyPRO\CUCM). After you have unpacked the file you will have these files:

SKyPRO-CUCMdriver-v2_1.xml	the CUCM driver file
Licenses\SKyPRO-CUCMSoap.jar	additional SKyPRO SOAP classes
SKyPRO-CUCMSoapUtils.jar	additional SKyPRO SOAP utilities
bcprov-jdk15-141.jar	Java classes for higher encryption technology
User Delete Notification.xml	mail template for delete notification
CreateKeystore.bat	utility to create Java keystore file

The installation of the driver is done in three steps:

1. copy the necessary files to the server
2. import and install the driver either with designer or iManager
3. configure the driver

### 4.1 copy the necessary files to the server

#### 4.1.1 Java files

Locate the installation directory on your server, where the Novell Identity Manager drivers has been installed.

On linux this is by default is the directory:

*/opt/novell/eDirectory/lib/dirxml*. On Windows

In Windows this is by default the directory:

C:\Novell\NDS\lib

The best way to look for the installation directory of your Identity Manager drivers is to search for the SOAP driver files like *SOAPShim.jar* or *SOAPUtil.jar*.

After you have located the directory where your Identity Manager drivers are installed, please copy the following files into this directory:

SKyPRO-CUCMSoap.jar  
SKyPRO-CUCMSoapUtils.jar  
bcprov-jdk15-141.jar

The file *bcprov-jdk15-141.jar* can also be located in other directories. Please look for other locations of this file and rename them to *.old*.

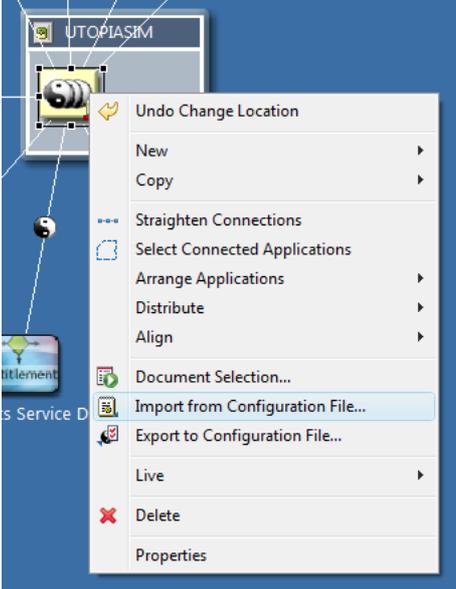
After you have copied these files you should restart your java virtual machine, because classes of *bcprov* could already be loaded into memory and must be replaced by the new classes we have copied.

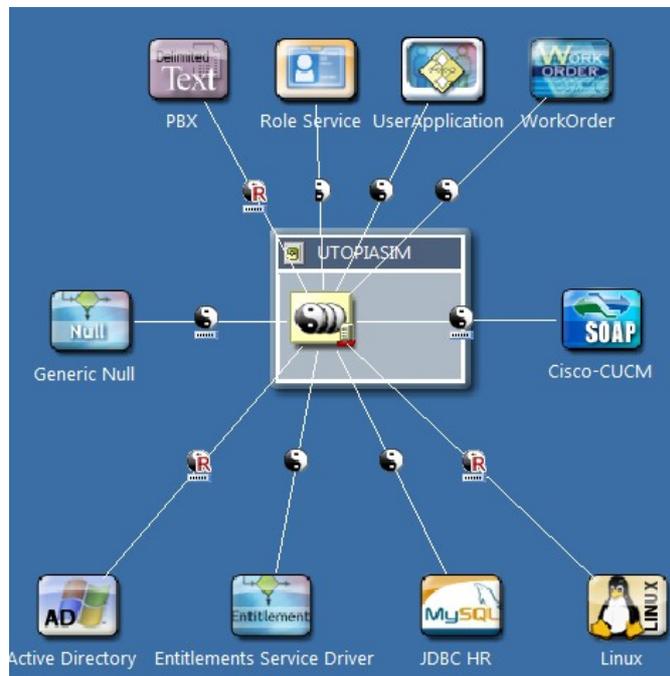
#### 4.1.1.1 keystore file

Create or define a directory on your Novell Identity Management Server where you want to store the Java keystore file for the SSL encryption (e.g. [C:\certs](#)). Copy the generated *cucm.keystore* file into this directory.

## 4.2 Installing the driver

### 4.2.1 installing with designer

<p>Start designer and open the project in which you want to integrate the cucm driver. Right click the driverset where you want to import the cucm driver in. Select</p> <p style="text-align: center;"><i>Import from configuration file.</i></p> <p>Go to the directory where you unpacked the driver into and select</p> <p style="text-align: center;"><i>SKYPRO-CUCMdriver-v2_1.xml</i></p> <p>Click <i>Ok</i>.</p>	 <p>The screenshot shows a software interface with a context menu open. The menu items are: Undo Change Location, New, Copy, Straighten Connections, Select Connected Applications, Arrange Applications, Distribute, Align, Document Selection..., Import from Configuration File... (highlighted), Export to Configuration File..., Live, Delete, and Properties.</p>
<p>If you receive a warning about localized strings ignore it.</p>	 <p>The file containing the localized strings for this driver file was not available or could not be loaded. Strings that could not be localized are displayed in the form 'xifid(...)'</p>
<p>Choose a name for the driver e.g. Cisco-CUCM. Leave all password fields empty and select <i>Next</i>.</p>	



The driver will be imported successfully

Go to the *Default Notification Collection*.

Right click on the *Default Notification Collection* and select *Import Template from file*.

Go to the directory where you unpacked the driver into and select the file

*User Delete Notification.xml*

Click *ok* to start the import process and confirm the successful import with *Ok*.

- Default Notification Collection
  - Forgot Hint
  - Forgot Password
  - Password Reset Fail
  - Password Set Fail
  - Password Sync Fail
  - Provisioning Approval Completed Notification
  - Provisioning Notification
  - User Delete Notification

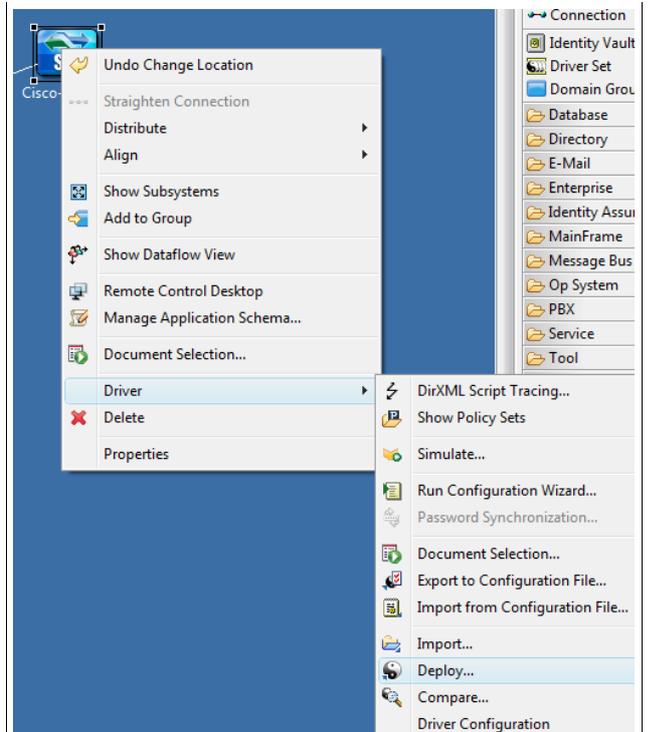
Deploy the driver. Right click on the driver icon or on the driver connection line and select *Live/Deploy*.

On the deployment Summary screen select *Deploy*.

Define *admin* or an appropriate user as a "Security Equivalences" for the driver.

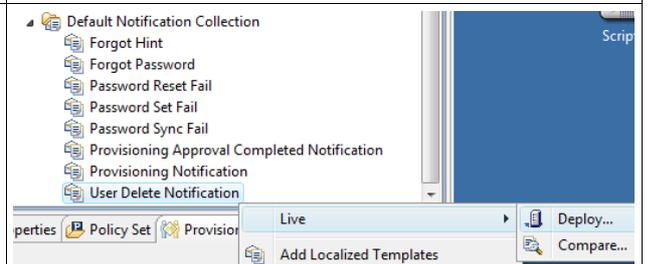
Exclude "Administrative Roles" is optional.

Press *OK*.

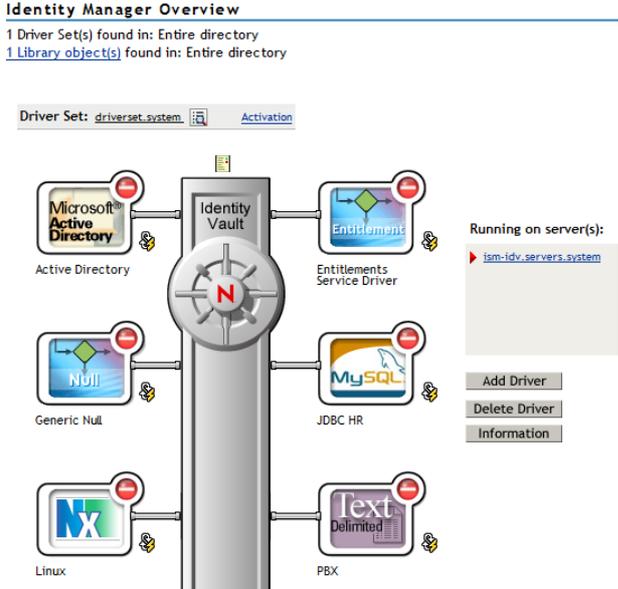
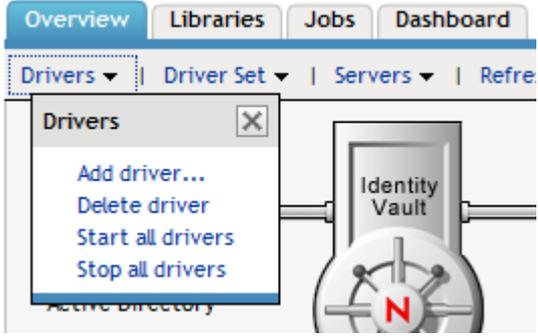


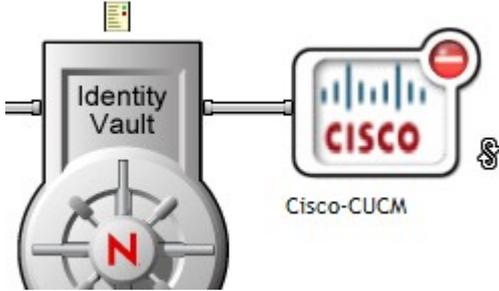
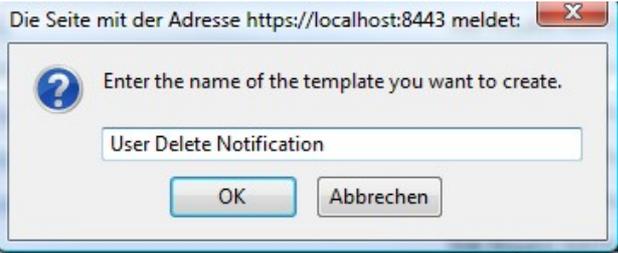
Go to the *Default Notification Collection* right click on *User Delete Notification* and select *Live/Deploy...* to deploy this mail template.

Select *Deploy* on the Deployment Summary



### 4.2.2 installing with iManager

<p>Start iManager and login as admin. Open the <i>Identity Manager</i> roles and task and select <i>Identity Manager Overview</i>. Select the driver-set where you want to import the cucm driver.</p> <p>In the Overview click the button</p> <p style="text-align: center;"><i>Add Driver</i></p>	 <p><b>Identity Manager Overview</b> 1 Driver Set(s) found in: Entire directory 1 Library object(s) found in: Entire directory</p> <p>Driver Set: <code>driverset.system</code> Activation</p> <p>Running on server(s): ism-idv.servers.system</p> <p>Add Driver Delete Driver Information</p>
<p>Or in iManager 2.7 go to Drivers and select <i>Add driver..</i> in the drop down menu.</p>	 <p>Overview Libraries Jobs Dashboard</p> <p>Drivers Driver Set Servers Refre</p> <p>Drivers</p> <p>Add driver... Delete driver Start all drivers Stop all drivers</p>
<p>Choose to import into an existing or new driver-set.</p>	
<p>Choose <i>Import a configuration from the client (.XML file)</i> and press <i>Browse</i>.</p> <p>Goto to the directory you unpacked the driver files and select <i>SKYPRO-CUCMdriver-v2_1.xml</i>.</p> <p>Press <i>Next</i> and ignore the warning about localized strings.</p>	<p>Import a configuration into this driver set.</p> <p><input type="radio"/> Import a configuration from the server (.XML file) Show: Identity Manager 3.5 configurations Configurations: ActiveDirectory-IDM3_5_1-V1.xml</p> <p><input checked="" type="radio"/> Import a configuration from the client (.XML file) File: D:\temp\cucmIDMdriver20.xml <input type="button" value="Durchsuchen"/></p>
<p>Set the name of the driver. If you want to replace an existing driver select the driver you want to replace. Otherwise leave this field empty. Press <i>Next</i>.</p>	<p>e.g. Cisco-CUCM</p>

<p>Define <i>admin</i> or an appropriate user as a "Security Equivalences" for the driver. Exclude "Administrative Roles" is optional.</p>	<p>e.g. admin</p>
<p>Confirm the summary by pressing <i>Finish</i>.</p>	
<p>The driver will successfully be imported.</p>	 <p>The diagram illustrates the connection between Identity Vault and Cisco-CUCM. On the left is a vault icon labeled 'Identity Vault'. On the right is a Cisco logo with 'CISCO' text and 'Cisco-CUCM' below it. A line connects the two components.</p>
<p>Open the <i>Workflow Administration</i> Task and select <i>Email Templates</i>.</p>	
<p>Select <i>New...</i> to create a new Email Template and set the name of the template to <i>User Delete Notification</i>.</p>	 <p>The screenshot shows a dialog box titled 'Die Seite mit der Adresse https://localhost:8443 meldet:'. It contains a question mark icon and the text 'Enter the name of the template you want to create.' Below this is a text input field containing 'User Delete Notification'. There are 'OK' and 'Abbrechen' buttons at the bottom.</p>
<p>Select the new created template. In the template editor switch to the <i>Source View</i>. Delete the existing message body.</p>	
<p>Open the extracted <i>User Delete Notification.xml</i> file with a simple text editor like <i>notepad</i>. Mark and copy the text from the tag <code>&lt;html&gt;</code> until <code>&lt;/html&gt;</code>. Paste the text into the <i>Message Body</i>. Fill the <i>subject</i> with the text <i>Notice of User deleted</i>. Check the button <i>send as HTML</i>.</p>	<p>Subject: Notice of User deleted</p> <p>Message Body:</p> <pre>&lt;html xmlns:form="http://www.novell.com/dirxml/workflow/form"&gt;   &lt;form:token-descriptions&gt;     &lt;form:token-description description="     &lt;form:token-description description="   &lt;/form:token-descriptions&gt;   &lt;head&gt;     &lt;title&gt;Notice of User deleted&lt;/title&gt;     &lt;style&gt;       &lt;!-- body { font-family: Trell     &lt;/style&gt;   &lt;/head&gt;   &lt;body BGCOLOR="#FFFFFF"&gt;     &lt;p&gt;This is a notice that the user \$U:     &lt;p&gt;User ID: \$UserID&lt;/p&gt;   &lt;p&gt;</pre>
<p>Press <i>Ok</i> to save the template.</p>	

## 4.3 Configuring the driver

Before you can deploy the driver you have to make some configuration.

### 4.3.1 configure with designer

In designer double click the ying yang icon of the cucm driver. This opens the driver properties. Go to the *Driver Configuration* and select *Driver Parameters*.

#### 4.3.1.1 Subscriber Options

Select the tab *Subscriber Options*. You have to configure these parameters:

##### URL of the remote DSML server

Enter the URL of the AXL web service. This is the same URL you tested the connection with the AXL web service in chapter 3.2, Activate the AXL web service on page 9 e.g.

<https://ccm-sdk.cisco.com:8443/axl>

This is also the URL of the server you exported the certificate for the SSL encryption.

##### Authentication ID / Authentication Password

Enter the userid and password of the user with sufficient rights to create, modify and delete end users in CUCM.

##### Truststore file

Enter path and filename of the java keystore file you created in chapter 3.3, Create the Java keystore file on page 10. e.g.

C:\certs\cucm.keystore (on Windows) or  
/certs/cucm.keystore (in Linux)

This path shows to a local directory on your filserver where the cucm driver is installed.

#### 4.3.1.2 Publisher Options

Select tab *Publisher Options*. There is only one parameter to configure

##### Heartbeat interval in minutes

Enter the interval in minutes for the publisher to poll the CUCM database for changes.

---

On every poll interval all data will be polled from CUCM. So depending on the amount of users increase the parameter to a higher value.

---

Press *Ok* to confirm your settings.

### 4.3.1.3 Global Configuration Values

Still in the *Driver Properties* select the *GCVs*.

#### Root Container for synchronisation – Users

Please enter the path to the container holding the users to synchronize with CUCM. e.g.  
utopia\users

#### Cisco CUCM/CCM Version

Select the version of your CUCM system. (for future use)

#### Delete User in eDirectory to

How will the delete event in eDirectory be handled by the driver:

Delete User in CUCM	Delete user in CUCM
Delete & Notify Admin	Delete user in CUCM and send email to Administrator defined in <i>Notification – Admin eMail Address</i>

#### Delete User in CUCM to

How will the delete event in CUCM be handled by the driver:

Delete user in eDirectory	user will be deleted also in eDirectory
Notify Administrator	Association will be removed and an email will be sent to the Administrator defined in <i>Notification – Admin eMail Address</i>
Remove Association	Association in eDirectory will be removed

---

If you only remove the association in eDirectory the user will be recreated in CUCM as soon as an attribute, that is in the drivers filter, has changed!

---

#### Notification – Admin eMail Address

Enter the eMail address of the CUCM or eDirectory administrator receiving email from the driver.

#### Notify the admin of password synchronization failure via e-mail

Select *Yes* or *No* to notify the administrator of any password failure.

### 4.3.1.4 Deploy the driver

In designer right click the ying yang icon of the cucm driver. Choose *Live/Deploy* to deploy the driver.

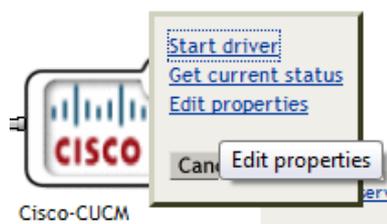
### 4.3.1.5 Start the driver

In designer right click the ying yang icon of the cucm driver. Choose *Live/Start Driver*.

### 4.3.2 configure with iManager

In iManager open the *Identity Manager* role and task and select *Identity Manager Overview*. Select the driverset where you have installed the cucm driver into.

Locate the cucm driver, click the status icon of the driver and select *properties*.



#### 4.3.2.1 Subscriber Options

In the *Driver Configuration* scroll down to the *Driver Parameters* and *Subscriber Settings*. You have to configure these parameters:

##### URL of the remote DSML server

Enter the URL of the AXL web service. This is the same URL you tested the connection with the AXL web service in chapter 3.2, Activate the AXL web service on page 9 e.g.

<https://ccm-sdk.cisco.com:8443/axl>

This is also the URL of the server you exported the certificate for the SSL encryption.

##### Authentication ID / Authentication Password

Enter the userid and password of the user with sufficient rights to create, modify and delete end users in CUCM.

##### Truststore file

Enter path and filename of the java keystore file you created in chapter 3.3, Create the Java keystore file on page 10. e.g.

C:\certs\cucm.keystore

This path shows to a local directory on your filserver where the cucm driver is installed.

#### 4.3.2.2 Publisher Options

Scroll farther down to the *Publisher Settings*. There is only one parameter to configure

##### Heartbeat interval in minutes

Enter the interval in minutes for the publisher to poll the CUCM database for changes.

On every poll interval all data will be polled from CUCM. So depending on the amount of users increase the parameter to a higher value.

Press *Apply* to confirm your settings.

#### **4.3.2.3 Global Configuration Values**

Still in the *Driver Properties* select the *Global Config Values* Tab.

#### **Root Container for synchronisation – Users**

Please enter the path to the container holding the users to synchronize with CUCM. e.g.  
utopia\users

#### **Cisco CUCM/CCM Version**

Select the version of your CUCM system. (for future use)

#### **Delete User in eDirectory to**

How will the delete event in eDirectory handled by the driver:

Delete User in CUCM	Delete user in CUCM
Delete & Notify Admin	Delete user in CUCM and send email to Administrator defined in <i>Notification – Admin eMail Address</i>

#### **Delete User in CUCM to**

How will the delete event in CUCM handled by the driver:

Delete user in eDirectory	user will be deleted also in eDirectory
Notify Administrator	Association will be removed and an email will be sent to the Administrator defined in <i>Notification – Admin eMail Address</i>
Remove Association	Association in eDirectory will be removed

If you only remove the association in eDirectory the user will be recreated in CUCM as soon as an attribute, that is in the drivers filter, has changed!

#### **Notification – Admin eMail Address**

Enter the eMail address of the CUCM or eDirectory administrator receiving email from the driver.

#### **Notify the admin of password synchronization failure via e-mail**

Select *Yes* or *No* to notify the administrator of any password failure.

Press *Ok* to save your configuration.

#### 4.3.2.4 Start the driver

In iManager you do not have to deploy the driver. Click the status icon of the cucm driver and select *Start driver*.



## 4.4 Testing the driver

After you have successfully installed, deployed and started the driver we test the basic functionality of the driver. Go to iManager and create a user in the container you configured to synchronize.

<p>Username: * <input type="text" value="jsmith"/></p> <p>First name: <input type="text" value="John"/></p> <p>Last name: * <input type="text" value="Smith"/></p> <p>Full name: <input type="text" value="John Smith"/></p> <p>Context: * <input type="text" value="users.utopia"/>  </p> <hr/> <p>Password: <input type="password" value="••••"/></p> <p>Retype password: <input type="password" value="••••"/></p> <p><small>Note: Failure to enter a password will allow the user to login without a password.</small></p> <hr/> <p><input type="checkbox"/> Set simple password</p> <p><small>Note: Simple password is required for native file access for Windows and Macintosh users. (Not required when Universal password is enabled)</small></p> <hr/> <p><input type="checkbox"/> Copy from template or user object</p> <p><input type="text"/></p>	<p><small>Note: Simple password is required for native file access for Windows and Macintosh users. (Not required when Universal password is enabled)</small></p> <hr/> <p><input type="checkbox"/> Copy from template or user object</p> <p><input type="text"/></p> <hr/> <p><input type="checkbox"/> Create home directory</p> <p>Volume: <input type="text"/></p> <p>Path: <input type="text"/></p> <p><small>Note: Please enter an existing path where the user directory will be created.</small></p> <hr/> <p>Title: <input type="text"/>   </p> <p>Location: <input type="text"/>   </p> <p>Department: <input type="text" value="IDM Development"/>   </p> <p>Telephone: <input type="text"/>   </p> <p>Fax number: <input type="text"/>   </p> <p>E-mail address: <input type="text" value="john.smith@skypro.ch"/>   </p> <p>Description: <input type="text"/>   </p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Click *Ok* to create the user.

Start your web browser and go to the CUCM administration site e.g.

<https://ccm-sdk.cisco.com:8443/ccmadmin>

Login as Administrator and go the *User Management/End User*. Search for a user *First Name* starting with *John*.

Find User where	First name	begins with	John	Find	Clear Filter	+	-
<input type="checkbox"/>	User ID	First Name	Last Name	Department			
<input type="checkbox"/>	<a href="#">jsmith</a>	John	Smith	IDM Development			

Select user *jsmith* and display his details. You'll see, that John has been successfully provisioned to the CUCM.

**User Information**

User ID\*

Password

Confirm Password

PIN

Confirm PIN

Last name\*

Middle name

First name

Telephone Number

Mail ID

Manager User ID

Department

User Locale

Associated PC

Digest Credentials

Confirm Digest Credentials

Now we have to assign a device to John's account. Make sure that you already have assigned a valid line to the device. According to the lines that are assigned to the phones we are assigning to John, all numbers of these devices are synchronized to eDirectory.

<input type="checkbox"/>		Device Name	Directory Number	Description
<input checked="" type="checkbox"/>		SEP123456789012	123	SEP123456789012
<input checked="" type="checkbox"/>		SEP123456789012	125	SEP123456789012

In our example we assign one device to John. This device has to lines (123 and 125) assigned. So the phone numbers 123 and 125 are synchronized to the eDirectory attribute "Telephone Number".

User Information	
User ID*	<input type="text" value="jsmith"/>
Password	..... <input type="button" value="Edit Credential"/>
Confirm Password	.....
PIN	..... <input type="button" value="Edit Credential"/>
Confirm PIN	.....
Last name*	<input type="text" value="Smith"/>
Middle name	<input type="text"/>
First name	<input type="text" value="John"/>
Telephone Number	<input type="text"/>
Mail ID	<input type="text" value="john.smith@skypro.ch"/>
Manager User ID	<input type="text"/>
Department	<input type="text" value="International Sales"/>
User Locale	< None > ▼
Associated PC	<input type="text"/>
Digest Credentials	<input type="text"/>
Confirm Digest Credentials	<input type="text"/>

Device Associations	
Controlled Devices	<input type="text" value="SEP123456789012"/> <input type="button" value="Device Association"/>

Go back to eDirectory and have a look at John's phone number. The phone numbers have both been synchronized to eDirectory.

**Modify Object:** jsmith.users.utopia

General | **SecureLogin SSO** | User Profile | Kerberos | Certificates | Security

Identification | Environment | Group Memberships | Login Script | See Also | Postal Address

First name:	<input type="text" value="John"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Last name:	<input type="text" value="Smith"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Full name:	<input type="text" value="John Smith"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Generational qualifier:	<input type="text"/>
Middle initial:	<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Other name:	<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Title:	<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Location:	<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Department:	<input type="text" value="International Sales"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Telephone number:	<input type="text" value="123"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Fax number:	<input type="text" value="123"/> <input type="text" value="125"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
E-mail address:	<input type="text" value="john.smith@skypro.ch"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>
Description:	<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/> <input type="button" value="edit"/>

Congratulations! Your driver is working.