

# CA Identity Manager™

## Connectors Guide

12.6.4



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## CA Technologies Product References

This document references the following CA Technologies products:

- CA CloudMinder™ Identity Management
- CA Directory
- CA Identity Manager™
- CA Identity Governance (formerly CA GovernanceMinder)
- CA SiteMinder®
- CA User Activity Reporting
- CA AuthMinder™

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# Chapter 1: Endpoints, Connectors, and the Connector Server

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This guide describes how to use the following connector servers:

- CA IAM Connector server (CA IAM CS)
- C++ Connector Server (CCS)

The following products can use these connector servers to connect to endpoints:

- CA Identity Manager
- CA CloudMinder
- CA Identity Governance

In this guide, we refer to these products as *clients* of CA IAM CS.

For information about each connector, download the Endpoint Guide for that connector from the [Connector Download page](#).

## Audience

This guide is for administrators of CA IAM CS and CCS, who are responsible for the following tasks:

- Installing and configuring CA IAM Connector Server (CA IAM CS)
- Connecting to endpoint systems using CA IAM CS

## Endpoints

An endpoint is a specific installation of a platform or application which has identity and role data on it.

An endpoint can include the following systems:

- An operating system (such as Windows)
- A security product that protects an operating system (such as CA Top Secret and CA ACF2)
- An authentication server that creates, supplies, and manages user credentials (such as CA Arcot)
- A business application (such as SAP, Oracle Applications, and PeopleSoft)
- A cloud application (such as Salesforce and Google Apps)

For the full list of endpoints that you can connect to with CA IAM CS, see the [Platform Support Matrix](#).

## Connectors

A connector is the software that enables communication between CA IAM CS and an endpoint system.

For each endpoint that you want to manage, you must have a connector. Connectors are responsible for representing each of the managed objects in your endpoint in a consistent manner. Connectors translate add, modify, delete, rename, and search LDAP operations on those objects into corresponding actions against the endpoint system.

A connector acts as a gateway to a native endpoint type system technology. For example, to manage computers running Active Directory Services (ADS) install the ADS connector on a connector server.

CA IAM CS comes with many connectors. In addition, you can generate a dynamic connector using Connector Xpress, and you can develop a custom static connector in Java.

Users use Connector Xpress to generate and maintain the XML metadata for JDBC and JNDI dynamic connectors. Developers can also maintain data for other connectors manually, or adjust metadata for released connectors (for instance adding site-specific mappings for custom attributes).

## What Connectors Can Do

Each connector can perform the following operations on managed objects on the endpoint:

- **Add**
- **Modify**—Changes the value of attributes, including modifying associations between them (for example, changing which accounts belong to a group).
- **Delete**
- **Rename**
- **Search**—Queries the values of the attributes that are stored for an endpoint system or the managed objects that it contains.

For most endpoint types, all of these operations can be performed on accounts. These operations can also be performed on other managed objects if the endpoint permits it.

Some consuming applications can perform all of these operations. Other consuming applications perform only some of these operations.

### Example: What CA Identity Manager can do on an endpoint

CA Identity Manager manages identities on endpoints. It adds, modifies, deletes, and renames users, groups, and accounts.

### Example: What CA Identity Governance can do on an endpoint

CA Identity Governance monitors roles and permissions on endpoints. It searches for users, groups, roles, and permissions. It can also remove roles from a user. However CA Identity Governance cannot create or delete user accounts.

## Types of Connector

CA IAM CS has two types of connectors:

### **Java Connectors**

CA Technologies creates new connectors in Java, and CA IAM Connector Server (CA IAM CS) serves these connectors.

If you create a connector, use Java.

### **C++ Connectors**

Previously, CA Technologies created connectors in C++. These connectors still work well.

In addition, some consuming applications have their own connectors. CA Identity Manager has some plugin connectors, and CA Identity Governance has some import connectors.

## Connector Servers

Client applications can use a connector server to get data from the endpoints. Some client applications also manage some data on the endpoint. A connector server uses a connector to manage each endpoint.

- **CA IAM CS**—A Java connector server which can manage the following things:
  - All of the Java connectors
  - Any dynamic connectors that were created with Connector Xpress
  - C++ Connector Server (CCS) and its connectors, if CCS is present
- **CCS**—A C++ connector server which manages all of the C++ connectors.

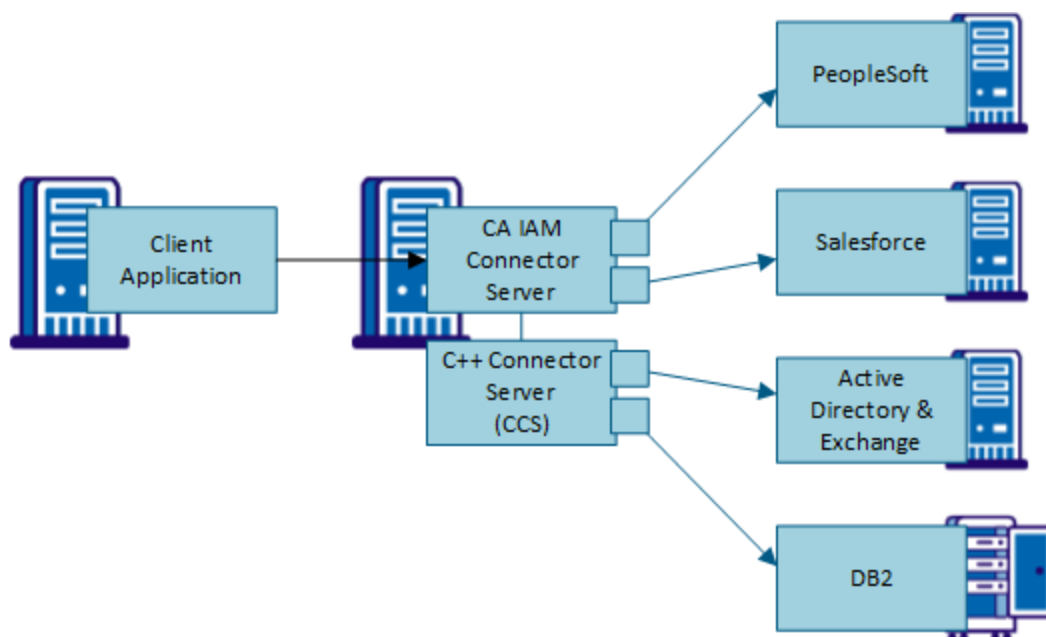
When you install CA IAM CS, you have the option to install CCS in a managed mode. If you do this, CA IAM CS manages CCS and the C++ connectors that it manages.

If you prefer to install CCS on its own, it manages the C++ connectors directly.

You cannot use both CA IAM CS and CCS to manage the same endpoint type

### Example: Two kinds of connectors

In this example, CA IAM CS serves the connectors for PeopleSoft and Salesforce. CCS serves the connectors for Active Directory and DB2.



## Where to Find Documentation for Connectors

CA Technologies documents how to set up and use each connector, and also how to fill in the relevant fields in endpoint-specific screens.

### **Connectors Guide and online help**

Until recently, each endpoint type was documented with a section in the CA Identity Manager Connectors Guide and a section in the online help for CA Identity Manager User Console. The Connectors Guide is available in the product bookshelf, and the online help comes with the User Console.

### **Endpoint Guide and attribute list**

An *Endpoint Guide* contains everything you need to know about setting up a connection to a particular endpoint type. An *attribute list* is an HTML page that describes every setting that is required for configuring a connector.

The Endpoint Guides and attribute lists are available on the [Connector Download page](#). To access this page, log in with your CA Support credentials.

We put documentation for any new connectors on this download page when the connector is released. A connector can be released at any time between releases of other products.

You can read the documentation, and then download the new connector from CA Support and use it with your consuming application. The new connector causes new pages to appear in some applications, including the CA Identity Manager User Console. However, any Help links for these new pages will not work until the connector is included in the next release of your consuming application.

# Chapter 2: Installation

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This section contains the following topics:

[Install CA IAM CS](#) (see page 17)

[Install Connectors](#) (see page 19)

[File Locations](#) (see page 21)

## Install CA IAM CS

The installation files for CA IAM CS are supplied with the installation files for products that use the connector server.

Alternatively, you can download the installation files from [support.ca.com](http://support.ca.com).

For information about how to install the connector server, search for "install CA IAM Connector Server" in the bookshelf for your product.

## CCS on Windows and UNIX

The C++ Connector Server (CCS) works slightly differently on Windows and on Solaris.

If you install CCS on UNIX, it can manage only some endpoints. To see a list of these endpoints, see the [Connector Support Matrix](#).

In addition, if you want CA IAM CS to manage CCS on UNIX, use the following sections for configuration.

### CCS for CA Identity Manager and on-premise CA CloudMinder

When you install CA IAM CS, choose the option to install with a remote CCS. This allows CA IAM CS on UNIX to route CCS requests to a CCS on Windows.

If you install CCS on Windows, register it with the Provisioning Server that was installed on Solaris. During installation, specify that this connector server is your default CCS.

You can access the other C++ connectors from the Solaris Provisioning Server by using a Connector Server Framework (CSF). The CSF allows a Provisioning Server on Solaris to communicate with connectors running on Windows.

### CCS for CA CloudMinder

The CCS is accessed through the on-premise CA IAM CS. If that CA IAM CS is installed on UNIX, configure it to use the CCS on Windows.

### CCS for CA Identity Governance

The CCS is accessed through the on-premise CA IAM CS. If that CA IAM CS is installed on UNIX, configure it to use the CCS on Windows.

## Install Connectors

CA IAM CS comes with many connectors. You do not need to install these connectors.

When we update a connector or create a new one, we post it on the [Connector Download page](#). If you want to add a new or updated connector, use this download page, as described in the following instructions.

### Follow these steps:

1. Navigate to the [Connector Download page](#).
2. Find your connector, then download its Endpoint Guide and its attribute list.  
**Note:** Not all connectors have an Endpoint Guide yet. For those that do not, use the link to the CA Identity Manager Connectors Guide.
3. Download the connector file. This ZIP file contains the following components:
  - A JAR file
  - A ZIP file that contains the connector JAR file plus other components that are required by the installer.
  - A readme that lists the connector version and other details
4. If CA IAM CS is already installed, put the JAR file into any local directory, then [deploy the connector](#) (see page 25).
5. If CA IAM CS is not installed, install the new connector when you install CA IAM CS:
  - a. Find the old connector ZIP file in the installation files for CA IAM CS, then rename the file.
  - b. Add the new connector ZIP file to the installation files for CA IAM CS. Ensure that the filename is the same as the old connector file.
  - c. Run the installer for CA IAM CS.  
The CA IAM CS installation program also installs the new connector.

The connector is now available for use.

## Contents of Downloaded ZIP File for a Connector

When you download a connector from the [Connector Download page](#), you receive a ZIP file. The ZIP file contains the following files:

- **A JAR file**—Contains the entire connector as an OSGi bundle. Deploy this file to replace the old connector in an existing installation.
- **A ZIP file**—Contains the entire connector in installable form. Use this file to replace the old connector in the installation files for CA IAM CS. This lets you install the new connector when you install the connector server.
- **An XML file**—(Optional) Contains the metadata for the connector. Use this with Connector Xpress if you want to add custom attributes to the connector.

The metadata files are also supplied in the JAR and ZIP files. This file is only supplied separately for connectors that support custom attributes.

- **A readme**—Lists the version of the connector.

### Example: Contents of the downloaded file for the ACF2 ACFESAGE connector

The name of the downloaded file is *acf2acfesage.zip*.

The downloaded ZIP contains the following files:

- acf2acfesage\_metadata.xml
- jcs-connector-acfesage-1.1.0.jar
- jcs-connector-acf2acfesage.zip
- readme.txt

### Example: Contents of the downloaded file for the Google Apps connector

The name of the downloaded file is *google-apps.zip*.

The downloaded ZIP contains the following files:

- jcs-connector-gab-1.1.0.jar
- jcs-connector-gab.zip
- readme-google-apps.txt

This connector does not support custom attributes, so the metadata file is not supplied separately.

## File Locations

This guide uses the following abbreviations for installation locations:

- *cs\_home*: Installation directory of CA IAM Connector Server (CA IAM CS)
- *cs\_sdk\_home*: Installation directory of the Connector Server SDK
- *conxp\_home*: Installation directory of Connector Xpress

### Location of the CA IAM CS Files in the Installers

The installation files for the CA products that use CA IAM CS each contain the CA IAM CS files. However these installation files for CA IAM CS are supplied in different locations in each client:

- **CA Identity Manager**: The connector files are in the following location:  
Provisioning\ConnectorServer
- **CA CloudMinder**: The connector files are in the following location:  
Servers\ConnectorServer
- **CA Identity Governance**: The connector files are in the following location:

## Location of the Connector Files in CA IAM CS

### Default Installation Locations

When you install CA IAM CS, you can define its installation location, or you can accept the default location.

The following tables list the default installation locations for the client products that use CA IAM CS.

#### Default Installation locations for CA Identity Manager

The locations in this table also apply to an on-premise installation for CA CloudMinder.

Component	Default Location
<b>CA IAM CS</b> <i>cs_home</i>	<b>Windows:</b> C:\Program Files\CA\Identity Manager\Connector Server <b>UNIX:</b> /opt/CA/IdentityManager/ConnectorServer
<b>Connector SDK</b> <i>cs_sdk_home</i>	<b>Windows:</b> C:\Program Files\CA\Identity Manager\Connector Server SDK <b>UNIX:</b> /opt/CA/IdentityManager/ConnectorServerSDK
<b>Connector Xpress</b> <i>conxp_home</i>	<b>Windows:</b> C:\Program Files\CA\Identity Manager\Connector Xpress <b>UNIX:</b> /opt/CA/IdentityManager/ConnectorXpress

### Default Installation locations for CA CloudMinder

This table shows the location of CA IAM CS when it is installed as part of a cloud installation.

Component	Default Location
CA IAM CS <i>cs_home</i>	Linux: /opt/CA/IdentityManager/ConnectorServer

### Default Installation locations for CA Identity Governance

Component	Default Location
CA IAM CS <i>cs_home</i>	Windows: C:\Program Files\CA\RCM\Server\Connector Server UNIX:
Connector SDK <i>cs_sdk_home</i>	Windows: UNIX:
Connector Xpress <i>conxp_home</i>	Windows: UNIX:



# Chapter 3: Managing Connectors

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This section contains the following topics:

[Deploy a Connector](#) (see page 25)

[Restart a Connector](#) (see page 26)

[Add a Third-Party Library to a Connector](#) (see page 27)

[Add a Certificate for a Connector](#) (see page 28)

[Find the Version of a Connector](#) (see page 29)

[Customize the Configuration for a Connector](#) (see page 29)

## Deploy a Connector

CA IAM CS lets you hot-deploy connectors. This means that you can add, start, stop, and remove connectors while CA IAM CS is running.

You can deploy connectors that came with your product, and connectors that you downloaded from the CA Support site.

### Follow these steps:

1. If required, [install the connector](#) (see page 19).
2. [Log in to CA IAM CS](#) (see page 31).
3. At the top, click the Connector Servers tab.
4. In the Connector Server Management area, click the Bundles tab.
5. In the Bundles area on the right, click Add.
6. Browse to a connector bundle JAR, then select the connector server on which this connector will be available.

You can select Start Bundle to have it start automatically after loading, or you can start it yourself later.

7. Click OK.

The new bundle appears in the Bundles list.

8. Right-click its name in the list, then choose Start from the popup menu.

## Restart a Connector

Restarting a connector is useful when you have changed some configuration and you want the connector to use the new setting.

These instructions apply to connectors that CA IAM CS manages.

**Follow these steps:**

1. [Log in to CA IAM CS](#) (see page 31).
2. Click the Connector Servers tab.
3. Click the Bundles tab.
4. Select the correct connector server from the Server Filter list.
5. Right-click on the connector, then select Refresh Imports.

The selected connector restarts, and any bundles that depend on that connector also restart.

## Add a Third-Party Library to a Connector

The following connectors require libraries that do not ship with CA IAM CS:

- [SecurID RSA 7](#) (see page 264)
- SAP R3
- [Oracle PeopleSoft](#) (see page 263)
- [Lotus Domino](#) (see page 195)

If you want to use one of these connectors, you must add the required libraries to the connector bundle.

**Follow these steps:**

1. Download the required libraries.
2. Run the relevant script in this location:

```
cs-home/bin
```

The script prompts for the location of the files that you downloaded.

The script creates a bundle for the libraries, and saves the bundle in the same folder as the script.

3. [Log in to CA IAM CS](#) (see page 31).
4. At the top, click the Connector Servers tab.
5. In the Connector Server Management area, click the Bundles tab.
6. Add the new bundle:

Note: You can deploy the OSGI bundle from the connector server GUI or copy the jar files to `ca-home/jcs/data/bundles/restore`. Then restart the connector server and wait up to ten minutes for it to load.

- a. In the Bundles area on the right, click Add.
- b. Browse to the bundle that the script created, then select the connector server on which this connector will be available.
- c. Click OK.

The new bundle appears in the Bundles list.

7. Find the main connector bundle in the Bundles list, then right-click its name in the list and select Refresh Imports from the popup menu.

The connector can now use the third-party library bundle.

## Add a Certificate for a Connector

CA IAM CS has its own keystore. You can add trusted certificates (either standalone certificates or keystores) to this keystore, using the Certificates tab.

When you work with CA IAM CS certificates, your changes apply only to the connector server that you are logged in to. The certificates for any peer connector servers remain unchanged.

**Follow these steps:**

1. [Log in to CA IAM CS](#) (see page 31).
2. Click the Certificates tab.

This tab lists all of the certificates in the CA IAM CS keystore. To filter the list of certificates by their names, type in the Certificate Filter box.

3. Click Add, then enter the details of the certificate:
  - a. Select Certificate if the target is a standalone certificate file, or Key Store, if it is saved in a keystore.
  - b. Browse to the certificate, select it, and click Add.
  - c. Enter the alias. If you selected Key Store, this alias identifies the certificate in the keystore.
  - d. If you selected Key Store, enter the keystore password.

The certificate or keystore is added to the CA IAM CS keystore, and the certificate is available for use by connectors.

Note the following information:

- To download a certificate, select it then click Download. You can download a certificate for either a private key or trusted certificate. You can then import this file another component, such as another instance of CA IAM CS.
- To delete a certificate from the CA IAM CS keystore, select it then click Remove. You can remove any trusted certificate from the CA IAM CS keystore. However, you cannot remove private key entries, because these keys are required by CA IAM CS.
- You cannot use the Certificates tab to manage private keys. Instead, update the Java keystore file and restart CA IAM CS.

## Find the Version of a Connector

To determine the version of a connector that is already installed, use CA IAM CS.

The version of a bundle has the following format:

n.n.n.yyyymmdd

The first three numbers are separated by periods. These numbers represent the version of CA IAM CS that the connector was supplied with. The remaining digits represent the release date of the connector itself.

In this example, the connector was released on 21 January 2013, and it was released with CA IAM CS 1.1.0:

1.1.0.20130121

**Follow these steps:**

1. [Log in to CA IAM CS](#) (see page 31).
2. Click the Bundles tab.

The version of each bundle is shown in the Version tab.

## Customize the Configuration for a Connector

The configuration for each connector is stored in `connector.xml` in `cs_home/jcs/conf/`. Each connector also has the following files in `cs_home/jcs/conf/override/connector`:

- **connector.xml**—Use this file to override settings. By default this file is identical to the main version of `connector.xml`.
- **SAMPLE.connector.xml**—This template file contains common customizations.

**Follow these steps:**

1. Rename `connector.xml` so that you can revert to it later if you need to.
2. Copy `SAMPLE.connector.xml` and rename the copy to `connector.xml`.
3. Edit the newly renamed file.
4. [Restart the connector](#) (see page 26).

## Change Pool Settings

To maximize scalability for a connector by configuring it to match expected usage patterns, you can change pool-related settings.

Connection pooling is configured through the `connector.xml` file for an individual connector, rather than in the `server_jcs.xml` global configuration file.

Most connectors use a connection pool configured in `connector.xml`, for example, through:

- `poolConfig` for JNDI and most connectors.

**Note:** For more information, see the Class `GenericObjectPool` on <http://jakarta.apache.org>

- `dataSourceConfigProps` for JDBC

**Note:** For more information, see <http://jakarta.apache.org> for a complete list and documentation of available configuration parameters.

### Follow these steps:

1. Copy `cs_home/conf/override/jdbc/SAMPLE.connector.xml` and rename the copy to `connector.xml`.
2. Edit the `connector.xml` file.
3. [Restart the connector](#) (see page 26).

# Chapter 4: Managing CA IAM CS

---

This section contains the following topics:

[Log In to CA IAM CS](#) (see page 31)

[Start and Stop CA IAM CS](#) (see page 32)

[Logging for CA IAM CS](#) (see page 32)

[Change the Administrator Password for CA IAM CS](#) (see page 38)

[Connect to CA IAM CS from JXplorer](#) (see page 39)

[Find the Version of CA IAM CS](#) (see page 39)

## Log In to CA IAM CS

You can use a web browser to log on to CA IAM CS from any computer, using details that you specified during installation.

Use the following URL:

`http://hostname:port`

**hostname**

Specifies the name of the computer running CA IAM CS, as a fully qualified domain name

**port**

Specifies the HTTP or HTTPS port that was set during installation.

**Example URLs for CA IAM CS**

`http://myserver.mycompany.org:20080`

`https://myserver.mycompany.org:20443`

## Start and Stop CA IAM CS

You can start and stop CA IAM CS using the following methods.

- **UNIX daemon**—The installation process creates a startup script named *im\_jcs* and links it to the rc.d system on the local system. The script automatically runs CA IAM CS in run levels 2-5, or shuts it down on 0,1, and 6 corresponding to *system halt*, *single user mode*, and *reboot*.

Use the following commands to start, restart, and stop the daemon:

```
/etc/init.d/im_jcs start
/etc/init.d/im_jcs restart
/etc/init.d/im_jcs stop
```

Use the following command to display the status of the daemon:

```
/etc/init.d/im_jcs status
```

- **Windows service**—Start and stop the CA Identity Manager - Connector Server (Java) service.
- **Windows command line**—Use the following commands to start and stop the service:

```
net start im_jcs
net stop im_jcs
```

## Logging for CA IAM CS

You can see log files for the following components:

- Logging for CA IAM CS
- Logging for each endpoint type

## View a Log

You can view a log by reading a text file, or through a web browser.

To see the 500 most recent log messages, [log in to CA IAM CS](#) (see page 31), and click the Logs tab.

To see an entire log, open one of the following files from `cs_home\jcs\logs`:

Log File Name	Description
<code>jcs_daily.log</code>	Today's logging from CA IAM CS. These messages are also displayed in the Logs tab.
<code>jcs_daily.log.YYYYMMDD</code>	<code>jcs_daily.log</code> for a particular date
<code>servicemix.log</code>	All the content from the <code>jcs_daily.log</code> , plus some additional messages from ServiceMix. ServiceMix is the toolkit with which CA IAM CS was created.
<code>servicemix.log.YYYYMMDD</code>	<code>servicemix.log</code> for a particular date
<code>endpoint-type/jcs_conn_connector-name.log</code>	Logging for a connector
<code>endpoint-type/jcs_conn_connector-name.log.YYYYMMDD</code>	Logging for a connector for a particular date

When you are trying to identify a fault, we recommend that you start with `jcs_daily*` files and work downwards to the connector-specific log files.

## Configure Logging for CA IAM CS

The `jcs_daily.log` and `servicemix.log` files that are listed in [View a Log](#) (see page 33) are configured in a text file. You can modify the file to change the following aspects of logging:

- The logging levels for each of the components in CA IAM CS.
- Whether log files are appended daily
- The formatting of the lines that are written to the log

By default, the logging configuration is minimal, so that performance is not reduced.

If you find a problem with a connector or CA IAM CS, contact CA Support. Before you send your logs to the support team, we recommend that you configure the logging to capture detailed information.

### Follow these steps:

1. Identify how to trigger the problem with your deployment.
2. Replace the default logging configuration file with the verbose configuration:
  - a. Find the following file:  
`cs_home/etc/org.ops4j.pax.logging.cfg`
  - b. Rename this file to `org.ops4j.pax.logging.cfg.original`.
  - c. Find `org.ops4j.pax.logging.cfg.verbose` and rename it to remove `.verbose`. This file will now provide the logging configuration.
  - d. Restart CA IAM CS.
3. Trigger the problem that you have identified.
4. Zip the entire `cs_home/logs` directory, and include the zipped file with your support request.
5. To reduce the logging level, reverse step 2:
  - a. Rename `org.ops4j.pax.logging.cfg` to `org.ops4j.pax.logging.cfg.verbose`.
  - b. Rename `org.ops4j.pax.logging.cfg.original` to `org.ops4j.pax.logging.cfg`.
  - c. Restart CA IAM CS.

**Note:** You can also edit `org.ops4j.pax.logging.cfg` in a text editor.

## Configure Logging for a Connector

Each endpoint type has a configuration file that defines its logging. You can configure the logging for a particular connector by sending LDAP commands to CA IAM CS.

The endpoint log files contain most of the logging data for the relevant connector. However, also look for relevant logging in the `jcs_daily.log*` systemwide log file. Messages can be logged to the systemwide file for the following reasons:

- A connector uses third-party libraries.
- A connector was developed (using Connector Xpress or the SDK) without sufficient attention to logging.
- Problems occur while creating or activating a connector.

### Follow these steps:

1. With an LDAP client, bind to CA IAM CS using the following details:
  - Port: 20410 (LDAP) or 20411 (LDAPS)
  - User: `cn=root,dc=etasa`
  - Password: Use the password that was specified during installation
2. Find the entry with the following DN:
 

```
eTDYNDirectoryName=${CONN},eTNamespaceName=${CONN_TYPE},dc=${DOMAIN},dc=etasa
```

You can enable and configure logging by changing the attributes of this entry.
3. To enable logging for a connector, modify the following attribute:
  - `eTLog=1` (active)
4. To configure the logging level for a connector, include the following attributes:
  - `eTLogDestination='F'` (file)
  - `eTLogFileSeverity=severity-code`

Use the following severity codes:

Logging Level	Severity in Provisioning Server	Severity Code in Provisioning Server
DEBUG	Information	I
INFO	Non-Admin Success	S
WARN	Warning	W
ERROR	Error	E
FATAL	Fatal	F

## Increase the Number of Log Messages Seen

When you log in to CA IAM CS to view log messages, you can see only the 500 most recent messages. These messages are kept in memory, which is why so few can be seen.

You can filter which messages are shown on the Logs tab, using the options under the Logs heading. These filters apply to the 500 most recent messages. They do not change the way that CA IAM CS records log messages.

You can configure the page to display more or fewer messages.

### Follow these steps:

1. Open the following file in a text editor:

```
cs_home/etc/org.apache.karaf.log.cfg
```

2. Find and edit the following setting:

```
size = 500
```

**Note:** If you set the size too high, CA IAM CS becomes slower.

3. Save the file.
4. Restart CA IAM CS.

## Interpreting Log Messages

All log messages include the following information:

### **Date and time**

The timestamp on the local host when the message was logged. The date and time use ISO8601 format.

### **Elapsed time**

The number of milliseconds elapsed since the server started.

### **Thread name**

The thread that logged the message, for example *[Timer-1]*.

### **Bundle name, class name, and line number**

The bundle that contains the executed code, the class from which the message came, and the line number (if this number is available). This section uses the following format:

*(bundle-name: class-name: line)*

For example:

*(com.ca.jcs.core:com.ca.jcs.osgi.listener.ImplBundleServiceList  
ener:123)*

### **Severity level**

The severity of the message:

- Error
- Warning
- Info
- Debug

### **Message**

The actual log message.

## Change the Administrator Password for CA IAM CS

To ensure better security across a deployment you can change the password of the administrative user of CA IAM CS.

CA IAM CS remembers all passwords for all users since it was last restarted. All of these passwords are accepted as valid for bind requests. Each user can reset only their own cache.

The cache of old passwords is useful for a system where many applications connect to one connector server. In this situation, the applications may not update their stored passwords for CA IAM CS at the same time, but they can still access the connector server.

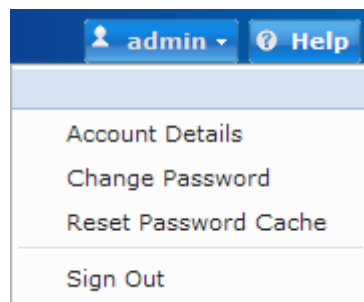
However, these old passwords make your system potentially insecure. To make the connector server forget the old passwords, clear the password cache. To clear a password cache, you must be logged in as that user.

### Follow these steps:

1. Log in to CA IAM CS as the administrator and change the password.
2. Update the password stored in all provisioning servers and any other clients that connect to CA IAM CS.
3. Log in to CA IAM CS as the administrator.
4. Choose the Reset Password Cache option in your username menu in the top right.

The following example shows the menu for a user named *admin*:

*Figure 1: The menu under your user name contains the options "Account Details, "Change Password" and "Reset Password Cache"*



## Connect to CA IAM CS from JXplorer

You can use the following parameters to connect to CA IAM CS from an LDAP browser such as JXplorer.

These settings are configured in `server_osgi_jcs.xml`. Changing the User DN is problematic because of assumptions within ApacheDS. To avoid problems, `server_osgi_jcs.xml` includes the property `java.naming.security.principal.alias`. This property simulates use of a different user DN, as an alias to "uid=admin,ou=system".

### Host

Specifies the host server name of CA IAM CS

### Protocol

LDAP v3

### Port

Default port number: 20411, when using level: SSL + User + Password (TLS)

20410, when using the less safe level: User + Password

### User DN

uid=admin,ou=system

### Password

As configured during installation.

**Note:** For more information on JXplorer, see <http://www.jxplorer.org>.

## Find the Version of CA IAM CS

To determine the version of your CA IAM CS installation, look in the following file:

`cs_home/version.properties`



# Chapter 5: Configuring CA IAM CS

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This section contains the following topics:

[Configuration Files for CA IAM CS](#) (see page 41)

[Customize the Configuration for CA IAM CS](#) (see page 47)

[Java Virtual Machine Memory Errors](#) (see page 52)

[Edit JVM Memory Options](#) (see page 53)

[Adjust the Start Parameters for the CA IAM CS Service \(Windows Only\)](#) (see page 53)

## Configuration Files for CA IAM CS

The configuration files for CA IAM CS are in the following location:

`cs_home/jcs/conf`

- **server\_osgi\_jcs.xml**—Configures CA IAM CS and some connector behavior
- **server\_osgi\_ad.xml**—Configures the LDAP binding
- **server\_osgi\_ccs.xml**—Configures communication to the CCS (if CA IAM CS manages the CCS)
- **server\_osgi\_ui.xml**—Configures the user interface for CA IAM CS
- **server\_osgi\_common.xml**—Configures common items such as security and data persistence
- **server\_osgi\_shared.xml**—Contains settings for use by different components

**Note:** Any changes that you make to these files are lost when you upgrade CA IAM CS. We recommend that you use the properties files in `cs_home\conf\override`, as described in [Customize the Configuration for CA IAM CS](#) (see page 47).

## server\_osgi\_jcs.xml

The server\_osgi\_jcs.xml file contains the following configuration settings:

### **connectorClientCertStore**

Specifies the client certificate store for CA IAM CS. The value is a path to the file which contains trusted certificates that are used to verify the identity of the endpoint server during SSL handshakes. Used for outbound TLS connections that the connectors make themselves, to the endpoint systems they manage. Import any issuer certificates for the endpoints to which TLS connections into this store.

### **connectorClientCertStoreType**

Specifies the certificate store type (JKS or PKCS12).

### **connectorClientCertStorePassword**

Specifies the password protecting the connector client store. The same rules apply as for the IdapsCertificatePassword.

### **connectorSSLVerifyPeer**

#### **False (default)**

During SSL handshakes the peer certificate that the endpoint sends is not verified for trust. That is, the connectorClientCertStore value is ignored and not required for outbound SSL connections in this configuration.

#### **True**

The endpoint host certificate that is presented to CA IAM CS undergoes trust checks against connectorClientCertStore contents.

### **connectorSSLTrace**

When TRUE, sends SSL information to a log file.

### **httpProxyConfiguration**

Enables or disables the HTTP proxy, and configures the proxy details. Use a proxy if CA IAM CS must communicate with other computers outside the network.

The HTTP proxy can be configured when CA IAM CS is installed. You can change it later by updating this value in the configuration file.

## server\_osgi\_ad.xml

### **java.naming.security.authentication**

Specifies the authentication methods. Only *simple* is currently supported.

### **java.naming.security.principal**

Specifies the authentication principal. By default, ApacheDS sets this value to *uid=admin,ou=system* by ApacheDS, but an optional `java.naming.security.principal.alias=` can be specified to ease integration. When this alias is received for authentication, it is treated exactly as *uid=admin,ou=system*.

### **maxThreads**

Specifies the maximum number of requests that can be processed concurrently for all activated connectors that a single connector server hosts. The default value of 200 matches the Provisioning Server configuration.

If you increase this value, consider also increasing other configuration settings. For example, you can change the heap-space for the Java Virtual Machine or "ulimit -n" setting for open files on Solaris.

**Note:** For more information, see [Configure CA IAM CS to Work Under Heavy Loads \(UNIX Only\)](#) (see page 50).

### **ldapPort**

Specifies the port on which CA IAM CS listens for insecure connections. Set the port to one of the recommended ports unless many connector servers run on the same computer. Where a secure port is configured, use the secure port instead.

The insecure port can be useful for debugging purposes. By default, CA IAM CS uses only `ldapsPort`.

Set the port to one of the following port numbers:

- Production: 20410
- Development: 20412

### **ldapsPort**

Specifies the port on which CA IAM CS listens on for secure connections. The `ldapsPort`, with associated properties `enableLdaps`, `ldapsCertificateFile`, `ldapsCertificateFile`, and `ldapsCertificatePassword`, must be a different port from the one chosen for `ldapPort`. Traffic on this port is secured using the configured certificate and the Transport Layer Security (TLS) protocol.

`ldapsPort` can also be useful for debugging. Set the logging level in the `log4j.properties` file to trace LDAP requests as they are delivered to the connector server.

Set the port to one of the following port numbers:

- Production: 20411
- Development: 20413

The `ldapsCertificateFile` is configured to reference a Java keystore containing the standard IM Provisioning Server certificate. The default `ldapsCertificatePassword` was set during installation.

#### **bootstrapSchemas**

Specifies which LDAP schemas the connector server knows. This property incorporates schemas which have been converted to Java objects by the ApacheDS build process.

You can load additional OpenLDAP formatted schema files (see <http://www.openldap.org/doc/admin23/schema.html>) by placing them in the `conf` directory (like `eta_dyn_openldap.schema`) or ideally contributed from the `conf/` directory within a specific connector's `JCS-connector-*.jar` file (refer to SDK connector's `conf/etaeta_sdk_openldap.schema_nds_openldap.schema` registered through its `conf/connector.xml` descriptor in the `jcs-connector-sdk.jar` sample connector).

#### **ldapsCertificateFile**

Specifies the path to an LDAPS certificate store for CA IAM CS. This store contains all the certificates that CA IAM CS uses to verify its identity during inbound LDAPS (TLS) connections. At least one certificate with an accompanying private key issued to represent CA IAM CS is placed in this store.

To change this value, add it to `server_osgi_shared.xml`. Values in this file overwrite any in `server_osgi_ad.xml`.

#### **ldapsCertificatePassword**

Specifies the password protecting the certificate store specified in `ldapsCertificateFile`.

The password can either be cleartext or obfuscated. For example:

```
{ALGORITHM}ciphertext
```

where ALGORITHM would be typically set to 'AES'. For example, `{AES}LQpBXeljOMGSsGLU`

See The Password Tool.

#### **interceptorConfigurations**

Specifies any other standard ApacheDS interceptor services. The interceptor services that CA IAM CS does not require have been deactivated.

## server\_osgi\_common.xml

### **cryptoService**

Configure the crypto service for activating encryption convertors on specific fields according to their metadata properties. The most important setting is the `isEncrypted` boolean metadata setting.

### **jcsSslContext**

Contains the path to the Java certificate keystore file in properties “`keyStore`” and “`trustStore`”.

### **jcs-broker**

Contains the HTTP and HTTPS ports that CA IAM CS uses for sending and receiving messages.

### **jmsCredentials**

Contains the user name and password for accessing the broker.

## server\_osgi\_shared.xml

### **fipsEnabled**

Enables or disables FIPS compliance.

**Default:** Enabled.

### **camelTimeoutConfiguration**

Contains the timeout periods for messages. When a timeout is reached, CA IAM CS returns an error to the user or to the service that was expecting a response.

### **defaultMessageTimeout**

The default message timeout (30 minutes).

### **oneLevelSearchMessageTimeout**

The timeout for a one-level LDAP search (1 hour).

### **subtreeSearchMessageTimeout**

The timeout for a subtree LDAP search (8 hours).

### **managementMessageTimeout**

The timeout for messages coming from the web UI (60 seconds).

### **connectionErrorTimeout**

The timeout after a connection error occurs (60 seconds).

### **httpInactiveClientTimeout**

The time before an ideal HTTP connection is considered inactive (2 minutes).

### **httpSocketTimeout**

Default socket timeout for HTTP clients (60 seconds).

### **httpRetryCount**

The number of times an HTTP operation can be retried (3).

## server\_osgi\_ccs.xml

### **proxyConnectionConfig**

The connection details to a local or remote CCS.

## Customize the Configuration for CA IAM CS

Previous versions of this connector server were named Java CS or JCS. From CA Identity Manager 12.6 onwards, the connector server is named CA IAM CS. At the same time, we changed the way configuration is handled.

The configuration for CA IAM CS is stored in five configuration files, which are described in [Configuration Files for CA IAM CS](#) (see page 41).

When you upgrade CA IAM CS, any changes you made to the XML configuration files are lost. This loss happens whether you are upgrading from Java CS or from CA IAM CS.

However, any changes you made to the following files are preserved:

- `cs_home\conf\override\server_jcs.properties`
- `cs_home\conf\override\server_ad.properties`
- `cs_home\conf\override\server_shared.properties`
- `cs_home\conf\override\server_ui.properties`
- `cs_home\conf\override\server_common.properties`
- `cs_home\conf\override\server_ccs.properties`

The settings in these files override the settings in the XML configuration files.

For this reason, we recommend that you do not change the settings in the XML configuration files. Instead, add any settings that you want to configure to the properties files in the *override* folder.

**Note:** Each XML configuration file has a matching override file. However, the filenames of the override files do not contain *\_osgi*. Otherwise they match. For example, *server\_ad.properties* is the override file for *server\_osgi\_ad.xml*.

### Follow these steps:

1. If the properties file does not exist, copy the matching sample file and change its name.
2. Open the properties file in a text editor.
3. Edit the values for any of the settings already in the file.
4. If you want to customize other settings, add them to the properties file.

Ensure that you use property names that match the nested structure of the entries in the XML configuration files.

5. Save the edited properties file.
6. Restart CA IAM CS.

## Retry Configuration

You can configure the Exception Map setting to contain groups of exception messages that require special handling (and optionally associated retry delay and retry count settings).

In particular, the JDBC connector defines entries for exceptions signifying these conditions which drive retrying when connections to the endpoint experience problems:

- **Stale**—The connection to the endpoint has become stale and is reestablished immediately.
- **Retriable**—The connection to the endpoint has encountered a transient soft failure, in which case a retry loop is started with the configured count and delay. If the count is exhausted before connectivity is restored, then the current request is considered to have suffered a hard failure which is reported to CA IAM CS.
- **Busy**—The endpoint has reported it is too busy to complete a request in which case a retry loop is started with a separate retry delay and count settings. For example, the MSSQL database reports deadlock exceptions when it is unable to complete processing a transaction within a certain time interval. The delay and recount settings are typically much longer than the Retriable case.

In addition to these triggering exceptions, each ExceptionRetryGroup has associated resilientDelay and resilientMaxRetries settings which specify how many retry attempts are required when a matching exception is encountered, and the delay between each attempt.

## Disable FIPS for CA IAM CS

When you install CA IAM CS, you can enable FIPS. If you upgrade to CA IAM CS from a Java CS that had FIPS enabled, it is still enabled after the upgrade.

In either of these situations, you can disable FIPS without running the installation program again.

The FIPS setting is in the `server_osgi_shared.xml`. We recommend that you customize this setting in an override file.

### Follow these steps:

1. Open the following properties file in a text editor:

```
cs_home/conf/override/server_shared.properties
```

If it does not already exist, follow the steps in [Customize the Configuration for CA IAM CS](#) (see page 47) to create it.

2. Find the following setting, or add it to the file:

```
JsafeJCE.fipsEnabled=false
```

3. Ensure that the setting is not commented out with a # character.
4. Save the edited properties file.
5. Restart CA IAM CS.

## Configure CA IAM CS to Work Under Heavy Loads (UNIX Only)

We recommend that you consider carefully the *ulimit -n* setting for the user for which you install CA IAM CS. The default setting is too low to allow CA IAM CS to function properly under load.

When this problem occurs the Java virtual machine shuts down and the following message appears in the `jcs_daily` log:

```
exiting because of 120 exceptions in a row: Too many open files
```

CA IAM CS requires a minimum `ulimit -n` setting of around 80.

### Follow these steps:

1. Find out the value of `maxThreads`.

The default value is stored in the following file:

```
cs_home/jcs/conf/server_osgi_ad.xml
```

If a custom value has been specified, it is stored in the following file:

```
cs_home/jcs/conf/override/server_ad.properties
```

2. Calculate the best `ulimit` value, using the `maxThreads` value:

- $ulimit = 50 + 2 \times maxThreads$

3. Set the `ulimit` value.

## Set the TLS Store Certificate Password

CA IAM CS uses two certificates: one for each of the following roles:

- **CA IAM CS as a server**—When LDAP and client requests a TLS-secured connection, CA IAM CS acts as an LDAP server. CA IAM CS uses a certificate to secure this communication.
- **CA IAM CS as a client**—When CA IAM CS requests a secure connection with an endpoint, CA IAM CS acts as a client. It uses a different certificate to secure this communication.

When you install CA IAM CS these certificates each have a temporary password. We recommend that you update these passwords.

By default, these certificates are stored in the same keystore. However you can store them in separate keystores if you prefer.

### Follow these steps:

1. Stop CA IAM CS.
2. Open a command prompt, then change to the following directory:

```
cs_home/jcs/tools/ldaps_password
```

3. Use the following command to update the password of the keystore for the **server**:

```
ldaps_password new-password
```

This command updates the encrypted *commonConfiguration.keystorePassword* value in *server\_shared.properties*.

4. Use the following command to update the password of the keystore for the **client**:

```
ldaps_password new-password  
connectorManager.connectorClientCertStorePassword  
../conf/override/server_jcs.properties
```

This command updates the encrypted *connectorManager.connectorClientCertStorePassword* value in *server\_jcs.properties*.

**Note:** The password for the keystore is the password that you set during CA IAM CS installation.

5. Restart CA IAM CS.

**Note:** Alternatively, you can manage the keystore using the *keytool* utility included in the Java Runtime Environment. This lets you install your own certificate instead of the default Provisioning Server certificate that the installer configures.

## Java Virtual Machine Memory Errors

During stress or high load, the Java Virtual Machine can run out of memory. This may affect the functionality of CA IAM CS.

If an out-of-memory error occurs frequently, you can set Java VM debugging options to alert you when it happens.

To do this, use the following debugging setting to specify a command that the Java VM will invoke when the OutOfMemoryError is thrown:

```
-XX:OnOutOfMemoryError= string
```

**Note:** For more information about setting JVM debugging options, see the following pages on [www.oracle.com](http://www.oracle.com):

- [Java HotSpot VM Options](#)
- [Using JVM Options to Help Debug](#)

## Edit JVM Memory Options

If the Java process runs out of memory, you can increase the memory available to it.

### On Windows, Follow these steps:

You can edit the JVM memory options `JvmMs` and `JvmMx` which define the minimum and maximum amount of memory that the JVM can use. To do this, locate the following registry key on Windows and expand it:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Identity Manager\Procrun 2.0\im_jcs
```

### On UNIX, Follow these steps:

Create a file named `jvm_options.conf` in the Connector Server data folder with the following Java arguments:

```
-Xms128M -Xmx1024M -d64
```

#### **-Xms**

Specifies the minimum heap memory allowed for CA IAM CS

**Example:** `-Xms128M` specifies that the minimum heap memory allowed for CA IAM CS is 128 MB.

#### **-Xmx**

Specifies the maximum heap memory allowed for CA IAM CS.

**Example:** `-Xmx1024M` specifies that the maximum heap memory allowed for CA IAM CS is 1024 MB.

#### **-d64**

Specifies that the JVM is run in a 64-bit environment.

## Adjust the Start Parameters for the CA IAM CS Service (Windows Only)

To adjust any CA IAM CS service start (including related JVM parameters), go to the following location in the Windows registry:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Identity Manager\Procrun 2.0\im_jcs
```



# Chapter 6: Connecting to Endpoints

---

This section contains the following topics:

- [CA Access Control Connector](#) (see page 56)
- [CA ACF2 Connector](#) (see page 80)
- [CA ACF2 v2 Connector](#) (see page 80)
- [CA Arcot Connector](#) (see page 80)
- [Embedded Entitlements Manager Connector](#) (see page 81)
- [CA DLP Connector](#) (see page 84)
- [CA SSO Connector for Advanced Policy Server](#) (see page 98)
- [CA Top Secret Connector](#) (see page 108)
- [CA Top Secret v2 Connector](#) (see page 109)
- [Google Apps Connector](#) (see page 109)
- [IBM DB2 UDB Connector](#) (see page 111)
- [IBM DB2 UDB for z/OS Connector](#) (see page 118)
- [IBM i5/OS \(OS/400\) Connector](#) (see page 124)
- [Kerberos Connector](#) (see page 139)
- [LDA Connector Migration to DYN JNDI](#) (see page 184)
- [Lotus Domino Connector](#) (see page 195)
- [Microsoft Active Directory Connector](#) (see page 231)
- [Microsoft Exchange Connector](#) (see page 232)
- [Microsoft Office 365](#) (see page 232)
- [Microsoft SQL Server Connector](#) (see page 232)
- [Microsoft Windows Connector](#) (see page 233)
- [Oracle Applications Connector](#) (see page 248)
- [Oracle Connector](#) (see page 258)
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- [RSA ACE \(SecurID\) Connector](#) (see page 264)
- [RSA Authentication Manager SecurID 7 Connector](#) (see page 276)
- [Salesforce.com Connector](#) (see page 367)
- [SAP R/3 Connector](#) (see page 383)
- [SAP UME Connector](#) (see page 383)
- [Siebel Connector Introduction](#) (see page 384)
- [UNIX ETC and NIS Connector](#) (see page 398)
- [UNIX v2 Connector](#) (see page 424)

## CA Access Control Connector

The CA Access Control Connector lets you administer accounts and groups on CA Access Control servers.

The CA Access Control Connector provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage CA Access Control accounts using account templates specific to CA Access Control
- Change account passwords and account activations in one place
- Synchronize global users with their roles or synchronize global users' accounts with their account templates
- Assign a CA Access Control account template to each of your CA Access Control endpoints
- Use the default Endpoint Type account template to create accounts with the minimum level of security needed to access a CA Access Control endpoint
- Create and manage CA Access Control groups
- Generate and print reports about CA Access Control accounts and groups
- Create and manage objects of the supported CA Access Control resource classes.

This connector is managed using the Connector and C++ Server installation process.

**Note:** For more information and requirements, see *Connector and C++ Connector Server Installation*.

## Recommended Patch Levels

If you are using the Solaris, HP-UX, Linux, or AIX version of CA Access Control UNIX r5.3, you must apply the mandatory patch for the corresponding version of CA Access Control. Consult CA Access Control Customer Support to obtain the latest revisions of these mandatory patches.

If you are using the CA Access Control Connector for UNIX, you must install the latest revision of CA Access Control UNIX r12 on the UNIX system where the C++ Connector Server is to be run.

## ACC Connector Multi-Threading Support

The ACC Connector supports multi-threading and is capable of handling concurrent operations targeting multiple ACC endpoints (AC endpoints) concurrently.

### Managing ACC Sessions

The following parameters have been added to the `acc_agent.ini` file to support multi-threading:

[SessionManager]

**MaxSessions:**

Specifies the maximum number of connections initialized by the ACC Connector to simultaneously connect to CA Access Control endpoints.

This value should not be less than the `MaxSessionsPerEndpoint` parameter. For example, `MaxSessions=200` and `MaxSessionsPerEndpoint=1`, the server can simultaneously connect to 200 ACC endpoints. For `MaxSessions=50` and `MaxSessionsPerEndpoint=2`, the server can simultaneously connect to 25 ACC endpoints.

**Note:** This value should not exceed the number of threads configured in `im_css.conf`.

**Default:** 200

[Session]

**MaxSessionsPerEndpoint:**

Specifies the maximum number of connections the server can use for one ACC endpoint.

**Caution:** The ACC endpoint may return a connection reset error if this value is set too high.

**Default:** 1 (This value is optimal for most configurations.)

The `acc_agent.ini` file is located in the following location:

`%PS_HOME%\Provisioning Server\Data\ACC\acc_agent.ini`

### Runtime Environment Settings

The following are the runtime environment settings for the CA Access Control Connector for Windows and the CA Access Control Connector for UNIX.

## Setting the Encryption Key for the CA Access Control Connector

If the CA Access Control Connector has to use an encryption key other than the default one to manage your CA Access Control systems, issue the following commands at the prompt on the Provisioning Server to enter a new encryption key:

```
cd PS_HOME\Provisioning Server\etc\acc  
CHANGE_EAC_KEY
```

**Important!** Restart the Windows service C++ Connector Server after the new encryption key is set.

## Resetting the Encryption Key for the CA Access Control Connector Back to the Default Key

If the CA Access Control Connector has to use the default encryption key to manage your CA Access Control systems, do not change the encryption key. If you need to change your new encryption key back to the default encryption key, issue the following commands at the prompt on the Provisioning Server:

```
cd PS_HOME\Provisioning Server\etc\acc  
RESET_EAC_KEY
```

**Important!** Restart the Windows service C++ Connector Server after the new encryption key is set.

## Changing the Encryption Method for the CA Access Control Connector

If the CA Access Control Connector has to use an encryption method other than the default one to manage your CA Access Control systems, edit the following Windows registry entry on the Provisioning Server and set the value to the path name of the DLL for the new encryption method:

```
HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\Identity Manager\Provisioning  
Server\NSOptions\ACC\Trust Access Control SDKRt\Encryption Package
```

For example, you can change the value of the Encryption Package from C:\Program Files\CA\Identity Manager\Provisioning Server\etc\acc\defenc.dll for the default encryption to C:\Program Files\CA\Identity Manager\Provisioning Server\etc\acc\tripleDESenc.dll for triple-DES encryption.

**Note:** The directory *PS\_HOME*\Provisioning Server\etc\acc contains the encryption DLLs for the default encryption, DES encryption, triple-DES encryption, and AES encryption.

**Important!** Restart the Windows service C++ Connector Server after the encryption method is changed.

## CA Access Control Connector for UNIX

CA Access Control UNIX r8.0 or greater must be running on the same UNIX system where the CA Access Control Connector is installed. Otherwise, the CA Access Control Connector will not work. For Solaris, if CA Access Control UNIX r8.0 is installed after the CA Access Control Connector is installed, you must add the library pathname for CA Access Control UNIX r8.0 to the environment variable LD\_LIBRARY\_PATH. For example, if CA Access Control UNIX r8.0 is installed in directory /opt/CA/eTrustAccessControl, add the pathname /opt/CA/eTrustAccessControl/lib to LD\_LIBRARY\_PATH. You do not have to add the path name if CA Access Control UNIX r8.0 is already installed before the CA Access Control Connector is installed.

The CA Access Control Connector shares the same runtime environment with CA Access Control UNIX r8.0. Therefore, they will have the same encryption settings. In order to change the encryption method or key of the CA Access Control Connector, you have to change the corresponding one of CA Access Control UNIX r8.0. Refer to the documentation for CA Access Control UNIX r8.0 for information about changing the encryption settings. You need to restart the C++ Connector Server process after the encryption settings are changed.

## Configuring CA Access Control UNIX on the C++ Connector Server System

**Note:** This section is only applicable to the CA Access Control Connector for UNIX.

The UNIX user who invokes the C++ Connector Server process for CA Identity Manager must be properly defined to CA Access Control UNIX. By default, UNIX user *imps* is to run the C++ Connector Server process.

Start CA Access Control command selang on the UNIX system where the C++ Connector Server is installed and issue the following commands in selang:

```
eu imps admin
auth terminal superagent_workstation_name uid(imps) acc(a)
```

where

***superagent\_workstation\_name***

Is the machine name of the UNIX system where the superagent is installed.

## Configuring a CA Access Control UNIX or Windows Server

To configure your CA Access Control UNIX or Windows server for CA Identity Manager, follow these steps:

1. Start the `selang` command interpreter.
2. Create the system administrator's account on the CA Access Control server if it does not already exist.
3. Authorize CA Identity Manager to connect to the CA Access Control server.
4. Enable the administrator's account to connect from the Provisioning Server.
5. Install Filtering Rules for the Policy Model Database (PMDB).

**Note:** You can also use the CA Identity Manager for Access Control utility (SeAM) to perform these authorizations.

## Starting the Slang Command Interpreter

To begin the configuration process, start the `selang` command interpreter on the CA Access Control server system as follows:

- a. Change directory to the home directory of CA Access Control from a UNIX or Window prompt.
- b. Change directory to `bin` and then enter the command `selang`

## Creating the System Administrator's Account

Create an administrator's account on the CA Access Control server using the user ID and password that you use when logging on to the Provisioning Server. To do this, issue the following commands in selang:

```
nu administrator_name password (administrator_password) admin auditor
```

***administrator\_name***

Is the user ID that you use to log on to the Provisioning Server.

***administrator\_password***

Is the administrator's password for the user ID.

**Important!** It is strongly recommended that you do not use a user ID named "Administrator" to define a CA Access Control directory for Windows 2000, because doing so may cause login failures when you try to access the directory.

Ensure that you add the admin and auditor keywords to the command. This gives you administrative privileges.

Next, you must create the administrator's account and password in the native operating system (UNIX). To do this, issue the following commands in selang:

```
env(native)
```

```
eu administrator_name password(administrator_password)
```

```
env(seos)
```

***administrator\_name***

Is the user ID that you use to log on to the Provisioning Server.

***administrator\_password***

Is the administrator's password for the user ID.

## Authorizing Access to the CA Access Control Server

To give the Provisioning Server access to the CA Access Control server, issue the following command in selang:

```
nr TERMINAL workstation_name owner(terminal_owner) defacc(R)
```

***workstation\_name***

Is the machine name of the Provisioning Server.

***terminal\_owner***

Is the owner of the terminal.

For example, if the *workstation\_name* is cacc.la.com and the *terminal owner is nobody*, enter the following:

```
nr TERMINAL cacc.la.com owner(nobody) defacc(R)
```

## Enabling the Administrator's Account

Issue the following command in selang so that the administrator's account can access the CA Access Control server:

```
auth TERMINAL workstation_name acc(a) uid(administrator_name)
```

***workstation\_name***

Is the machine name of the Provisioning Server or CA Identity Manager clients.

***administrator\_name***

Is the administrator's account that was created in Creating the System Administrator's Account.

For example:

```
auth TERMINAL cacc.la.com acc(a) uid(accadmin)
```

**Note:** To successfully create an Provisioning Account on the CA Access Control Solaris machine, you have to authorize the two machines as follows:

```
auth TERMINAL workstation_name acc(a) uid(administrator_name) Workstation name - Provisioning Server name & Access Control Solaris machine
```

If you are not authorizing the Access Control Solaris machine, an error message "You are not allowed to administer this site from terminal (ACC Control Sol Machine)" is thrown during the Provisioning account creation.

## Installing Filtering Rules for the Policy Model Database (PMDB)

The following step should be performed after you enable the administrator's account.

The following PMDB filtering rules should be specified for each PMDB on the CA Access Control server if you want to administer the PMDB. These rules prevent internal updates to the pre-defined account `__ACCAgt` (use two underscores with this account name) from being propagated to the subscribers of the PMDB.

```
#-----
# ACCESS  ENV.      CLASS  OBJECTS  PROPERTIES  ACTION
#-----
MODIFY   eTrust  USER   __ACCAgt  *           NOPASS
CREATE   eTrust  USER   __ACCAgt  *           NOPASS
DELETE   eTrust  USER   __ACCAgt  *           NOPASS
```

For example, if the PMDB is for CA Access Control for UNIX, add these rules to the filter file specified in the `pmd` section of the `pmd.ini` file for the PMDB. For CA Access Control for Windows, the filter file is specified in the registry for the PMDB. For either platform, create the filter file if it does not exist.

The *Utilities Guide* for CA Access Control for UNIX and the *Administrator Guide* for CA Access Control for Windows provide the instructions for setting up filtering rules for PMDB propagation.

## ACC Support for FIPS and IPv6

For this release of CA Identity Manager, the CA Access Control Connector does not support FIPS or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

## Acquire a CA Access Control Server Using the User Console

You must acquire the CA Access Control server before you can administer it with CA Identity Manager.

### To acquire a CA Access Control server using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select Access Control from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create Access Control Endpoint page to register a CA Access Control server. During the registration process, CA Identity Manager identifies the CA Access Control server you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all Access Control accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click a Access Control endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

**To use an explore and correlate definition**

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire the CA Access Control Server Using the Provisioning Manager

You must acquire the CA Access Control server before you can administer it with CA Identity Manager. When acquiring a CA Access Control server, perform the following steps from the Endpoint Type task view:

1. Register the server as an endpoint in CA Identity Manager.

Use the CA Access Control property sheet to register a CA Access Control server. During the registration process, CA Identity Manager identifies the CA Access Control server you want to administer and gathers information about it.

**Note:** Ping the node name from the Provisioning Server. If the ping is successful, then you know that CA Identity Manager will find the CA Access Control node.

2. Explore the objects that exist on the directory.

After registering the server in CA Identity Manager, you can explore its contents, using the Explore and Correlate Endpoint dialog. The Exploration process finds all CA Access Control accounts and groups. You can correlate the accounts with global users at this time, or you can correlate them later.

3. Correlate the explored accounts with global users.

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users. By correlating accounts, you can specify what fields are matched with global user fields. CA Identity Manager provides a default correlation account template for CA Access Control endpoints. This account template performs the following actions in this order:

- a. CA Identity Manager attempts to match the account name with each existing global user's unique name. If a match is found, CA Identity Manager associates the CA Access Control account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the full name with each existing global user's full name. If a match is found, CA Identity Manager associates the CA Access Control account with the global user. If a match is not found, CA Identity Manager performs the next step.
- c. If the Create Global Users as Needed button is selected, CA Identity Manager creates a new global user and then associates the CA Access Control account with the global user. If the Create Global Users as Needed button is cleared, CA Identity Manager performs the next step.
- d. CA Identity Manager associates the CA Access Control account with the [default user] object.

## ACC Account Templates

The CA Access Control Default Policy, provided with the CA Access Control Connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

**Important!** When you associate a new endpoint to an account template, the new endpoint must contain all applications, application groups, and groups that have already been selected for the associated account template. For details, see [Associating Account Templates with Endpoints](#).

## File Class Administration

A property sheet called the CA Access Control File has been added so that you can protect files on a Windows or UNIX operating system.

### **General Tab on CA Access Control File Property Sheet**

From this tab you can add file records to the Access Control database to be protected on a CA Access Control Windows or UNIX system.

### **Default Access Tab on CA Access Control File Property Sheet**

From this tab you can grant access to an account or group who is not defined to CA Access Control or do not appear in the access control list of the resource. However, an account or group must exist in the CA Access Control database.

### **Authorization Tab on CA Access Control File Property Sheet**

From this tab you can set the access control lists or ACLs of a file. You can also set the desired file permissions in the Permissions window on this tab.

### **Audit Tab on CA Access Control File, Program, Terminal, Loginappl, Surrogate, and Regkey Property Sheets**

From this tab you can specify various properties for auditing access to a resource.

### **Day/Time Restrictions Tab on CA Access Control File, Program, Terminal, Loginappl, Surrogate, and Regkey Property Sheets**

From this tab you can specify the days and hours when access to a resource is allowed.

### **ACC Statistics Tab on CA Access Control File, Program, Terminal, Loginappl, Surrogate, and Regkey Property Sheets**

From this tab, you can view the usage statistics for a resource that has been created in the CA Access Control database.

## TERMINAL Class Administration

A property sheet called CA Access Control Terminal has been added so that you can create, modify, delete, or duplicate terminal records in the CA Access Control database.

### **General Tab on CA Access Control Terminal Property Sheet**

From this tab you can add terminal records to the Access Control database to be protected on a CA Access Control Windows or UNIX system.

### **Default Access Tab on CA Access Control Terminal Property Sheet**

From this tab you can grant access to an account or group who is not defined to CA Access Control or do not appear in the access control list of the resource. However, an account or group must exist in the CA Access Control database.

### **Authorization Tab on CA Access Control Terminal Property Sheet**

From this tab you can set the access control lists or ACLs of a terminal.

## PROGRAM Class Administration

A property sheet called CA Access Control Program has been added so that you can protect programs on a Windows or UNIX operating system.

### **General Tab on CA Access Control Program Property Sheet**

From this tab you can add program records to the CA Access Control database to be protected on a CA Access Control Windows or UNIX system.

### **Trusted Program Tab on CA Access Control Program Property Sheet**

From this tab you can specify the unique security properties of a program, such as the program information to monitor.

### **Default Access Tab on CA Access Control Program Property Sheet**

From this tab you can grant access to an account or group who is not defined to CA Access Control or do not appear in the access control list of the resource. However, an account or group must exist in the CA Access Control database.

### **Authorization Tab on CA Access Control Program Property Sheet**

From this tab you can set the access control lists or ACLs of a program.

**Note:** You must be running at minimum, CA Access Control r5.3 UNIX or CA Access Control Windows r8.0 in order for the Provisioning Manager to enable the program Condition field.

## LOGINAPPL Class Administration

A property sheet called CA Access Control Loginappl has been added so that you can create, modify, delete, or duplicate loginappl records in the CA Access Control database. Only the UNIX version of CA Access Control supports this resource.

### **General Tab on CA Access Control Loginappl Property Sheet**

From this tab you can add loginappl records to the CA Access Control database to be protected on a UNIX system.

### **Default Access Tab on CA Access Control Loginappl Property Sheet**

From this tab you can grant access to an account or group who is not defined to CA Access Control or do not appear in the access control list of the resource. However, an account or group must exist in the CA Access Control database.

### **Authorization Tab on CA Access Control Loginappl Property Sheet**

From this tab you can set the access control lists or ACLs of a loginappl.

## Surrogate Class Administration

A property sheet called CA Access Control Surrogate has been added so that you can create, modify, delete, or duplicate surrogate records in the CA Access Control database.

**Note:** Surrogate Class is not supported by the Windows NT version of CA Access Control.

### **General Tab on CA Access Control Surrogate Property Sheet**

From this tab you can add surrogate records to the CA Access Control database to be protected on an Access Control Windows or UNIX system. The name of a surrogate must be in the form of *USER.name* or *GROUP.name*.

### **Default Access Tab on CA Access Control Surrogate Property Sheet**

From this tab you can grant access to an account or group who is not defined to CA Access Control or do not appear in the access control list of the resource. However, an account or group must exist in the CA Access Control database.

### **Authorization Tab on CA Access Control Surrogate Property Sheet**

From this tab you can set the access control lists or ACLs of a surrogate.

## REGKEY Class Administration

A property sheet called CA Access Control REGKEY has been added so that you can create, modify, delete, or duplicate regkey records in the CA Access Control database. Only the Windows version of CA Access Control supports this resource class.

### General Tab on CA Access Control Regkey Property Sheet

From this tab you can add regkey records to the CA Access Control database to be protected on a CA Access Control Window system.

### Default Access Tab on CA Access Control Regkey Property Sheet

From this tab you can grant access to an account or group who is not defined to CA Access Control or do not appear in the access control list of the resource. However, an account or group must exist in the CA Access Control database.

### Authorization Tab on CA Access Control Regkey Property Sheet

From this tab you can set the access control lists or ACLs of a regkey.

## ACC Etutil Conventions

Use the following CA Access Control conventions in your etutil commands:

The endpoint type name (eTNamespaceName) is Access Control.

- The endpoint type prefix is ACC. The CA Access Control class names are:
  - eTACCDirectory for an endpoint class
  - eTACCPolicyContainerName for an account template container
  - eTACCPolicy for an account template object

## Associating ACC Account Templates with Endpoints

When associating account templates with endpoints, you must follow the intersection *requirement* for account templates: For any new endpoint that you want to associate with an account template, all groups, categories, and security labels that have previously been selected for the account template *must* exist in the new endpoint. If any of the previously selected groups, categories, or security labels for the account template do not exist in the new endpoint, the attempt to associate the new endpoint to the account template fails, and an error message is displayed.

## Sample Scenario Using Groups

This sample scenario uses groups to illustrate the intersection requirement. At the beginning of this scenario, the following are true:

- Groups 1 through 4 exist in the Endpoint 1.
- Group 1 and Group 4 exist in Endpoint 2.
- Account Template 1 is not associated to any endpoints.

The following table illustrates this setup:

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	(none)
Group 2		
Group 3		
	Group 4	

Suppose you perform the following steps:

1. Associate Endpoint 1 with Account Template 1, creating the first endpoint association for Account Template 1.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	+ Endpoint 1 (succeeds)
Group 2		
Group 3		
	Group 4	

2. Select Group 1 and Group 2 for Account Template 1. The selection succeeds because these groups exist in Endpoint 1.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	Endpoint 1
Group 2		+ Group 1 (succeeds)
Group 3		+ Group 2 (succeeds)
	Group 4	

- Attempt to associate Endpoint 2 with Account Template 1. The attempt fails because one of the account template's selected groups, Group 2, does not exist in Endpoint 2.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	Endpoint1
Group 2		Group 1
Group 3		Group 2
	Group 4	+ Endpoint 2 (fails)

When the attempt fails, the Manager displays an error message similar to the following one:

Resources not found

Endpoint 2 is not necessarily required to contain the same groups as Endpoint 1. However, Endpoint 2 **must** contain all groups from Endpoint 1 that have already been selected for Account Template 1. In other words, for any new endpoint that you want to associate with an account template, all previously selected groups for the account template must exist in the new endpoint.

### Sample Scenario Using Additional Groups

A new endpoint that you want to associate to an account template is permitted to contain *additional* groups; that is, groups that have not been selected for the account template. After you associate the new endpoint to the account template, you may optionally select any of these additional groups for the account template. If you do, these groups are **added** to the list of required groups that must exist in all new endpoints that you attempt to associate with the account template in the future.

The following scenario illustrates this principle. At the beginning of this scenario, the following are true:

- Groups 1 through 4 exist in Endpoint 1
- Groups 1 through 3 exist in Endpoint 2
- Account Template 1 has no associated endpoints

The following table illustrates this setup:

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	(none)
Group 2	Group 2	
Group 3	Group 3	

---

Group 4

---

Suppose you perform the following steps:

1. Associate Endpoint 1 with Account Template 1, creating the first endpoint association for Account Template 1.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	+ Endpoint 1 (succeeds)
Group 2	Group 2	
Group 3	Group 3	
Group 4		

2. Select Group 1 and Group 2 for Account Template 1. The selection succeeds.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	Endpoint 1
Group 2	Group 2	+ Group 1 (succeeds)
Group 3	Group 3	+ Group 2 (succeeds)
Group 4		

Consequently, any endpoints that you attempt to associate with Account Template 1 in the future must contain Group 1 and Group 2; otherwise, the attempt will fail.

3. Associate Endpoint 2 with Account Template 1, creating the second endpoint association for Account Template 1. The association succeeds, because all groups already selected for Account Template 1 (Group 1 and Group 2) exist in Endpoint 2.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	Endpoint 1
Group 2	Group 2	Group 1
Group 3	Group 3	Group 2
Group 4		+ Endpoint 2 (succeeds)

4. Select Group 3 for Account Template 1. The selection succeeds.

Endpoint 1	Endpoint 2	Account Template 1
Group 1	Group 1	Endpoint 1

Group 2	Group 2	Group 1
Group 3	Group 3	Group 2
Group 4		Endpoint 2
		+ Group 3 (succeeds)

Consequently, any endpoints that you attempt to associate with Account Template 1 in the future must contain groups Group 1 through Group 3; otherwise, the association will fail.

### Availability Requirements for Groups

On the Manager, the groups that you can select for an account template are displayed in the account template's list of available groups. Available groups must meet *both* of the following criteria:

- Are not already selected for the account template
- Exist in all endpoints that are associated with the account template

In the Sample Scenario Illustrating Additional Groups, Group 4 is an available group for Account Template 1 when Endpoint 1 is the only endpoint associated with the account template. However, when Endpoint 2 is associated with Account Template 1, Group 4 is no longer an available group for Account Template 1, because Group 4 does not exist in Endpoint 2.

### Availability Requirements for Categories and Security Labels

The intersection principle described previously for groups also applies to categories and security labels. That is, when you associate a new endpoint to an account template, the new endpoint is not necessarily required to contain all the same categories and security labels as the previous endpoint or endpoints that have already been associated with the account template. However, the new endpoint *must* contain all categories and security labels that have already been selected for the associated account template.

Similarly, a new endpoint that you want to associate to an account template is permitted to contain additional categories or security labels that have not already been selected for the account template. After you associate the new endpoint to the account template, you may optionally select any such categories or security labels for the account template. If you do so, these categories or security labels are *added* to the list of required categories and security labels that must exist in all new endpoints that are associated with the account template in the future.

Finally, the availability requirements discussed previously for groups also apply to categories and security labels. That is, an available category or security label remains available to an account template until an endpoint that does not contain the category or security label is associated with the account template.

## Removing ACC Endpoints from Account Templates

If an associated endpoint is removed from an account template, the list of selected items does not change. This is true even if the last endpoint is removed from an account template, but the list of available items is recomputed. For example, the connector attempts to compute the new list of available groups for the remaining endpoints that are still associated to the account template.

## Password Synchronization

The CA Identity Manager password synchronization agent supports the interception of Windows password changes.

## Reconfiguring the Password Synchronization Component

These are the steps to reconfigure a CA Identity Manager password synchronization component:

1. Install the Windows NT Connector after installing the Windows Connector (Windows NT or Active Directory).
2. Install Windows NT Remote Agent for a Windows NT system. Active Directory Services Connector directly manages Active Directory using LDAP.
3. Acquire the Windows directory to create an internal representation of the Windows system in CA Identity Manager.

**Note:** Do not explore and correlate the Windows accounts, because they are managed as CA Access Control accounts. Explore and correlate these as CA Access Control accounts.

4. Install the Password Synchronization agent. During the installation process, the Password Synchronization Configuration wizard guides you through the process to set the component as a Windows password interceptor.
5. Install the CA Access Control Connector to manage the CA Access Control accounts.
6. Install CA Access Control on the Windows system if it is not already installed.
7. Acquire the CA Access Control Directory.
8. Explore and correlate CA Access Control accounts to global users in CA Identity Manager.
9. Revise the Password Synchronization Configuration File to reflect the changes from Windows to the CA Access Control Connector.

## Architecture

The out-of-box configuration does not support intercepting CA Access Control password changes. However, because CA Access Control also manages Windows password changes, you can reconfigure the password synchronization component to propagate CA Access Control password changes.

When a Windows password changes, the password synchronization component intercepts the change and forwards it to Provisioning Server, which then propagates the change to other accounts belonging to the same global user.

You can reconfigure the password synchronization component for synchronizing CA Access Control passwords, using the same Windows password interception.

Thus, users make changes to their passwords using CA Access Control tools. The password changes affect the CA Access Control environment and the native Windows environment. When you make password changes to the Windows environment, the Provisioning password synchronization component intercepts the password changes.

The reconfiguration of the Provisioning password synchronization component sends the password changes to the Provisioning Server, indicating that the password changes are from CA Access Control, instead of a native Windows system.

The Provisioning Server discovers the global user associated with the CA Access Control accounts that originate the password changes, and then propagates password changes to other accounts belonging to the same global users.

## Comparing PMDB to Local Database

CA Identity Manager manages CA Access Control identities in an identity store that can be either a CA Access Control PMDB or a local database. Since CA Identity Manager and CA Access Control both manage users and passwords, it is an architecture decision as to which users are managed by CA Identity Manager and which by CA Access Control. A general guideline is that CA Identity Manager manages a PMDB and the PMDB handles the propagation of all its subscribers.

## Changing Passwords Using Windows Tools

Besides password changes from CA Access Control tools, users can also change their passwords using Windows native utilities. The CA Identity Manager password synchronization component intercepts the password change and propagates it to other CA Identity Manager managed accounts associated with the same global users. However, the CA Access Control managed accounts require a separate mechanism to synchronize passwords initiated from the native Windows environment. CA Access Control also provides a password intercept mechanism for this purpose. We recommend the following guidelines:

- Disable the password quality control of the CA Identity Manager password synchronization agent.
- Let the CA Access password synchronization component manage the password quality control.

## Mapping Configuration from Windows

The following two configuration files are an example of a conversion from Windows to CA Access Control. The information that you should modify is in italics.

```
;
; This configuration file is used by the CA Identity Manager Windows Password
; Synchronization Facility.
;
[Server]
host=<Provisioning Server host>
port=20389
use_tls=yes
admin_suffix=dc=<domain suffix>
admin=etaadmin
password=k4tpGDJ8Djg=

;; CA Identity Manager domain information
;;
;; If the search fails, and the container dn is specified, the account dn is
;; constructed as "<acct_attribute_name>=<native acct name>,<container dn>".
;; The container DN should contain "dc=eta".
;;
[EtaDomain]
domain=<domain name>
etrust_suffix="dc=eta"
domain_suffix=dc=<domain suffix>
Namespace=Windows NT
directory=chete03

directory_dn=eTN16DirectoryName=chete03,eTNamespaceName=Windows
NT,dc=129-731-CHOPIN,dc=eta
container_dn=eTN16AccountContainerName=Accounts,eTN16DirectoryName=chete03,eTNa
meSpaceName=Windows NT,dc=129-731-CHOPIN,dc=eta
acct_attribute_name=eTN16AccountName
acct_object_class=eTN16Account
```

```
;
; This configuration file is used by the CA Identity Manager Password Synchronization
; Facility for CA Access Control
;

[Server]
host=<Provisioning Server host>
port=20389
use_tls=yes
admin_suffix=dc=<domain suffix>
admin=etaadmin
password=k4tpGDJ8Djg=

;; CA Identity Manager domain information
;;
;; In order to find the account DN, a search operation will be performed, using
;; the directory dn as the search base, and objectClass and account name as the
;; search filter.
;;
;; If the search fails, and the container dn is specified, the account dn is
;; constructed as "<acct_attribute_name>=<native acct name>,<container dn>".
;; The container DN should contain "dc=eta".
;;
;; Currently, domain, etrust_suffix, Endpoint Type, and directory keys are not used,
;; because all DNs are hardcoded. The future enhancement is to provide "domain",
;; "Endpoint Type" and, "directory name". CA Identity Manager will find out the DNs
based on
;; the supplied information.

[EtaDomain]
domain=<domain name>
etrust_suffix="dc=eta"
domain_suffix=dc=<domain suffix>
Namespace=Windows NT
directory=pmdb
;; Directory name of the CA Access Control system
```

```
directory_dn=eTACCDirectoryName=pmdb,eTNamespaceName=Access
Control,dc=129-731-CHOPIN,dc=eta
container_dn=eTACCAccountContainerName=Accounts,eTACCDirectoryName=pmdb,eTNamespa
ceName=Access Control,dc=129-731-CHOPIN,dc=eta
acct_attribute_name=eTACCAccountName
acct_object_class=eTACCAccount

;; Password Profile Configuration
;; profile_enabled = [yes|y|no|n] ---> Unknown values default to "no"
;; profile_dn = "<the DN of the password profile>"
[PasswordProfile]
profile_enabled = no
profile_dn = eTPasswordProfileName=Password
Profile,eTPasswordProfileContainerName=Password
Profile,eTNamespaceName=CommonObjects,dc=129-731-CHOPIN,dc=eta
```

## CA ACF2 Connector

This guide no longer contains information about the CA ACF2 connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## CA ACF2 v2 Connector

This guide does not contain information about the CA ACF2 v2 connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## CA Arcot Connector

This guide no longer contains information about the CA Arcot connector.

Instead, download the CA AuthMinder endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Embedded Entitlements Manager Connector

The Embedded Entitlement Manager (EEM) Connector lets you create management interfaces for EEM servers and provides a single point for all user administration by letting you do the following:

- Administer two types of EEM applications: the built-in "Global" application and the user-defined application
- Add accounts and account containers to any level of the tree
- Delete accounts and account containers from any level of the tree
- Modify and search accounts from any level of the tree
- Add groups to the accounts
- Modify user attributes for accounts in user-defined applications
- Create, search, modify, and delete access policies
- Create, search, modify, and delete calendars
- Add, search, and delete groups
- Search resource classes

**Note:** Only Provisioning manager can be used in order to manage EEM connector.

The EEM Connector supports multiple, simultaneous connections to different EEM servers and multiple applications on the same server.

**Note:** The EEM Connector refers to the EIAM Connector for this release.

### EEM Installation

This connector is managed using the Connector and C++ Server installation process.

**Note:** For more information and requirements, see *Connector and C++ Connector Server Installation*.

### EEM Support for FIPS and IPv6

The Embedded Entitlements Manager Connector does not support FIPS or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

### Acquire an EEM Server Machine

You must acquire the EEM server machine before you can administer it with CA Identity Manager.

#### From the Endpoint Type task view

1. Register the machine as an endpoint in CA Identity Manager.

Use the EEM Endpoint property sheet to register an EEM server machine. During the registration process, CA Identity Manager identifies the EEM server machine you want to administer and gathers information about it.

Then choose the application name and specify the name and password for the management account that has been configured on the EEM Backend Server.

2. Explore the accounts that exist on the endpoint.

After registering the machine in CA Identity Manager, you can explore its accounts. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all EEM accounts. You can correlate the accounts with global users at this time, or you can wait to correlate them.

3. Correlate the explored accounts with global users.

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the username with each existing global user name. If a match is found, CA Identity Manager associates the EEM account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the account name with each existing global user's full name. If a match is found, CA Identity Manager associates the EEM account with the global user. If a match is not found, CA Identity Manager performs the next step.
- c. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and associates the EEM account with the global user. If the Create Global Users as Needed button is unchecked, then CA Identity Manager performs the next step.
- d. CA Identity Manager associates the EEM account with the [default user] object.

## EEM Account Templates

The EEM Connector account template can be associated with two types of EEM applications, (build-in and user-defined). If the associated directory is the Global application, the "Application Properties" tab in the account template is disabled, whereas, the Global Properties tab is disabled for user-defined application directories.

Since the Connector is a hierarchical Endpoint Type, the account container must be specified for the account template in order to create accounts in the right place.

## Global and Application Endpoints are Managed Separately

No accounts can be added to the build-in Global application endpoint when adding accounts to user-defined application endpoints and conversely the opposite applies. You can now view which endpoint the accounts are being associated to on the Account Template Property Sheet.

## EEM Accounts

When creating application users using the EEM Web User Interface (not recommended), all users will be created under the root folder regardless of what folder is specified, although the Web User Interface appears to display the user with the correct path. This indicates that such application users created using the EEM Web User Interface will all appear under the "EEM Accounts" container after exploration in the Provisioning Manager.

If you use CA Identity Manager or Safex to create users, all users will be created in the correct folders or they will be displayed correctly after an exploration.

## EEM Access Policies

You can create and maintain EEM access policies using the Endpoint Type task view. Use the EEM Access Policies property sheet when defining and managing your access policies.

Any changes made in this object using native tools are kept in sync with the views in the Provisioning Server without requiring a re-exploration.

## EEM Calendars

Calendars define dates and times that users can access system functions. Use the EEM Calendars property sheet to set user access times.

Any changes made in this object using native tools are kept in sync with the views in the Provisioning Server without requiring a re-exploration.

## EEM Groups

You can create and maintain EEM groups using the Endpoint Type task view. Use the EEM Group property sheet when managing your groups.

Any changes made in this object using native tools are kept in sync with the views in the Provisioning Server without requiring a re-exploration.

### Available Groups in Account Template Property Sheet

You can now view and choose from all the available groups, where to add group members to an account template.

## EEM Resource Classes

You can view the resource classes for the EEM server.

## CA DLP Connector

The CA DLP Connector provides a single point for CA DLP account administration. The connector lets you administer account objects on CA DLP endpoints.

You can use the CA DLP Connector to:

- Acquire CA DLP endpoints
- Explore CA DLP endpoints for existing accounts
- Create, update, or delete CA DLP accounts
- Move a CA DLP user to a different location in the CA DLP hierarchy

## CA DLP Connector Management

The CA DLP Connector is managed using the CA Identity Manager User Console.

## FIPS 140 Configuration

CA IAM CS and CA DLP CMS (Central Management Server) must be in the same FIPS 140 mode before CA IAM CS can use the CA DLP Connector to manage a CA DLP endpoint.

The following table shows the supported configuration modes for CA IAM CS and CA DLP CMS.

CA IAM CS	CA DLP CMS	Supported	Connection Type
FIPS 140 Mode	FIPS 140 Mode	Yes	TLS
Non-FIPS 140 Mode	Non-FIPS 140 Mode	Yes	Unauthenticated SSL
FIPS 140 Mode	Non-FIPS 140 Mode	No	N/A
Non-FIPS 140 mode	FIPS 140 Mode	No	N/A

The CA DLP Connector detects whether CA IAM CS is running in FIPS 140 mode, and configures itself to communicate with the CA DLP endpoint using a FIPS 140 encrypted connection.

If CA IAM CS and CA DLP CMS are both running in FIPS mode, you must install certificates that the CA DLP CMS trusts on CA IAM CS. The certificates are stored in a keystore, copied from the CA DLP CMS.

If CA IAM CS and CA DLP CMS are both running in non-FIPS 140 mode, the CA DLP CMS uses unauthenticated SSL and a CA DLP keystore file is not required.

## Enable Communication Between CA IAM CS and CA DLP In FIPS 140 Mode

To enable communication between CA IAM CS and CA DLP CMS in FIPS 140 mode, CA IAM CS must be installed with FIPS 140 mode enabled and the CA DLP CMS must be deployed in Advanced Encryption Mode.

To enable communication in FIPS 140 mode, copy the CA DLP keystore to CA IAM CS configuration directory.

**Note:** For more information on FIPS 140 mode, see FIPS 140-2 Compliance in the *Configuration Guide*. For more information about how to deploy CA DLP in Advanced Encryption Mode, see the *CA DLP Deployment Guide*.

### Follow these steps:

1. Verify that the CA DLP CMS is in Advanced Encryption Mode. Do the following:
  - a. Start the CA DLP Administration console.
  - b. Verify that the activity log contains a message similar to one of the following:

```
I0100      JCE Provider CRYPTOJ 4.0 20071129 1450: Standard mode.
I00FE      JCE Provider CRYPTOJ 4.0 20071129 1450: Advanced mode startup tests ran successfully
```

If the most recent message starts with id I0100, the CA DLP CMS is deployed in standard mode and is not in FIPS 140 mode. You must configure the CA DLP CMS to use FIPS 140 mode before you can enable FIPS 140 mode for CA IAM CS.

If the most recent message starts with id I01FE, the CA DLP CMS is deployed in Advanced Encryption mode, and the CA DLP CMS is deployed in FIPS 140 mode.
2. On the computer used to create certificates for use by CA DLP, navigate to the following folder:

```
C:\FIPS\AdvancedEncryption\output
```
3. Copy the keystore.dat file to the following folder on the CA IAM CS computer:

```
cs-home\conf
```
4. Rename the keystore.dat file to dlp.ssl.keystore.
5. Restart CA IAM CS.

CA IAM CS is now in FIPS 140 mode and can use the CA DLP connector to manage the CA DLP CMS endpoint.

## Generate a New Keystore

When the keystore.dat file on the CA DLP CMS changes or is compromised, generate a new keystore file so that CA IAM CS and CA DLP CMS can communicate in FIPS 140 mode.

### To generate a new keystore

1. On the CA DLP CMS, revoke the current CA DLP keystore.
2. On the CA DLP CMS, install the new keystore.
3. On the computer used to create certificates for use by CA DLP, navigate to the following folder:

C:\FIPS\AdvancedEncryption\output

4. Copy the keystore.dat file to the following folder on the CA IAM CS computer:  
CS\_HOME\conf
5. Rename the keystore.dat file to dlp.ssl.keystore.
6. Restart CA IAM CS.

CA IAM CS is now in FIPS 140 mode and you can now use the CA DLP connector to manage the DLP CMS endpoint.

**Note:** For information about revoking and generating a keystore, see the *CA DLP Deployment Guide*.

## CA DLP Connector Specific Features

This section details the management features of your connector, including account, group, and least privilege information for your connector.

## How to Rename CA DLP Connector User Attributes

CA DLP Connector account management screens use the labels User Attribute 1 – User Attribute 10 by default on the User Attributes 1 and User Attributes 2 tabs in the CA Identity Manager User Console.

If you rename user attributes in your CA DLP environment, we recommend that you also rename the corresponding user attributes in the CA DLP Connector account management screens. Using identical attribute names in your CA DLP environment and the CA DLP Connector account management screens makes administration easier.

For example, if you rename User Attribute 1 to City in your CA DLP environment, you can change the name of User Attribute 1 to City in the CA DLP Connector account management screens. You can change the name of the user attribute by editing the metadata of the CA DLP Connector by using Connector Xpress.

To rename a user attribute in the CA DLP Connector account management screens, do the following:

1. Edit the metadata of the CA DLP Connector using Connector Xpress as follows:
  - a. Create a Connector Xpress project based on the existing CA DLP Connector metadata.
  - b. Rename the CA DLP Connector user attribute so that its name matches the corresponding user attribute in your CA DLP environment.

**Important!** We recommend that you edit only the Name attribute in the CA DLP Connector metadata. Editing other attributes can make the CA DLP Connector inoperable.

- c. Redeploy the CA DLP Connector metadata to the provisioning server.
2. Generate the CA DLP account management screens, as follows:
  - a. Use the Role Definition Generator to generate the CA\_DLP.jar file.

The CA\_DLP.jar file contains the role, task, and screen definitions for the CA DLP account management screens in the CA Identity Manager User Console.
  - b. Import the CA\_DLP.jar file into the CA Identity Manager User Console.

### Example: Edit the metadata of the CA DLP Connector using Connector Xpress

The following example shows you how to rename a CA DLP user attribute on the CA DLP account management screen so that it matches the name of the corresponding attribute in your CA DLP environment. You rename the attribute by using Connector Xpress to edit the CA DLP Connector metadata. This example assumes that you have changed the name of the User 1 Attribute in your CA DLP environment to City.

This example shows you how to change the name of User Attribute 1 to City on the User Attribute 1 tab in the CA Identity Manager User Console.

**To edit the metadata of the CA DLP Connector using Connector Xpress**

1. Start Connector Xpress.
2. If necessary, add and configure the provisioning server that manages the CA DLP Connector.
3. In the Provisioning Servers tree, navigate to your CA DLP endpoint.
4. Right-click the CA DLP endpoint, then click Create a Project.  
Connector Xpress creates a project based on the existing CA DLP Connector metadata.
5. In the Mapping Tree, expand the Classes Node, expand the eTDYNAccount node, then expand the Attributes node.
6. Click the User Attribute 1 node.  
The Attribute Details dialog appears.
7. In the Name field, change the name of the attribute to City.
8. In the Provisioning Servers tree, navigate to your CA DLP endpoint.
9. Right-click the CA DLP endpoint, then Click Deploy Metadata.  
The Deploy Metadata dialog appears.
10. When prompted, increase the version number of the CA DLP Connector and confirm that you want to deploy the new metadata to the provisioning server.  
Connector Xpress deploys the CA DLP Connector metadata to the provisioning server.  
Next, use the Role Definition Generator to generate the CA DLP account management screens.

**Note:** For more information about how to add and configure a provisioning server, create a Connector Xpress project, and generate CA Identity Manager User Console account management screens, see the *Connector Xpress Guide*.

**Example: Generate CA DLP account management screens using the Role Definition Generator**

This example shows you how to use the Role Definition Generator to generate the CA\_DLP.jar file and how to import it into the CA Identity Manager User Console to generate DLP account management screens. This example uses a provisioning server named myProvisioningServer, with administrator login name AdminLogin for a CA DLP endpoint named CA DLP.

This example assumes that you have edited the metadata of the CA DLP Connector using Connector Xpress and renamed User Attribute 1 to City.

**Note:** For more information about how to use the Role Definition Generator, see *How you Generate CA Identity Manager User Console Account Screens* in the *Connector Xpress Guide*.

**To generate CA DLP account management screens using the Role Definition Generator**

1. On the computer where you installed CA Identity Manager, stop the CA Identity Manager Server.
2. Navigate to the following folder:  
`<jboss_home>\server\default\deploy\iam_im.ear\user_console.war\WEB-INF\lib`
3. Back up the current CA\_DLP.jar file.

Making a backup of the CA\_DLP.jar file allows you to restore the previous version of the CA DLP Connector metadata and revert to the previous version of the CA DLP account management screens, if necessary.

4. Navigate to one of the following directories according to your operating system:
  - (Windows) `<identity_manager_HOME>\tools\RoleDefinitionGenerator\bin`
  - (UNIX) `<identity_manager_HOME>/tools/RoleDefinitionGenerator/bin`
5. Open a Command Prompt window or a terminal window according to your operating system, then enter one of the following commands:
  - (Windows) `RoleDefGenerator.bat -d exampledomain -h im.example.com -p port -u adminusername EndpointType`
  - (UNIX) `RoleDefGenerator.sh -d exampledomain -h im.exmaple.com -p port -u adminusername EndpointType`

For example:

```
RoleDefGenerator.bat -d im -h myProvisioningServer -p myport -u Adminlogin "CA DLP"
```

When prompted, enter the provisioning server password.

The Role Definition Generator creates the CA\_DLP.jar file and puts it in the following folder by default:

```
<identity_manager_home>\RoleDefinitionGenerator\bin
```

**Note:** For more information about the Role Definition Command, see the *Connector Xpress Guide*.

6. Copy the CA\_DLP.jar that you generated to the following folder:  
`<jboss_home>server\default\deploy\iam_im.ear\user_console.war\WEB-INF\lib`
7. Restart the CA Identity Manager Server.  
  
CA Identity Manager loads the new role, screen, and task definitions for the CA DLP account management screens.
8. Start the CA Identity Manager Management Console.
9. Click Environments, then click the environment that you want to change.

The Environment Properties page appears.

10. Click Role and Task Settings, then click Import.

CA Identity Manager displays the currently installed version of the CA DLP metadata in the Installed Version column. The version of the CA DLP Connector metadata that you deployed to the Provisioning Server in Step 6 appears in the Version column.

11. In the Name column, select the check box next to CA\_DLP, then click Finish.

CA Identity Manager deploys the role definitions, screens, tasks, and roles for the CA DLP Connector and updates the CA Identity Manager environment you selected.

12. Click Continue, then click Restart Environment.

13. Start the CA Identity Manager User Console.

14. Verify that CA Identity Manager has renamed the User Attribute 1 field to City, as follows:

- a. In the CA Identity Manager User Console, view the CA DLP account of a user.
- b. Click the User Attributes 1 Tab.
- c. Verify that CA Identity Manager has renamed the User Attribute 1 field to City.

## How to Create Custom User Categories

CA DLP Connector account management screens display the same user categories used in CA DLP by default. For example, Administrator, Manager, User, Policy Administrator, and Reviewer.

CA DLP supports the addition of new user categories. If you add a user category in your CA DLP environment, we recommend that you also add the new user category to the CA DLP Connector account management screens. Adding user categories to the CA DLP Connector account management screens to match the user categories on your CA DLP endpoint makes administration easier.

For example, if you add a user category named Assistant Manager to your CA DLP environment, you can add a user category attribute named Assistant Manager to the CA DLP Connector account management screens.

You can add the new user category attribute by using Connector Xpress to edit the metadata of the CA DLP Connector.

To create a custom user category on the CA DLP Connector Account tab in the CA Identity Manager User Console account management screens, do the following:

1. Edit the metadata of the CA DLP Connector using Connector Xpress as follows:
  - a. Create a Connector Xpress project based on the existing CA DLP Connector metadata.
  - b. In Connector Xpress, add the same User Category attribute that you added to the CA DLP endpoint.
  - c. Redeploy the CA DLP Connector metadata to the provisioning server.

**Important!** We recommend that you edit only the `DLPUserCategory` attribute in the CA DLP Connector metadata. Editing other attributes can make the CA DLP Connector inoperable.
  - d. Redeploy the CA DLP Connector metadata to the provisioning server.
2. Generate the DLP account management screens, as follows:
  - a. Use the Role Definition Generator to generate the `CA_DLP.jar` file.

The `CA_DLP.jar` file contains the role, task, and screen definitions for the DLP account management screens in the CA Identity Manager User Console.
  - b. Import the `CA_DLP.jar` file into the CA Identity Manager User Console.

### Example: Edit the metadata of the CA DLP Connector using Connector Xpress

The following example shows you how to add a CA DLP user category attribute named Assistant Manager to the CA DLP account management screen. You add the attribute by using Connector Xpress to edit the CA DLP Connector metadata. This example assumes that you have added a user category named Assistant Manager to your CA DLP environment.

This example shows you how to add a user category named Assistant Manager to the Account Management tab in the CA Identity Manager User Console.

### To edit the metadata of the CA DLP Connector using Connector Xpress

1. Start Connector Xpress.
2. If necessary, add and configure the provisioning server that manages the CA DLP Connector.
3. In the Provisioning Servers tree, navigate to your CA DLP endpoint.
4. Right-click the CA DLP endpoint, then click Create a Project.

Connector Xpress creates a project based on the existing CA DLP Connector metadata.

5. In the Mapping Tree, click the Custom Types node.

The Custom Types dialog appears.

6. Under Enumerated Types, click DLPUserCategory.

7. In the Values list, click Add, then enter the following:

#### Value

Defines the value of the enumerated type used on the endpoint system.

**Example:** Assistant Manager

#### Display Name

(Optional) Defines the name of the enumerated type displayed in the CA Identity Manager User Console.

**Example:** Assistant Manager

#### Ordinal

(Optional) Defines the order of the enumerated values.

**Example:** 2

8. In the Provisioning Servers tree, navigate to your CA DLP endpoint.
9. Right-click the CA DLP endpoint, then click Deploy Metadata.

The Deploy Metadata dialog appears.

10. When prompted, increase the version number of the CA DLP Connector and confirm that you want to deploy the new metadata to the provisioning server.

Connector Xpress deploys the CA DLP Connector metadata to the provisioning server.

Next, use the Role Definition Generator to generate the CA DLP account management screens.

**Note:** For more information about how to add and configure a provisioning server, create a Connector Xpress project, and generate CA Identity Manager User Console account management screens, see the *Connector Xpress Guide*.

### Example: Generate CA DLP account management screens using the Role Definition Generator

This example shows you how to use the Role Definition Generator to generate the CA\_DLP.jar file and how to import it into the CA Identity Manager User Console to generate DLP account management screens. This example uses a provisioning server named myProvisioningServer, with administrator login name AdminLogin for a CA DLP endpoint named CA DLP.

This example assumes that you have edited the metadata of the CA DLP Connector using Connector Xpress and added a new user category named Assistant Manager to the CA DLP account management screens.

**Note:** For more information about how to use the Role Definition Generator, see *How you Generate CA Identity Manager User Console Account Screens* in the *Connector Xpress Guide*.

#### To generate DLP account management screens using the Role Definition Generator

1. On the computer where you installed CA Identity Manager, stop the CA Identity Manager Server.
2. Navigate to the following folder:  

```
<jboss_home>\server\default\deploy\iam_im.ear\user_console.war\WEB-INF\lib
```
3. Back up the current CA\_DLP.jar file.  

Making a backup of the CA\_DLP.jar file allows you to restore the previous version of the CA DLP Connector metadata, and revert to the previous version of the DLP account management screens, if necessary.
4. Navigate to one of the following directories according to your operating system:
  - (Windows) <identity manager\_HOME>\tools\RoleDefinitionGenerator\bin
  - (UNIX) <identity manager\_HOME>/tools/RoleDefinitionGenerator/bin
5. Open a Command Prompt window or a terminal window according to your operating system, then enter one of the following commands:
  - (Windows) RoleDefGenerator.bat -d *exampledomain* -h *im.example.com* -p *port* -u *adminusername* EndpointType
  - (UNIX) RoleDefGenerator.sh -d *exampledomain* -h *im.exmaple.com* -p *port* -u *adminusername* EndpointType

For example:

```
RoleDefGenerator.bat -d im -h myProvisioningServer -p myport -u AdminLogin "CA DLP"
```

When prompted, enter the provisioning server password.

The Role Definition Generator creates the CA\_DLP.jar file and puts it in the following folder by default:

<identity\_manager\_home>\RoleDefinitionGenerator\bin

6. Copy the CA\_DLP.jar that you generated to the following folder:  
<jboss\_home>\server\default\deploy\iam\_im.ear\user\_console.war\WEB-INF\lib
7. Restart the CA Identity Manager Server.  
CA Identity Manager loads the new role, screen, and task definitions for the CA DLP account management screens.
8. Start the CA Identity Manager Management Console.
9. Click Environments, then click the environment that you want to change.  
The Environment Properties page appears.
10. Click Role and Task Settings, then click Import.  
CA Identity Manager displays the currently installed version of the DLP metadata in the Installed Version column. The version of the CA DLP Connector metadata that you deployed to the provisioning server in Step 6 appears in the Version column.
11. In the Name column, select the check box next to CA\_DLP, then click Finish.  
CA Identity Manager deploys the role definitions, screens, tasks, and roles for the CA DLP Connector and updates the CA Identity Manager environment you selected.
12. Click Continue, then click Restart Environment.
13. Start the CA Identity Manager User Console.
14. Verify that CA Identity Manager has added the user category Assistant Manager to the CA DLP account management screens, as follows:
  - a. In the CA Identity Manager User Console, view the CA DLP default template
  - b. Click the Account tab.
  - c. Verify that CA Identity Manager has added the new user category Assistant Manager.

## Least Privilege Considerations

To manage objects on a CA DLP endpoint using the CA DLP Connector, the administrator account that manages the CA DLP endpoint requires the following minimum permissions and privileges:

- User: Reset user passwords
- User: Edit the user hierarchy

In CA DLP, the administrator user category inherits these privileges by default, however you can configure other user categories to have these privileges.

**Note:** For more information, see the *CA DLP Deployment Guide*.

## Account Management

You can use the CA DLP Connector to view, create, modify, or delete an account.

## Account Suspension and Unlocking

The CA DLP Connector does not support account suspension and unlocking.

## Groups and Hierarchies

CA DLP maintains a user hierarchy. Groups can also contain users. The user hierarchy is built up dynamically as users are provisioned to CA DLP. Groups that contain users and other groups are typically built from the attributes belonging to users provisioned to CA DLP.

The CA DLP Connector does not display the CA DLP group hierarchy. However, you can use the CA DLP Connector to provision a user into a group or groups on the CA DLP endpoint.

The account template associated with a CA DLP endpoint lets you define a rule string that specifies the group hierarchy and the groups you want to provision the user to. The rule string is defined in the Groups field.

When you provision a user with the CA DLP Connector, CA DLP dynamically creates the groups and the group hierarchy based on the rule strings specified in the Group field on the CA Identity Manager account template.

For example, specifying the following rule string `%COUNTRY%/%UC%/%UB%/%UL%` in the Group field groups users by country, city, building, and location on the CA DLP endpoint.

## Troubleshooting

### Unable to View or Modify CA DLP Accounts with Unicode or UTF-8 Characters in the User Console

**Symptom:**

I created a CA DLP account with Japanese or other non-English characters. When I try to view the account, I get an error message that starts with Not a valid IAM handle, and then contains unintelligible characters.

**Solution:**

The account was created in CA Identity Manager, but it is not visible in the User Console. However, it is visible in the Provisioning Manager. To display CA DLP accounts created with non-English characters in the User Console, configure the JBoss server.xml file for UTF-8 encoding for URI.

**Note:** For information about configuring server.xml file for UTF-8 encoding for URI, see Change JBoss server.xml in the *User Console Design Guide*.

### Removal of Email Address from a CA DLP Account is Ignored

**Symptom:**

I am modifying a CA DLP account with more than one email address. When I try to remove one of the email address in the CA Identity Manager User Console, the changes are applied, but the email address is not removed.

**Solution:**

Removal of an email address from a CA DLP account is not supported in the CA Identity Manager User Console.

**Note:** Attempts to delete an email address from a CA DLP account in the CA Identity Manager User Console are recorded in the logs, and include the reason for preventing the operation.

To remove an email address from a CA DLP account, use the CA DLP administrative tools.

**Important!** Deleting an email address from a DLP account can impair the event tracking and search capabilities of CA DLP.

## CA SSO Connector for Advanced Policy Server

The CA SSO Connector for Advanced Policy Server (PLS) is a Endpoint Type connector for CA Identity Manager that lets you administer CA Single Sign-On, version 7.0 or higher. The CA SSO Connector for Advanced Policy Server provides a single point for all user administration by letting you do the following:

- Manage Endpoint, Account, Group, Terminal, Authentication Host, Application, Application Group and Account Template object classes.
- Create, modify, or delete an account or group in a user data store.
- Add accounts to a group, or remove them.
- Authorize an account or group to access selected applications and application groups.
- Administer passwords for the SSO and LDAP authentication methods.
- Administer login information for applications.
- Administer various pre-defined account and group properties, such as expiration date, suspension date, and resumption date.
- Administer date and time restrictions for Account, Account Template, and Terminal objects.
- Specify user attribute values for accounts in a user data store.
- Create, modify, or delete Terminal or Authentication Host objects in SSO endpoints
- Authorize users and groups to access Terminal or Authentication Host objects

**Note:** Terminal and Authentication Host classes are only available to be managed in the PLS Connector when the SSO servers are v8.0 and higher.

This connector is managed using the Connector and C++ Server installation process.

**Note:** For more information and requirements, see *Connector and C++ Connector Server Installation*.

## Configuring the CA Single Sign-On Server

Follow the steps below to configure your CA Single Sign-On server for CA Identity Manager.

1. Start the selang command interpreter.
2. Create the system administrator's account on the CA Single Sign-On server if it does not already exist.
3. Enable the administrator's account to connect from the Provisioning Server.

## Create the System Administrator Account

Create the CA Single Sign-On administrator account on the CA Single Sign-On server. Add the admin and auditor keywords to the selang command to grant the correct privileges to the administrator. In selang, enter the following command:

```
nu administrator_name password(administrator_password) admin auditor
```

***administrator\_name***

The user ID that the administrator uses to log on to the CA Single Sign-On Server.

***administrator\_password***

The administrator password for the user ID.

**Note:** We recommend that you do **not** use a user ID named “Administrator” to define a CA Single Sign-On endpoint for Windows 2000.

Enter the following command to add *administrator\_name* to the predefined group `_ps-adms`.

```
join administrator_name group(_ps-adms)
```

Enter the following commands to ensure the administrator account is created in the native operating system with the same password.

```
env(native)
```

```
eu administrator_name password(administrator_password)
```

```
env(seos)
```

## Enable the Administrator Account

Enter the following command to enable the CA Access Control and CA Single Sign-On authentication methods for the administrator.

```
eu administrator_name auth_type(method5, method20)
```

Enter the following command to set the CA SSO password for the administrator's account to the same password you specified in Step 1.

```
e1 administrator_name appl(__SSO__) currpwd(administrator_password)
```

Give the administrator access to the CA Single Sign-On server by issuing the following command.

```
auth terminal server_name uid(administrator_name) acc(access_type)
```

### ***server\_name***

Is the machine name of the CA Single Sign-On Server.

### ***administrator\_name***

Is the administrator's account.

### ***access\_type***

Is the access that the administrator needs. Read and write access is necessary. The keywords for *access\_type* are READ, WRITE.

## Using Failover

When using the PLS Connector to connect to a policy server farm, you can set up a failover system that automatically switches from a failed server to a running server to let you keep working without interruption. For large sites that use a policy server farm, failover can provide reliable and rapid service.

When discovering the SSO endpoint, the policy server that is to be the primary policy server must be provided. After the discovery, the Fail-Over property page in the Endpoint Property Sheet shows the policy server that was specified. You can then add more policy servers to the list. Once the policy servers have been added, they can be edited or even removed as needed.

The PLS Connector always tries to connect the first policy server in the list, so the order of the policy servers in the list is significant. If the connection fails to the first policy server then the PLS Connector tries connecting to the second policy server and so on. Once a connection is successfully made, PLS continues to work with the server. Every 60 seconds, PLS checks whether failed servers are available again.

**Note:** When changing the policy server list in the Fail-Over tab, the primary server, (for example, the first entry in the list) must be responsive for the changes to be accepted and applied.

## Enable Application Password Propagation

Currently, in an SSO endpoint, every SSO user record contains a login application and every login application record contains a username and password. This username and password does not have to be the same as the SSO username. For example:

```
SSOuser1 Username=Doe Password=Doe
```

```
TelnetApp1 Username=Doe1 Password=Doe1 (Unix Host Srv1)
```

```
TelnetApp12 Username=Doe2 Password=Doe2 (Unix Host Srv2)
```

SSO has password synchronization. If you (or SSO) change the password from TelnetApp1, SSO also changes the password for TelnetApp2.

If you put CA Identity Manager into this equation, Admin is able to do password synchronization and has an SSO Connector and a UNIX Connector. You now have the following scenario:

```
Global User=Doe
```

```
SSO User=Doe
```

```
Inside SSO TelnetApp1 username=Doe, TelnetApp2 username=Doe
```

```
Unix User on Srv1=Doe
```

```
Unix User on Srv2=Doe
```

If you change the password for the global user Doe and propagate the password to all of the global user accounts, the password will change on the following Endpoint Types: SSO, Unix Srv1 and Unix Srv2. However, the password in the loginapplications (TelnetApp1, TelnetApp2, and so forth) for the SSO user will not be changed and those using SSO cannot use SSO to log into their applications anymore because the password stored in their loginappl record is out of sync.

To solve this problem, a master application, for example, eTrustIAM, can be defined and TelnetApp1 and TelnetApp2 can be set to use eTrustIAM as the master application. The PLS Connector can then update the password of the master application eTrustIAM when it receives the password propagation request caused by the CA Identity Manager global user password change. As a result, the Policy Server updates the passwords for TelnetApp1 and TelnetApp2. Because the UNIX Connector updates the passwords for the user in both Unix Srv1 and Unix Srv2, and the PLS Connector updates the SSO password if the user uses the SSO authentication method, the passwords in all levels are in sync.

If you are using an older Policy Server version that does not have the eTrustIAM master application defined automatically after installation, do the following to use this feature:

- Using Policy Manager, create a master application "eTrustIAM" in the Policy Server and set `_SSO_` as the master application.

- Like the `_SSO_` application, the eTrustIAM application should be available for every user, so set the default access rights to EXECUTE. And, since the eTrustIAM application should not be shown in the SSO client, the access rights must also be set to HIDDEN.
- Set eTrustIAM as the master application for all applications where you want password propagation.

If you want to integrate admin applications (Provisioning Manager, IA Manager, and Self Service) with SSO, do the following to start these Admin applications through the SSO client:

1. Using Policy Manager, create SSO applications for each Admin application (Provisioning Manager, IA Manager, and so forth).
2. Set eTrustIAM as the master application for these SSO applications.
3. Create TCL scripts for each Admin application, (These are used to start the applications through SSO.), and put these TCL scripts in the following directory:

eTrust Policy Server\Scripts

## PLS Support for FIPS and IPv6

For this release of CA Identity Manager, the PLS Connector does not support FIPs or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

## Acquire a CA Single Sign-On Server

You must acquire the CA Single Sign-On server before you can administer it with CA Identity Manager. When acquiring an CA Single Sign-On server, perform the following steps from the Endpoint Type task view:

1. Register the server as an endpoint in CA Identity Manager.

Use the PLS Endpoint property sheet to register an CA Single Sign-On server. During the registration process, CA Identity Manager identifies the CA Single Sign-On server you want to administer and gathers information about it.

**Note:** Ping the node name from the Provisioning Server. If the ping is successful, then you know that CA Identity Manager will find the PLS node.

2. Explore the objects that exist in the endpoint.

After registering the server in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all accounts and groups in the SSO server.. You can correlate the accounts with global users at this time or you can correlate them later.

3. Correlate the explored accounts with global users.

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the account name with each existing global user name. If a match is found, CA Identity Manager associates the PLS account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the full name with each existing global user's full name. If a match is found, CA Identity Manager associates the PLS account with the global user. If a match is not found, CA Identity Manager performs the next step.
- c. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and then associates the PLS account with the global user. If the Create Global Users as Needed button is unchecked, CA Identity Manager performs the next step.
- d. CA Identity Manager associates the PLS account with the [default user] object.

## Roles and Policies

In addition to defining privileges for users, you can also set login information for applications associated with account templates. Once this information is set, users have access to the applications if they provide the correct login information.

The PLS Default Policy, provided with the CA SSO Connector for Advanced Policy Server, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

## PLS Control Applications

You can view certain basic properties of an application on the PLS Application property sheet. You are not allowed to add, delete, or modify an application.

## PLS Control Application Groups

You can view certain basic properties of an application group on the PLS Application Group property sheet. You are not allowed to add, delete, or modify an application group.

## PLS Terminal

You can assign accounts and groups to access the current terminal objects. Use the PLS Terminal property sheet to set the profile, day/time restrictions, and account and group access to terminals.

## PLS Authorization Hosts

You can assign accounts and groups to access the current authorization host objects. Use the PLS Authhost property sheet to set the profile, and account and group access to authorization hosts.

## Frequently Asked Questions

This section is designed to help solve any problems that may occur and answer any questions you may have when using the CA SSO Option.

This section contains the following topics:

[Policy Questions](#) (see page 106)

[Authentication Method Question](#) (see page 107)

[Buffer Size Question](#) (see page 108)

[Exploration Questions](#) (see page 108)

## Policy Questions

**Question:**

I would like to set logon information for an application. How do I do this?

**Answer:**

You can set logon information for an application in a policy only. To set logon information, click the Applications tab in the policy and then double-click the application. The Application Login Information dialog appears. Use this dialog to enter your information.

**Question:**

What do I do if the logon information for an application is incorrect?

**Answer:**

You can correct this information using one of the following methods:

- Synchronize method

You can use this method if your policy uses strong synchronization. To use this method, remove the application from the policy and then synchronize your accounts with the policy. This method removes the application from all accounts. Once the application is removed, enter the correct logon information for the application, add the application to the policy, and then synchronize your accounts with the policy.

- Force Update method

You can use this method if your policy uses strong or weak synchronization. To use this method, enter the correct logon information, check the Force Update box, and then click OK. To save the changes, click Apply on the property sheet, and then propagate the changes to the policy.

**Question:**

My policy, when associated to a directory for the Policy data store, cannot be synchronized with an account created by using the policy. The Provisioning Manager always reports that the account's attribute GroupList is out-of-sync with that policy. Is there a solution for this problem?

**Answer:**

You can use *strong synchronization* for the policy and the *administrator* check box is checked on the Privileges tab, PLS Connector automatically joins the account to the predefined group\_ps-adms when the account is created in the Policy data store by using the policy. Hence, the Provisioning Manager reports that attribute GroupList is out-of-sync. You may simply add group\_ps-adms to the policy to eliminate this problem.

**Question:**

I have added an application to my policy on the Applications tab. The policy has been used to successfully create an account. However, the account's Applications tab does not show that the application in the policy is assigned to the account. If I use the Policy Manager for PLS Connector to verify the application assignment, the account's Applications tab also does not show the application as a linked one. Is this an error?

**Answer:**

An application can be explicitly or implicitly assigned to an account. In general, an application is implicitly assigned to an account if one of the following is true:

- The application's default access is EXECUTE.
- The application belongs to an application group already assigned to the account.
- The application is assigned to the group to which the account belongs.

When a policy is used to create an account, the PLS Connector does not explicitly assign an application to the account if the application has already been implicitly assigned. For performance reasons, this optimization is done to avoid storing redundant data for application authorization in the Policy data store. This optimization is especially important to user data stores with a large number of accounts. The Applications tab only shows the explicitly assigned applications, but the Application Login tab shows the applications explicitly or implicitly assigned to an account. If you use the SSO Policy Manager, you can also find all assigned applications on the Application List tab.

## Authentication Method Question

**Question:**

I have added a new authentication method to CA Single Sign-On. How can I add the same authentication method to the CA Single Sign-On Option?

**Answer:**

Assume that the new authentication method is Method25 with the symbolic name MyOwnMethodA. Do the following on each of the Provisioning Server and Provisioning Manager systems:

1. Create a directory PS\_HOME\Data\SSO.
2. Create a file sso\_gui.ini in this directory with the following configuration parameters:

```
# User-defined authentication methods

[AuthnMap]

Method25=MyOwnMethodA

# Put additional methods here, if necessary.
```
3. Shut down the Provisioning Manager.
4. Restart the Provisioning Manager. You should be able to find the new method on the Authentication tab.

## Buffer Size Question

**Question:**

How can I change the sizes of the buffers for the CA SSO Connector for Advanced Policy Server to send/receive data to/from PLS Connector?

**Answer:**

The PLS Connector allocates memory buffers to send and receive data to and from the clients that communicate with SSO Servers. The PLS Connector is one of these clients. Each PLS client needs to allocate buffers that are large enough to store the information sent to and from SSO Servers. For example, and in particular, the buffer for the client to receive data from SSO Servers must not be smaller than the buffer for SSO Servers to send data to the client. The configuration file PS\_HOME\Data\pls\_agent.ini allows you to set the sizes of these buffers for the PLS Connector. Usually, you do not need to change the default settings in pls\_agent.ini since the default buffer sizes are large enough to handle the communication between the PLS Connector and SSO Servers in most situations. However, if there are a very large number of accounts within one SSO Server container, you may need to increase the size of the buffers.

## Exploration Question

**Question:**

I received the error “Policy Server Error Buffer is too small” during exploration of a large number of accounts. What caused this to happen?

**Answer:**

When exploring a large number of accounts, the Send Buffer size should be increased in size up to 1 MB. For Policy Server 8.0 you can use a Policy Manager or selang command. For example:

```
chres PSCONFIGPROPERTY ("SendBuffSize@ssod") gen_prop('VALUE") gen_value ("2000000")
```

For Policy Server 7.0, you must add the SendBuffSize and set the value in the registry or modify the value using the Policy Manager. For example:

```
HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\eTrust\Shared\Policy Server\2.0\ssod
```

## CA Top Secret Connector

This guide no longer contains information about the CA RACF connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## CA Top Secret v2 Connector

This guide does not contain information about the CA Top Secret v2 connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Google Apps Connector

The Google Apps Connector provides a single point for all Google Apps account administration. The connector lets you administer account objects and groups on Google Apps endpoints.

Google Apps Connector guide describes how to install, configure, and manage the Google Apps Connector for Google Apps endpoints.

This guide is for the following people:

- CA Identity Manager administrators
- CA CloudMinder tenant administrators

## Platform Support

The Google Apps Connector has the same system requirements as CA Identity Manager, and requires Google Apps API version 2.0.

**Note:** For more information, see [Configure Google Apps Provisioning API Access](#). (see page 109)

## Configure Google Apps Provisioning API Access

To manage a Google Apps endpoint with CA Identity Manager, log in to the Google Apps Control Panel and enable the provisioning API in your Google Apps settings.

CA Identity Manager can now manage the Google Apps endpoint.

**Note:** For more information, see the *Google Apps Admin Help*.

## Configure Password Length

To ensure password compatibility between Google Apps and CA Identity Manager, configure the minimum and maximum length for passwords in Google Apps and in CA Identity Manager so they match.

**Note:** For more information, see Password Policies in the *CA Identity Manager Administration Guide*.

## Configure NTLM Authentication

If CA IAM CS is running on a Windows computer and NTLM is the strongest authentication scheme supported by the HTTP proxy, the Google Apps connector attempts to use NTLM authentication with the HTTP proxy.

On a Windows computer, CA IAM CS is installed as a Windows Service and runs as Local System by default. If your HTTP proxy server uses NTLM authentication, configure CA IAM CS to run under a Windows domain account or a Windows local account.

To configure NTLM authentication, do either of the following:

- Run CA IAM CS with a Windows account that can be authenticated with the HTTP proxy server without providing a user name and password for proxy authentication when creating the endpoint.
- Run CA IAM CS with a Windows account that cannot be authenticated with the HTTP proxy server, and provide a HTTP user name and password that can be authenticated with the proxy when creating the endpoint.

**Note:** If you use a Windows domain user for HTTP proxy authentication, prefix the HTTP proxy user name with the Windows domain that the user is in. For example, *DOMAIN\ProxyUserAccountName*.

## Google Apps—CAPTCHA Challenge

### Symptom:

During authentication, I receive the following error message with a CAPTCHA challenge:

Authentication failed, CAPTCHA requires answering. Please use the following website to unlock JCS computer: <https://www.google.com/a/yourdomain/UnlockCaptcha>

### Solution:

Do the following:

1. Log on to the computer where CA IAM CS is running.
2. Open a web browser.
3. Follow the link provided in the error message, and replace `yourdomain.com` with your Google Apps domain. For example:

`https://www.google.com/a/yourdomain.com/UnlockCaptcha`

4. Answer the CAPTCHA question.

The Google Apps server issues a new authentication token and trusts your computer.

**Note:** For more information, about CAPTCHA challenge, see <http://code.google.com/googleapps/faq.html#handlingcaptcha>

## IBM DB2 UDB Connector

Along with the CA Identity Manager Connector for the underlying operating system, the DB2 UDB Connector lets you administer accounts and groups on DB2 UDB databases and provides a single point for all user administration by letting you:

- Register DB2 UDB endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage DB2 UDB database authorization names (users and groups) using DB2 UDB-specific account templates
- Synchronize global users with their provisioning roles or synchronize global users' accounts with their account templates
- Assign a DB2 UDB account template to each of your DB2 UDB endpoints
- Use the default endpoint type account template to create DB2 UDB users with the minimum security level needed to access a DB2 UDB endpoint
- Create and manage DB2 UDB groups (Windows only)

## DB2 UDB Installation

This connector is managed using the Connector and C++ Server installation process.

**Note:** For more information and requirements, see *Connector and C++ Connector Server Installation*.

### Installation Requirements for Windows

The following connector and agent are necessary to administer the DB2 Universal Database:

- **DB2 UDB Connector** must be installed.
- To administer DB2 UDB authentication, an appropriate CA Identity Manager Connector for the underlying operating system of DB2 UDB Server installation must be installed on the Provisioning Server. Such options include, but are not limited to the NT Connector, ETC Connector, NIS Connector and the ADS Connector.
- **DB2 UDB Administration Client** must already be installed where the DB2 UDB Connector will be installed.

**Note:** You must install the 32-bit version of the DB Connect client package.

- **TCP/IP** must be one of the supported communication protocols of the DB2 UDB installation when DB2 UDB server is at a remote location.
- **TCP/IP Communication** must be set up for the DB2 UDB Instance on DB2 UDB Server using Control Center and have either a TCP/IP Service Name or Port Number assigned (default to 50000) when the DB2 UDB server is at a remote location.
- **Database Manager Instance** should be started on the DB2 UDB Server.

**Note:** The DB2 UDB Connector supports any DB2 UDB server installations that the DB2 UDB Administrative Client for Window supports, but tests have been done only with DB2 UDB server installations on Windows 2000 and AIX.

### DB2 UDB Support for FIPS and IPv6

For this release of CA Identity Manager, the DB2 UDB Connector supports IPv6, but not FIPS.

### DB2 Limitation

You cannot associate a DB2 provisioning role created with English characters to a user created with French or Japanese characters. This is a limitation of DB2.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

### Acquire a DB2 UDB Database Using the User Console

You must acquire the DB2 database before you can administer it with CA Identity Manager.

#### To acquire an DB2 database using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select DB2 Server from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create DB2 Server Endpoint page to register a DB2 database. During the registration process, CA Identity Manager identifies the DB2 database you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all DB2 accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click a DB2 endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

**To use an explore and correlate definition**

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire a DB2 UDB Database Using the Provisioning Manager

You must acquire the DB2 UDB database before you can administer it with CA Identity Manager.

### From the Endpoint type task view

1. Register the database as an endpoint in CA Identity Manager.

Use the DB2 UDB Endpoint property sheet to register a DB2 UDB database. During the registration process, CA Identity Manager identifies the DB2 UDB database you want to administer and gathers information about it.

2. Explore the objects that exist on the endpoint.

After registering the database in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all DB2 UDB database authorization names that exist in the database authorization tables. You can correlate the authorization names of the User type (DB2 UDB Users) with global users at this time, or you can wait to correlate them.

3. Correlate the explored DB2 UDB users with global users.

When you correlate DB2 UDB users, CA Identity Manager creates or links the DB2 UDB users to an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the DB2 UDB user name with each existing global user name. If a match is found, CA Identity Manager associates the DB2 UDB user name with the global user. If a match is not found, CA Identity Manager performs the following step.
- b. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and then associates the DB2 UDB account with the global user. If the Create Global Users as Needed button is unchecked, CA Identity Manager performs the next step.
- c. CA Identity Manager associates the DB2 UDB user with the [default user] object.

## DB2 Provisioning Roles and Account Templates

By defining account templates for the underlying operating system to a provisioning role, you can manage the operating system accounts and groups while managing the authorization name of the DB2 UDB database. Therefore, provisioning roles and account templates let you manage all the aspects of the DB2 UDB database security.

The DB2 UDB Default Policy, provided with the DB2 UDB Connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

## Create Account Templates

The Default Account Template, provided with each connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

### To create an account template

1. Click the Provisioning Roles task button, select the connector's Account Template in the Object Type drop-down list box and click New.

The Account Template Property Sheet for the specified connector appears.

2. Complete the Account Template Property Sheet by:
  - a. Selecting an endpoint to populate the drop-down and group selection lists.
  - b. Selecting group memberships and other account settings.
  - c. Clicking OK.

A new account template is created for your connector.

## DB2 UDB Users

In CA Identity Manager DB2 UDB Users give users access to the resources on an endpoint. CA Identity Manager lets you manage all DB2 UDB database authorization names of the type User from the Endpoint type task view. Use the DB2 UDB User property sheet when managing your users.

## DB2 UDB Groups

CA Identity Manager lets you create and maintain DB2 UDB authorization names of the type Group using the Endpoint type task view. Use the DB2 UDB Group property sheet when managing your groups.

## Add New Endpoint Request

When the DB2 Connector receives an 'Add new endpoint' request, it:

1. Catalogs a new DB2 Local or TCP/IP node for the instance.
2. Catalogs a new DB2 Database entry for the database.
3. Configures an ODBC system data source for the database.

## How to Synchronize an Account from an Account Template

These are the rules for account synchronization from an account template in the DB2 Connector.

1. During the account synchronization process, when there are multiple account templates associated with a DB2 account, the DB2 connector merges those account templates to generate an intermediate effective account template. During the merge, if there are conflicting settings with the same authority, database privilege, or object privilege among the different account templates, the DB2 Connector selects the setting with the highest restriction.

For example, if Account Template One grants DBADM and Account Template Two does not, the effective account template does not grant DBADM. Another example: If Account Template One grants CONTROL and SELECT with GRANT option on view SYSCAT.ATTRIBUTES, but Account Template Two revokes CONTROL from and grants SELECT on view SYSCAT.ATTRIBUTES, the effective account template grants only SELECT on view SYSCAT.ATTRIBUTES and revokes CONTROL from SYSCAT.ATTRIBUTES.

2. If one of the merged account templates is set to use strong synchronization, the DB2 Connector applies the effective account template to the account using strong synchronization. If not, the effective account template uses weak synchronization.
3. For strong synchronization, the DB2 Connector replaces the account's authorities and privilege settings with that of the effective account template.
4. For weak synchronization, if there is a difference between the account settings and the effective account template, the DB2 Connector uses the setting that has the higher restriction.

For example, if an account is granted DBADM, and the effective account template does not grant DBADM, the account will not be granted DBADM. If an account is not granted DBADM and the effective account template grants DBADM, the account will still not be granted DBADM.

Another example: If an account is granted CONTROL and SELECT with GRANT option on view SYSCAT.ATTRIBUTES, but the effective account template revokes CONTROL from and grants SELECT on view SYSCAT.ATTRIBUTES, the account is granted only SELECT on view SYSCAT.ATTRIBUTES and CONTROL is revoked from SYSCAT.ATTRIBUTES.

When checking account or account template synchronization, the same process of generating effective account template applies, as do the rules of comparison. If you are going to synchronize account settings with the effective account template, and the account's authority and privilege settings do not change, the DB2 Connector considers the account synchronized with its associated account templates.

## IBM DB2 UDB for z/OS Connector

The connector for DB2 UDB for z/OS (DBZ) lets you manage user authorization and privileges of a DB2 UDB on z/OS instance and database on a z/OS mainframe.

Using this connector, you can do the following:

- Create, modify, or delete DBZ Endpoint Types, endpoints, users, and account templates in CA Identity Manager
- Create, modify, and remove users in the DBZ database on z/OS
- Manage user identifiers, authorizations, and privileges that exist in the DBZ authorization and privileges tables.

However, you cannot use this connector to map stored functions.

This connector does not support FIPs or IPv6.

This connector is managed by CCS.

**Note:** Before you use the connector, set up the license file for JDBC.

### DBZ Endpoint

The DBZ endpoint registers a Windows System ODBC Data Source Name (DSN) for the database and saves the necessary information to establish a connection and execute SQL statements with the database.

### Acquire a DBZ Database Using the User Console

You must acquire the DB2 z/OS database before you can administer it with CA Identity Manager.

#### To acquire an DBZ database using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select DB2 ZOS Server from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create DB2 ZOS Endpoint page to register a DB2 ZOS database. During the registration process, CA Identity Manager identifies the DBZ database and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all DBZ accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:
  - a. Fill in Explore and Correlate name with any meaningful name.  
Click Select Container/Endpoint/Explore Method to click a DBZ endpoint to explore.
  - b. Click the Explore/Correlate Actions to perform:
    - **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
    - **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
    - **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.
7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### To use an explore and correlate definition

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire a DBZ Database Using the Provisioning Manager

To acquire a DBZ database, you must do the following:

### From the Endpoint Type task view

1. Register the database as an endpoint in CA Identity Manager.

Use the DBZ Endpoint property sheet to register a DB2 z/OS database. During the registration process, CA Identity Manager identifies the DBZ database you want to administer and gathers information about it.

2. Explore the objects that exist on the endpoint.

After registering the database in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all DBZ database authorization names that exist in the database authorization tables. You can correlate the authorization names of the User type (DBZ Users) with global users at this time, or you can wait to correlate them.

3. Correlate the explored DBZ users with global users.

When you correlate DBZ users, CA Identity Manager creates or links the DBZ users to an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the DBZ user name with each existing global user name. If a match is found, CA Identity Manager associates the DBZ user name with the global user. If a match is not found, CA Identity Manager performs the following step.
- b. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and then associates the DBZ account with the global user. If the Create Global Users as Needed button is unchecked, CA Identity Manager performs the next step.
- c. CA Identity Manager associates the DBZ user with the [default user] object.

## Acquire or Remove a New Endpoint

When the DBZ connector receives an 'Add new endpoint' or 'Remove an endpoint' request, the following steps are taken:

### On the machine running the C++ Connector Server

1. Catalog or un-catalog a database entry for a database within the DBZ instance.
2. Register or un-register an ODBC system data source.

## DBZ Account Templates

The DBZ Default Policy, provided with your connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

## Synchronize an Account from an Account Template

There are several rules for account synchronization from an account template in the DBZ Connector.

### During the account synchronization process

1. When there are multiple account templates associated with a DBZ account, the DBZ Connector merges those account templates to generate an intermediate effective account template. During the merge, if there are conflicting settings with the same authority, database privilege, or object privilege among the different account templates, the DBZ Connector selects the setting with the highest restriction.

For example, if Account Template One grants DBADM and Account Template Two does not, the effective account template does not grant DBADM. Another example: If Account Template One grants CONTROL and SELECT with GRANT option on view SYSCAT.ATTRIBUTES, but Account Template Two revokes CONTROL from and grants SELECT on view SYSCAT.ATTRIBUTES, the effective account template grants only SELECT on view SYSCAT.ATTRIBUTES and revokes CONTROL from SYSCAT.ATTRIBUTES.

2. If one of the merged account templates is set to use strong synchronization, the DBZ Connector applies the effective account template to the account using strong synchronization. If not, the effective account template uses weak synchronization.
3. For strong synchronization, the DBZ Connector replaces the account's authorities and privilege settings with that of the effective account template.
4. For weak synchronization, if there is a difference between the account settings and the effective account template, the DBZ Connector uses the setting that has the higher restriction.

For example, if an account is granted DBADM, and the effective account template does not grant DBADM, the account will not be granted DBADM. If an account is not granted DBADM and the effective account template grants DBADM, the account will still not be granted DBADM.

Another example: If an account is granted CONTROL and SELECT with GRANT option on view SYSCAT.ATTRIBUTES, but the effective account template revokes CONTROL from and grants SELECT on view SYSCAT.ATTRIBUTES, the account is granted only SELECT on view SYSCAT.ATTRIBUTES and CONTROL is revoked from SYSCAT.ATTRIBUTES.

When checking account or account template synchronization, the same process of generating effective account template applies, as do the rules of comparison. If you are going to synchronize account settings with the effective account template, and the account's authority and privilege settings do not change, the DBZ Connector considers the account synchronized with its associated account templates.

## DBZ Accounts

The DBZ Account represents the authentication and privileges of the DBZ users of the DBZ instance and database on a z/OS mainframe.

The DBZ Connector does not manage user accounts and groups of the operating system. The DB2 Users that are managed by the DB2 z/OS Connector are the user identifiers, authorizations, and privileges that exist in the DB2 authorization and privileges tables.

## Create DBZ Accounts

CA Identity Manager lets you manage accounts from the Endpoint Type task view. Use the DBZ User property sheet when managing your accounts

### To create DBZ Accounts

1. Click the Endpoint Type task button and select DBZ Endpoint from the drop-down list box.
2. Search for the endpoint on which you want to create an account.
3. Right-click on the endpoint in the list view and choose Content from the pop-up menu.
4. Select Accounts in the Container Tree box and click New.  
The DBZ User Property Sheet appears.
5. Complete the DBZ User Property Sheet and click OK.  
A new DBZ account is now created.

## DBZ User Property Sheet

The DBZ User Property Sheet consists of 16 property pages with the following 14 pages specific to the DBZ Connector that show specific authorization and property information:

- Database
- Subsystem
- Table
- View
- Buffer Pool
- Storage Group
- Collection
- Package
- Plan
- Table Space
- Procedure
- User Defined Function
- Schema
- User Defined Type

## IBM i5/OS (OS/400) Connector

The OS/400 Connector lets you administer accounts and groups on OS/400 machines and provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage OS/400 accounts using OS/400-specific account templates
- Change account passwords and account activations in one place
- Synchronize global users with their provisioning roles or synchronize global users' accounts with their account templates
- Assign an OS/400 account template to each of your OS/400 endpoints
- Use the default endpoint type account template to create accounts with the minimum level of security needed to access an OS/400 endpoint
- Create and manage OS/400 groups
- Generate and print reports about OS/400 accounts and groups

### OS/400 Installation

The OS/400 Connector is installed with CA IAM CS.

### OS/400 Migration Steps

To migrate from the C++ OS/400 connector to the Java OS/400 connector, you must do the following:

- Install the OS/400 Java connector using CA IAM CS
- Using Connector Xpress, switch the OS400 Endpoint Type Connector Server from the C++ Connector Server to CA IAM CS

Once this has been done, all types of operations can be executed against the existing OS400 endpoints seamlessly.

### How to Configure your Machines

You must configure your OS/400 system to use the OS/400 connector. To do this, install and configure programs on your OS/400 system.

## Install and Configure Programs on OS/400

The JTOPEN toolkit used by the OS/400 connector requires the following programs to be installed and configured on your OS/400 system:

- TC1 Licensed Program (TCP/IP Connectivity Utilities for OS/400)
- Host Server Option of OS/400

These programs are necessary so the OS/400 connector can connect to your OS/400 system and access its data and services.

## How to Secure Your Information (Optional)

You can send information through secured or unsecured channels.

For security purposes, we recommend that you secure the communications between all your machines. To do this, you must configure the following:

- Provisioning Server
- CA IAM CS
- OS/400 system

## Connect Using SSL

Communication between the Provisioning Server/CA IAM CS and the OS/400 machine is secured by SSL. Using SSL is optional in both links and can be switched on when acquiring the OS/400 machine. Certificates are used to authenticate the server and encrypt communications and the username and password are used to authenticate the client request on the OS/400 machine.

To use SSL, the CA IAM CS machine must have the endpoint certificate installed in the Java certificate store in the JRE in which CA IAM CS machine is running.

## Configure Your OS/400 System

Secure the channel between CA IAM CS and your OS/400 system by performing these steps:

1. Prepare the system
2. Select the certificate location
3. Import the certificate authority
4. Request a server certificate from the CA
5. Request a server certificate for your system
6. Import the server certificate
7. Assign the Server Certificate to your OS/400 applications

## Prepare the System

To prepare your OS/400 system, perform the following procedure:

### On your OS/400 system

1. Verify that one of the following client encryption licensed programs is installed:

#### 5722-CE2

IBM iSeries Client Encryption (56-bit) Version 5, Release 1. This program is used in countries other than the United States or Canada.

#### 5722-CE3

IBM iSeries Client Encryption (128-bit) Version 5, Release 1. This program is used in the United States and Canada only.

#### 5769-CE2

IBM iSeries Client Encryption (56-bit) Version 4, Release 5. This program is used in countries other than the United States or Canada.

#### 5769-CE3

IBM iSeries Client Encryption (128-bit) Version 4, Release 5. This program is used in the United States and Canada only.

**Note:** These programs are an installation option on your OS/400 system.

2. Verify that one of the following server encryption licensed programs is installed:

#### 5722-AC2

IBM iSeries Server Encryption (56-bit) Version 5, Release 1. This program is used in countries other than the United States or Canada.

#### 5769-AC2

IBM iSeries Server Encryption (56-bit) Version 4, Release 5. This program is used in countries other than the United States or Canada.

#### 5769-AC3

IBM iSeries Server Encryption (128-bit) Version 4, Release 5. This program is used in the United States and Canada only.

**Note:** These programs are an installation option on your OS/400 system.

3. Verify that the following licensed programs are installed:

#### 5761-SS1

Product Option 34 - Digital Certificate Manager

#### 5761-DG1

IBM HTTP Server

4. Create a file share from your OS/400 system to your Provisioning Server/CA IAM CS.

## Select the Certificate Location

Select the location where you will import the certificate on your OS/400 system.

### To select the location

1. Start the HTTP Administration Server using the Operations Navigator or run the following command at your OS/400 command prompt:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

2. Connect to the HTTP Administration Server by pointing your browser at the following location and logging on with your system credentials:

```
http://server:2001
```

#### *server*

Specifies the name of the system running OS/400.

**Note:** Your logon ID must have the All Object Access and System Configuration permissions.

3. Select the Digital Certificate Manager link.

The Digital Certificate Manager window appears. The left frame contains navigational buttons and the right frame contains command buttons.

**Note:** The steps that reference the Digital Certificate Manager are based on Version 5, Release 1. If you are using another version, these steps may vary slightly.

4. Click the Select a Certificate Store button in the left frame.
5. Select the \*SYSTEM store radio button and then click Continue.
6. Enter the password for the \*SYSTEM certificate store and then click Continue.

## Import the Certificate Authority

Once you have selected the certificate location, import the certificate from your Certificate Authority (CA).

### From the left frame

1. Expand the Manage Certificates link.
2. Select the Import Certificate link.

The Import Certificate window appears.

3. Select the Certificate Authority (CA) radio button and then click Continue.
4. Enter the directory location that contains the certificate for the Integrated File System (IFS) on your OS/400 system and then click OK.

For example, enter: `\home\etadmin\certificate_file_name`.

5. Enter a unique name in the Label field for the certificate, for example etaCACert, and then click Continue.
6. Click the OK button.

The Digital Certificate Manager reads the certificate file and imports it into the system.

## Request a Server Certificate from the CA

After importing the Certificate Authority, you must now request a server certificate.

### From the CA

1. Select the Create Certificate option.  
The Create Certificate window appears.
2. Select the Server or client certificate radio button and then click Continue.
3. Select the Internet Certificate Authority radio button, for example VeriSign, and then click Continue.
4. Enter at least the following information and then click Continue:

#### Key size

1024 bits

#### Certificate Label

The name of your certificate

#### Common Name

The name of your server

#### Organization Name

The name of your organization

#### State or province

The name of your state or province

#### Country

The name of your country

5. Copy the generated lines (including the BEGIN and END lines) into a file and then save that file on your OS/400 system.

---

## Request a Server Certificate for Your System

To request a server certificate for your OS/400 system, follow this procedure:

### From a Certificate Authority (CA)

1. Install and configure Microsoft Certificate Services on your Windows 2000 server.
2. Point your browser to `http://computer-name/certsrv.`  
where *computer-name* is the name of the computer for which you are generating the certificate. The Microsoft Certificate Services Wizard appears.
3. Select Request a certificate, and click Next.
4. Select Advanced request, and click Next.
5. Select Submit a certificate request using a base64 encoded PKCS #10 file or a renewal request using a base64 encoded PKCS #7 file, and click Next.
6. Open the certreq.txt file with Notepad and cut its contents.
7. Paste the contents of certreq.txt in the Saved Request box, and click Submit.
8. Select Base 64 Encoded, and click the Download CA Certificate.
9. Save the certificate to your hard drive.

**Note:** Remember the location where you save the certificate.

## Import the Server Certificate

Once you generate a server certificate, you can import it into the system.

### From the CA

1. Expand the Manage Certificates link in the left frame.
2. Select the Import Certificate link.  
The Import Certificate window appears.
3. Select the Server or client radio button and then click Continue.
4. Enter the directory path that contains the certificate for the IFS on your OS/400 system and click Continue.  
For example, enter: `\home\etadmin\usildaaj.cer.`
5. Click OK.

## Assign the Server Certificate to Your OS/400 Applications

After importing the certificate, you must assign the server certificate to the following applications:

- OS/400 TCP Central Server
- OS/400 TCP Remote Command Server
- OS/400 TCP Signon Server

### From the CA

1. Expand Manage Applications in the left frame.
2. Select Update certificate assignment.
3. Select Server and then click Continue.

The Update Certificate Assignment window appears.

4. Perform the following steps for each of the applications:
  - a. Select the radio button for the application and then click the Update Certificate Assignment button.
  - b. Select the server certificate and then click the Assign New Certificate button.
5. Stop the applications by issuing the following command with each argument:

```
ENDHOSTSVR *CENTRAL
```

```
ENDHOSTSVR *RMTCMD
```

```
ENDHOSTSVR *SIGNON
```

6. Start the applications by issuing the following command with each argument:

```
STRHOSTSVR *CENTRAL RQDPCL(*TCP)
```

```
STRHOSTSVR *RMTCMD RQDPCL(*TCP)
```

```
STRHOSTSVR *SIGNON RQDPCL(*TCP)
```

## Configure CA IAM CS

If you are using a certificate from one of the following CAs, you do not need to perform this step:

- IBM World Registry
- Integrion Financial Network
- RSA Data Security, Inc.
- Thawte Consulting
- VeriSign, Inc.

If you want to use a certificate from a different CA, import the certificate into CA IAM CS. If you use the same certificate for each OS/400 system, you will perform these steps only once.

### Follow these steps: NEW STEPS

1. [Log in to CA IAM CS](#) (see page 31) Management Console.
2. At the top, click the Certificates tab.

This tab lists all of the certificates in the CA IAM CS keystore. To filter the list of certificates by their names, type in the Certificate Filter box.

3. To add a certificate, click Add, then enter the details of the certificate.

Add a certificate:

- **Certificate**—Enter the path to the certificate file
- **Alias**—Enter an alias for storing the certificate

Add a keystore:

- **Certificate**—Enter the path to the keystore file
- **Alias**—Enter an alias for storing the certificate. This alias also identifies the certificate in that keystore.
- **Keystore Password**—Enter the password of the keystore

### Follow these steps: OLD STEPS

1. Stop the CA IAM CS service.
2. Copy the CA certificate from your certificate authority to the directory where the connector client certificate keystore is located. Refer to the `server_jcs.properties` for the setting of `connectorManager.connectorClientCertStore` to determine the location of the connector client certificate keystore. The default value is set to `../conf/ssl.keystore`.
3. Open a DOS screen and change the DOS prompt to the directory where the connector client certificate keystore is located. For example,  

```
cd C:\Program Files\CA\Identity Manager\Connector Server\conf\
```

4. Issue the following command to import the CA certificate into the CA certificate store for Java:

```
..\..\bin\keytool -import -alias "eTrust Admin CA Certificate" -file  
certificate_name.cer -keystore ssl.keystore
```

- a. Enter the default password **secret** (if it has not been changed) at the "Enter a keystore password" prompt.

**Note:** You can use bin\ldaps\_password.bat utility to change the keystore's password.

- b. Enter **yes** at the "Trust this certificate" prompt.

5. Restart CA IAM CS service.

## Password Synchronization Agent

The Password Synchronization agent lets password changes, made on the OS/400 endpoint system, be propagated to your other accounts managed by CA Identity Manager. For more information, see the CA Identity Manager *Administrator's Guide*.

## OS/400 Support for FIPS and IPv6

For this release of CA Identity Manager, the OS/400 Connector does not support FIPS or IPv6.

The OS/400 Password Synchronization Agent also does not support FIPS or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

## Acquire an OS/400 Maching Using the User Console

You must acquire the OS/400 machine before you can administer it with CA Identity Manager.

### To acquire an OS/400 machine using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select OS400 from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create OS400 Endpoint page to register an OS/400 machine. During the registration process, CA Identity Manager identifies the OS/400 machine you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all OS/400 accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.

6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click an OS/400 endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.

- a. Click Schedule.

- b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### To use an explore and correlate definition

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire an OS/400 Machine Using the Provisioning Manager

You must acquire the OS/400 machine before you can administer it with CA Identity Manager.

#### From the OS/400 Endpoint Property Sheet

1. Register the machine as an endpoint in CA Identity Manager.

Provide the OS/400 server machine name, the user ID and password when acquiring an OS/400 system.

**Note:** Before acquiring the endpoint, make sure that it is registered to use the Java connector. To do this:

1. In Connector Xpress, right-click the OS400 endpoint
2. Select Set Managing CS
3. Select Java Connector

During the registration process, CA Identity Manager identifies the OS/400 machine you want to administer and gathers information about it.

2. Explore the objects that exist on the endpoint.

After registering the machine in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all OS/400 objects. You can correlate the accounts with global users at this time, or you can wait to correlate them.

3. Correlate the explored accounts to global users by choosing either of the following Connectors:
  - Use existing global users
  - Choose this option when there are already global users in CA Identity Manager and you want to connect the existing global users to the OS/400 accounts
  - Create global users as needed  
Choose this option when there are no global users and you want to populate CA Identity Manager from the OS/400 accounts.

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the user profile name with each existing global user name. If a match is found, CA Identity Manager associates the OS/400 account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the user profile name with each existing global user's full name. If a match is found, CA Identity Manager associates the OS/400 account with the global user. If a match is not found, CA Identity Manager performs the following step.
- c. CA Identity Manager associates the OS/400 account with the [default user] object or a new global user is created depending on your choice.

**Note:** More information on enabling Secure Socket Layer (SSL) communications between the Provisioning Server and the OS/400 system exists in the Provisioning Manager Help.

## Streaming Search Results

During the explore operation, the connector returns accounts to the Provisioning server as soon as possible instead of waiting until all accounts have been reviewed. This reduces memory usage resulting in a more efficient explore process.

## User ID Limitation

When creating User profiles in an Os/400 system, avoid using User ID numbers larger than 2147483647. A User ID larger than this cannot be mapped to global user UID.

## Non-Latin Characters are not Supported

When creating an OS/400 endpoint, non-latin character encodings are not supported.

## OS/400 Provisioning Roles and Account Templates

The OS/400 Default Policy, provided with the OS/400 Connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

### Policy Default Values

The new account templates are created with default values for most attributes. The new account templates are valid as soon as they are created and the attributes can be customized as necessary.

### OS/400 Cascading Delete

In previous versions, if an OS400 account owned objects, the account could not be deleted from CA Identity Manager. In this version, a flag called "cascadingDelete" in the OS400 connector.xml in CA IAM CS can be used to change this behavior. When the flag is set to true, the account and all objects owned by the account will be deleted. The default value is set to true.

If you want to override the default value, you must:

1. From a command prompt issue the following command:

```
cd cs-home\conf\override\as400\  
copy SAMPLE.connector.xml connector.xml
```

2. Edit connector.xml to set "cascadingDelete" property value to either "true" or "false" as desired.
3. Restart the im\_jcs so that the change takes effect.

**Note:** See [Customize the Configuration for a Connector](#) (see page 29) for more information on override connector.xml files.

### OS/400 Security Requirements

The OS/400 Connector issues remote commands to the endpoint system to manage accounts. The managing user profile must have permission to issue remote commands for creating, reading, modifying, and deleting accounts. Areas of security to consider include, special authorities of the managing account (\*SECADM is mandatory), exit programs implementing security, and authorization to user profiles.

### OS/400 Groups

You can create and maintain OS/400 groups using the Endpoint type task view. Use the OS/400 Group property sheet when managing your groups.

When a new group is defined, you should perform another exploration on the endpoint so CA Identity Manager has an updated group list.

## Deleting Account Members from Groups

Account members cannot be deleted from a group if that group is designated as the primary group. You must remove the group from the account member. For example, ProvisioningGroup has two account members, Prov1 and Prov2, and ProvisioningGroup is the primary group of Prov1. Prov2 has a primary group FinancialGroup and a supplement group called ProvisioningGroup. If you try to delete Prov1 and Prov2 from ProvisioningGroup, only Prov2 is removed successfully. Prov1 remains as an account member of ProvisioningGroup.

## OS/400 Directory Entry Names

When an account or group is created, a directory entry is created to store personal information about the user. Previously, the directory entry name was assumed to be the same as the user profile name. The attributes can now be set independently. If the Directory Entry Name is not specified, then a directory entry is not created for that user and many attributes cannot be set. Directory entry names must be unique across accounts and groups.

## Changing Connection Settings

The connection settings associated with each endpoint cannot be changed using the Endpoint property sheet. To change incorrect connection settings, follow these steps:

1. Right-click the endpoint name.  
The context sensitive menu appears.
2. Select Custom..., Change Admin Password.  
The Change Password Dialog appears.
3. Fill in the dialog and select OK.  
The dialog closes.

After the connection settings are changed, they are verified by attempting a connection to the OS/400 machine. The new settings are only saved if the connection is successful.

## Conventions

Use the following OS/400 conventions in your etacutil commands:

- The endpoint type name (eTNamespaceName) is OS400
- The endpoint type prefix is AS4. Therefore, the OS/400 class names are:
  - eTAS4Directory for an endpoint
  - eTAS4PolicyContainerName for an account template container
  - eTAS4Policy for an account template

## OS/400 Native Program Exits

The Java OS/400 Connector supports Native Program Exits in the same way as the eTrust Admin 8.1 SP2 OS/400 Connector did with the following limitations:

- Only one parameter of the Command Call format can be specified in Program Exits.
- The Program Exits can target only account objects, not groups.

**Note:** CA IAM CS provides a Scripting Style Processor interface for connectors. You can write code in the JavaScript scripting language to add extra logic to, or change the behavior of the OS/400 connector's operations. This approach is much more powerful than the C++ OS/400 Connector's Native Program Exits approach because you can access the full operation's details and write whatever you want to achieve for both account and group objects.

An example of this approach follows:

To change the description for each new account to the value of 'To demo scripting program exit concept works', use the `conf/as4script_opbindings.xml` file within the OS/400 Connector's archive file: `<jcs-home>/lib/jcs-connector-as400.jar`. Uncomment the `"staticMethodScriptStyleMetaDataFile"` in `<jcs-home>/conf/override/as400/connector.xml` and restart the `im_jcs` to turn on this behaviour.

See the *Connector Programming Guide* for more information on scripting-style programming.

## Kerberos Connector

You can use the Kerberos Connector to administer Kerberos principals and Kerberos password policies on Solaris servers. The Kerberos Connector provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users.
- Create and manage Kerberos principals using Kerberos-specific account templates.
- Change principal passwords and principals activations in one place.
- Synchronize global users with their provisioning roles or synchronize global users' accounts with their account templates.
- Assign a Kerberos account template to each of your Kerberos endpoints.
- Create accounts with the minimum level of security needed to access a Kerberos endpoint using the default endpoint type account template.
- Create, edit and delete password policies.

This connector is installed using the Connector and Java Connector Server installation process. For more information and requirements, [click here](#).

## Kerberos Connector Limitations

When you use the Kerberos Connector, we recommend that you consider the following limitations:

- The connector is based on the Solaris implementation of Kerberos version 5.
- The Windows CA IAM CS supports the Kerberos connector only when you use SSH.
- The connector can be installed with both the Windows and Solaris Server version of the Provisioning Server and manage the connector using CA IAM CS.
- The connector does not currently support keytab management of kadmin.
- The connector generates an error if you use any characters other than non-control ASCII characters in principal names, password policy names, and passwords, as Kerberos accepts only non-control ASCII characters.

## Unsupported kadmin Options

The Kerberos Connector is integrated with the kadmin interface to let you provision KRB principal and password policies; however you should be aware of the following:

- The connector does not support kadmin.local. Thus, options that are available only through kadmin.local are not supported.
- The keytab management (ktadd, ktremove) and administration privileges (ACL) aspects of kadmin are currently not supported.
- The `-c` option of kadmin is not supported since kadmin requests new service tickets from the KDC.
- The `-kvno` and `-keepold` password related options are not currently supported.

## Naming Limitations

Because the Kerberos Connector relies on kadmin to communicate with the Kerberos server, kadmin limitations are limitations of the connector.

Principal names, passwords, and password policy names can include any printable ASCII character. However, the following kadmin limitations are applicable, as described in the following sections:

- [Principal Naming Limitations](#) (see page 141)
- [Password Policy Naming Conventions](#) (see page 141)
- [Password Limitations](#) (see page 141)

## Principal Naming Limitations

- The double quote character (") is used by kadmin only as a quoting character. kadmin does not accept this character as part of a principal name. As a result, the connector will reject principal names containing this character.
- The @ character delimits principal names from realm names, and cannot be part of a principal or realm name.

The connector and kadmin accept an account name in the form name@realm, but if the realm is not the same as the realm specified by the endpoint, kadmin will treat this as a cross-realm principal. As a result, even though an entry for this principal will be included in the Kerberos database, unless you configure cross-realm authentication properly, this principal may not be able to authenticate to any KDC. If an account name with more than one @ character is used, kadmin will display a *Malformed name* error.

- The backslash character (\) is not properly supported. There are cases where, in a sequence of one or more backslash characters, one character may be dropped depending on the character immediately succeeding the backslash. The connector will not prevent the creation of principal names with backslash characters, but we recommend that you use the backslash character with caution.
- The hash (#) character can be used to start a principal name in kadmin. However, due to DN syntax limitations, the hash at the beginning of a principal name will be escaped with a backslash character (\). Within The Provisioning Manager, this escape character will always be present, but in the Kerberos system, the principal name will not have the escape character.

## Password Policy Naming Limitations

- kadmin uses the double quote character (") only as a quoting character. kadmin does not accept this character as part of a password policy name. Thus this connector will reject password policy names containing this character.
- kadmin will accept a password policy name that starts with a hash (#). However, due to DN syntax limitations, the hash at the beginning of a name will be escaped with a backslash character. Within the Provisioning Manager and the Kerberos system, this escape character will always be present.

## Password Limitations

The double quote character (") is used by kadmin only as a quoting character. kadmin does not accept this character as part of a password.

## Kerberos Installation and Deployment

This section provides information about installing and deploying the Kerberos Connector, including firewall configuration and keytab and cross-realm paths setup.

## Installation Prerequisites

The Kerberos server (KDC) must be Sun's Kerberos V5 implementation, and installed on Solaris 10. You must install the following packages.

- SUNWkdcr (Kerberos V5 KDC - root)
- SUNWkdcd (Kerberos V5 Master KDC – user)
- SUNWkrbr (Kerberos version 5 support – Root)
- SUNWkrbu (Kerberos version 5 support – Usr)

The CA IAM CS host must have the SUNWkdcd (Kerberos V5 Master KDC – user) packages installed, and you must configure them as a Kerberos client (that is, you must configure krb5.conf).

## Supported Configurations

The Kerberos Connector supports the following configurations:

CA IAM CS Host	SSH Server	Supported in CA Identity Manager version
Solaris 10 and a member of the Kerberos realm	None	SP8 and earlier
Solaris 10 and not a member of the Kerberos realm	Solaris 10, and a member of the realm	SP7 and later
Windows or Linux and not a member of the Kerberos realm	Solaris 10, and a member of the realm	SP7 and later

### More information:

[How to Set Up the CA IAM CS Host to be a Member of the Target Realm](#) (see page 147)

## How to Configure Authentication to Kerberos

If you are creating or migrating an endpoint, configure authentication to Kerberos using one or both of the following methods, [depending on your configuration](#) (see page 143):

- [Kerberos authentication](#) (see page 146)
- SSH authentication

## Install and Deploy the Connector

The installation package contains the components required to install the Kerberos Connector.

**Note:** If you have any standalone Provisioning Manager installations that require access to Kerberos, reinstall the Provisioning Manager to add the Kerberos Connector.

### Follow these steps:

1. Run the Provisioning Server install, and add the Kerberos Connector when prompted.

The server and directory components are updated with the schema for the Kerberos Connector.

2. Install the CA Identity Manager – Connector Server, and register it to the domain during the installation.

The connector is deployed and tells the server where to send Kerberos requests. When complete, you can start to acquire Kerberos endpoints.

**Note:** For more about setting up hosts, keytabs, and configuration files on a computer that hosts CA IAM CS where it is not the same computer as the KRB endpoint, see [How to Set Up CA IAM CS Host to be a Member of the Target Realm](#) (see page 147).

3. Depending on your configuration, set up SSH Permissions for the Kerberos Connector.

**Note:** For more information about when to configure the connector to use SSH, see [When to Configure the Kerberos Connector to Use SSH](#) (see page 143).

## When to Configure the Kerberos Connector to Use SSH

From CA Identity Manager 12.5 SP7 onwards, the Kerberos connector uses SSH to execute the kadmin command remotely. Set up SSH permissions on the SSH server under any of the following scenarios:

- You are upgrading any version of CA Identity Manager to SP7 or later, you have existing KRB endpoints, and you move CA IAM CS from Solaris to a Windows, Linux, or a Solaris host that is not a member of the realm.

**Note:** We recommend that you upgrade the CA Identity Manager Provisioning Directory, Provisioning Server, Provisioning Manager and the CA Identity Manager User Console. When installing the new CA IAM CS, register CA IAM CS to the Provisioning Server during installation.

- You are creating a Kerberos endpoint

**Note:** Ensure that the SSH server is a member of the realm.

## Pre-requisite Knowledge Required to Set Up SSH Permissions

To configure the Kerberos connector to use SSH, we recommend that you are familiar with the following:

- Basic UNIX file commands
- Basic UNIX concepts such as:
  - Output redirection
  - File permissions
  - Understanding, checking, and setting environment variables such as PATH
  - Navigating directories
  - Hidden directories and files
- User Administration
- Advanced commands for user and group administration such as `useradd` –create users and `passwd` – changing user passwords
- Advanced commands for services such as `svcs` – list services, `svcadm` – service administration

## Firewall Configuration

There are three main Kerberos components:

- Kerberos client applications (for example, `kinit`, `telnet`, `pop`)
- Server applications (for example, `telnetd`, `popper`)
- Kerberos KDC

Different types of traffic go between each pair of components your firewall is between. Depending on the pair of components your firewall is between, you will need to allow different types of traffic through your firewall.

**Note:** The notation `xxx/udp` or `xxx/tcp` used in the following table refers to an ephemeral port number (that is, >1024). This refers to a return port that the system assigns. The only assumption you can make about the port number is that it will be greater than 1024.

You may need to configure your firewall to allow traffic between a client program and the KDC on the following ports and protocols:

Client Application	To KDC	Return Traffic
Ticket requests (for example, <code>kinit</code> )	88/udp	xxx/udp
Kerberos 5-to-4 ticket conversion	4444/udp	xxx/udp

Client Application	To KDC	Return Traffic
Changing password (kpasswd under Unix)	749/tcp	xxxx/tcp
Changing password (under Windows, old interface)	464/tcp	xxxx/tcp
Changing password (under Windows, new interface)	464/udp	xxxx/udp
Running kadmin (also requires initial ticket, 88/udp)	749/tcp	xxxx/tcp

You may need to configure your firewall to allow traffic between an application server and the KDC on the following ports/protocols:

Application Server	To KDC	Return Traffic
Initial ticket request (for example, kinit)	88/udp	xxxx/udp
Kerberos 5-to-4 ticket conversion	4444/udp	xxxx/udp

You may need to configure your firewall to allow traffic between a client program and an application server on the following ports/protocols:

Application Program Server	To Server	To Client Traffic
rlogin/rlogind (w/o encryption)	543/tcp	xxxx/tcp
rlogin/rlogind (w/encryption)	2105/tcp	xxxx/tcp
rsh/rshd	544/tcp	xxxx/tcp
pop/popper	1109/tcp	xxxx/tcp
telnet/telnetd	Same as non-kerberos telnet/telnetd	
ftp/ftpd	Same as non-kerberos ftp/ftpd	

## Keytab and Cross-realm Paths Setup

Depending upon the Administrative principal's authentication options, and whether the host where CA IAM CS is deployed is in the realm specified for the endpoint, you may need to set up keytabs and cross-realm paths on the CA IAM CS host.

**Note:** For more information, see the *Solaris 10 System Administration Guide: Security Services*.

## Kerberos Authentication Methods

You can set up authentication using several different methods:

- [CA IAM CS host principal](#) (see page 149)
- [CA IAM CS principal and a custom keytab](#) (see page 150)
- [A principal other than CA IAM CS host principal and the default keytab](#) (see page 151)
- [A principal other than CA IAM CS host principal and a custom keytab](#) (see page 153)
- [Principal and password authentication](#) (see page 154)

## How to Set Up the CA IAM CS Host to be a Member of the Target Realm

The following section shows an example you how you can set up the host for use with CA IAM CS where the host will be a member of the target realm.

**Note:** This scenario is only applicable where CA IAM CS is on a Solaris computer that is not a member of the realm and you want to make it a member of the realm. If your CA IAM CS is on Windows or Linux, configure the connector to use SSH instead.

1. Ensure that the SSH server is a member of the realm.
2. Copy the file `/etc/krb5/krb5.conf` from the key distribution center to the CA IAM CS host. Ensure that:
  - The `default_realm` entry in the `libdefaults` section points to the target realm.
  - The KDC entry in the appropriate realm relation in the `realms` section points to the target KDC.
  - The `domain_realm` section has the correct mapping of the CA IAM CS host to the target realm.
3. Modify the logging and `appdefaults` sections in the `/etc/krb5/krb5.conf` file as required.
4. On the KDC, create a host principal for the CA IAM CS host and give it a random key. For example, use the following command in `kadmin` to create a new host principal:  

```
add_principal -randkey host/jcs_host.ca.com
```
5. Set up authentication to use one of the following:
  - [CA IAM CS host principal](#) (see page 149)
  - [CA IAM CS host principal and a custom keytab](#) (see page 150)
  - [A principal other than CA IAM CS host principal and the default keytab](#) (see page 151)
  - [A principal other than CA IAM CS host principal and a custom keytab](#) (see page 153)
  - [Principal and password authentication](#) (see page 154)

**Note:** For information on using the host for other Kerberos-related purposes, such as hosting other Kerberos applications or services, see the relevant sections on `kadmin`, `ktutil` and `krb5.conf` in the *Solaris 10 System Administration Guide: Security Services*.

## How you set Up Keytab Authentication Using the Host Principal

To set up keytab authentication using the host principal, do one of the following:

- If the default keytab file exists, [add the entries into a temporary keytab](#). (see page 149)
- If the default keytab file does not exist, [create a new keytab file](#). (see page 150)

## Set Up Keytab Authentication Using the CA IAM CS Host Principal if Keytab File Does Not Exist

To set up keytab authentication using the host principal if the default keytab file does not exist, you need to create a new keytab file.

### To specify keytab authentication using the CA IAM CS host principal if keytab file does not exist

1. Enter the following command in kadmin:

```
kadmin: ktadd -k temp_keytab jcs-host-principal
```

Kerberos adds the entries into a temporary keytab.

**Note:** This creates a new randomized password for the host principal, thus any entries for the host principal in any existing keytab file are no longer valid.

2. In the KDC, modify the kadm5.acl file using a text editor.

The connector adds the necessary privileges to the host principal.

**Note:** Use \* to specify all privileges.

3. In the Provisioning Manager, on the Endpoint Property sheet, click the Properties tab.

The Properties tab is displayed.

4. Select the Keytab option.
5. Leave the Keytab and Principal fields blank.
6. Click Apply.

The Kerberos Connector uses the CA IAM CS host principal for keytab authentication.

## Set Up Keytab Authentication Using the CA IAM CS Host Principal if Keytab File Exists

To set up keytab authentication using the host principal if the keytab file exists, you need to add keytab entries for the CA IAM CS host principal to the default `/etc/krb5/krb5.keytab` file.

### To specify keytab authentication using the CA IAM CS host principal if keytab file exists

1. Enter the following commands in ktutil:

```
ktutil: read_kt temp_keytab
```

```
ktutil: read_kt /etc/krb5/krb5.keytab
```

Kerberos reads both keytabs.

2. Enter the following command in ktutil:

```
ktutil: write_kt /etc/krb5/krb5.keytab
```

**Note:** Make sure that the entries for the host principal are the same, and are the latest key version number.

Kerberos writes the entries to the default keytab file and the temporary keytab file is merged into the default keytab.

3. In the KDC, modify the `kadm5.acl` file using a text editor.

The connector adds the necessary privileges to the host principal.

**Note:** Use `*` to specify all privileges.

4. In the Provisioning Manager, on the Endpoint Property sheet, click the Properties tab.

The Properties tab is displayed.

5. Select the Keytab option.
6. Leave the Keytab and Principal fields blank.
7. Click Apply.

The Kerberos Connector uses the CA IAM CS host principal for keytab authentication.

## Set Up Keytab Authentication Using a Custom Keytab and CA IAM CS Host Principal

To set up keytab authentication using a custom keytab file rather than the default keytab file and the CA IAM CS host principal, you can add keytab entries for the CA IAM CS host principal to your custom keytab file.

### To set up keytab authentication using a custom keytab and the CA IAM CS host principal

1. If the keytab file you want to use does not exist, use the following command to add entries to your custom keytab file.

```
kadmin: ktadd -k keytab jcs-host-principal
```

**Note:** This creates a new randomized password for the host principal, therefore any entries for the host principal in any existing keytab file are no longer valid.

2. If the keytab file exists, do the following:
  - a. Enter the following command in kadmin to add entries into a temporary keytab:

```
kadmin: ktadd -k temp_keytab jcs-host-principal
```

**Note:** This creates a new randomized password for the host principal, thus any entries for the host principal in any existing keytab file are no longer valid.

- b. Enter the following command in ktutil to read both keytabs:

```
ktutil: read_kt temp_keytab
```

- c. Enter the following command in ktutil to write it to the keytab file you want to use:

```
ktutil: write_kt keytab
```

The temporary keytab file is merged into the keytab file you want to use.

**Note:** Make sure that the entries for the host principal are the same, and are the latest key version number.

3. In the KDC, modify `kadm5.acl` using a text editor to add necessary privileges to the host principal.

**Note:** Use `*` to specify all privileges.

4. In the Provisioning Manager, on the Endpoint Property sheet, click the Properties tab.
5. Specify the keytab file you want to use, but leave the Principal field blank.
6. Click Apply.

The Kerberos Connector uses the keytab you specified for authentication.

## Set Up Keytab Authentication Using the Default Keytab and a Principal Other than the CA IAM CS Host Principal

To specify keytab authentication using the default keytab and a principal other than the CA IAM CS host principal, you can add keytab entries for the principal to the keytab file.

### To specify keytab authentication using the default keytab and a principal other than the CA IAM CS host principal

1. If the principal has a random password and the default keytab file does not exist, enter the following command in kadmin to add entries to the file:

```
kadmin: ktadd principal
```

**Note:** This creates a new randomized password for the target principal, therefore any entries for the target principal in any existing keytab file are no longer valid.

2. If the principal has a random password and the keytab file exists, do the following:

- a. Enter the following command in kadmin to add entries into a temporary keytab:

```
kadmin: ktadd -k temp_keytab principal
```

**Note:** This creates a new randomized password for the target principal, thus any entries for the target principal in any existing keytab file are no longer valid.

- b. Enter the following commands in ktutil to read both keytabs:

```
ktutil: read_kt temp_keytab
```

```
ktutil: read_kt /etc/krb5/krb5.keytab
```

- c. Enter the following command in ktutil to write the entries to the target keytab file you want to use.

```
ktutil: write_kt /etc/krb5/krb5.keytab
```

The temporary keytab file is merged into the target keytab file you want to use.

**Note:** Make sure that the entries for the target principal are the same, and are the latest key version number.

3. If the principal has a specific password, do the following:

- a. Enter the following command in ktutil:

```
ktutil: read_kt /etc/krb5/krb5.keytab
```

- b. Enter the following command in ktutil:

```
ktutil: addent -password -p principal -k kvno -e etype
```

- c. Repeat Step b for all encetypes.

ktutil adds the entries to the default keytab file.

**Note:** Ensure you add all keys for the principal, and that all resulting entries for the principal are the same and latest key version number.

4. Enter the following command in ktutil to verify that the list contains all required keys:  
`ktutil: list`
5. Enter the following command in ktutil to write the entries to the keytab file:  
`ktutil: write_kt /etc/krb5/krb5.keytab`
6. In the KDC, modify `kadm5.acl` using a text editor to add necessary privileges to the target principal.  
**Note:** Use `*` to specify all privileges.
7. In the Provisioning Manager, on the Endpoint Property sheet, click the Properties tab.
8. Specify the principal you want to use, but leave the Keytab field blank.
9. Click Apply.

The Kerberos Connector uses the keytab you specified for authentication.

## Set Up Keytab Authentication Using a Custom Keytab and a Principal Other than the CA IAM CS Host Principal

To specify keytab authentication using a keytab file other than the default keytab and a principal other than the CA IAM CS host principal, you can add entries for the desired principal to the desired keytab file.

### To set up keytab authentication using a custom keytab and a principal other than the CA IAM CS host principal

1. If the principal has a random password and the keytab file you want to use does not exist, use the following command to add entries:

```
kadmin: ktadd -k keytab principal
```

**Note:** This creates a new randomized password for the target principal, therefore any entries for the target principal in any existing keytab file are no longer valid.

2. If the principal has a random password and the keytab file exists, do the following:
  - a. Enter the following command in ktutil to add entries into a temporary keytab:

```
kadmin: ktadd -k temp_keytab principal
```

**Note:** This creates a new randomized password for the desired principal, thus any entries for the desired principal in any existing keytab file are no longer valid.

- b. Enter the following commands in ktutil to read both keytabs:

```
ktutil: read_kt keytab
```

```
ktutil: read_kt temp_keytab
```

- c. Enter the following command in ktutil to write the entries to the keytab file you want to use.

```
ktutil: write_kt keytab
```

The temporary keytab file is merged into the target keytab file you want to use.

**Note:** Make sure that the entries for the desired principal are the same, and are the latest key version number.

3. If the principal has a specific password, do the following:

- a. Enter the following command in ktutil:

```
ktutil: read_kt /etc/krb5/krb5.keytab
```

- b. Enter the following command in ktutil:

```
ktutil: addent -password -p principal -k kvno -e enctype
```

- c. Repeat Step b for all encetypes.

ktutil adds the entries to the keytab file you want to use.

**Note:** Ensure you add all keys for the principal, and that all resulting entries for the principal are the same and latest key version number.

4. Enter the following command in ktutil to verify that the list contains all required keys:

```
ktutil: list
```

5. Enter the following command in ktutil to write the entries to the keytab file:

```
ktutil: write_kt /etc/krb5/krb5.keytab
```

6. In the KDC, modify kadm5.acl using a text editor to add necessary privileges to the target principal.

**Note:** Use \* to specify all privileges.

7. In the Provisioning Manager, on the Endpoint Property sheet, click the Properties tab.
8. Specify the principal and keytab you want to use.
9. Click Apply.

The Kerberos Connector uses the keytab you specified for authentication.

## Set Up Principal and Password Authentication

You can specify authentication using principal and password authentication.

### To set up principal and password authentication

1. In the KDC, modify kadm5.acl to add necessary privileges to the target principal.  
**Note:** Use \* to specify all privileges.
2. In the Provisioning Manager, on the Endpoint Property sheet, click the Properties tab.
3. Specify the principal and keytab you want to use.
4. Click Apply.

Kerberos uses the principal and password for authentication.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

---

## Tools for Managing Data in Endpoints

You can manage the accounts on your directories using any of the client interfaces. Each of these interfaces offers unique functionality:

- **Provisioning Manager**—Lets you perform all administrative tasks. It is the most commonly used interface that all administrators can access.
- **Batch Utility**—Lets you perform repetitive and time-consuming tasks offline through a command line interface.

## KRB Etautil Conventions

Use the following Kerberos conventions in your etautil commands:

- The endpoint type name (eTNamespaceName) is KRB
- The endpoint type prefix is KRB. Therefore, the Kerberos class names are:
  - - eTKRBDirectory for an endpoint
  - - eTKRBAccountContainer for an account container
  - - eTKRBAccount for an account
  - - eTKRBPASSWORDPolicyContainer for a password policy container
  - - eTKRBPASSWORDPolicy for a password policy
  - - eTKRBPOLICYContainer for an account template container
  - - eTKRBPOLICY for an account template

## Program Exits (Common or Native)

Program Exits let you write software that executes during certain actions that the Provisioning Manager carries out. Program exits extend the framework of the Provisioning Manager and allow for additional functionality that can change or augment the standard Provisioning Manager behaviors. Of the two types of exits, the Kerberos Connector supports *Native Exits*.

*Native exits* are program exits executed from within the managed endpoint types. Program exits let you reference custom code from within the Provisioning Manager process flow.

Information about the Kerberos exit program is entered on the Kerberos Program Exit property sheet.

**Note:** For more detailed information about how to write program exits, see the *Programming Guide for Provisioning* for Common Exits.

## Acquire a Kerberos Machine Using the User Console

You must acquire the Kerberos machine before you can administer it with CA Identity Manager.

### To acquire a Kerberos machine using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select KRB Namespace from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create KRB Endpoint page to register a Kerberos machine. During the registration process, CA Identity Manager identifies the Kerberos machine you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all Kerberos accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click an Kerberos endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.

- a. Click Schedule.
- b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### **To use an explore and correlate definition**

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## **How You Acquire and Manage Kerberos Endpoints Using the Provisioning Manager**

You must acquire the Kerberos endpoint before you can administer it with the Provisioning Manager. When acquiring a Kerberos endpoint, perform the following steps from the Endpoint task view:

1. Acquire the machine as an endpoint in the Provisioning Manager.

**Note:** There are two ways to authenticate to the endpoint: use a keytab or use a principal and a password. To specify the authentication method, complete the fields on the Properties Tab on the KRB Endpoint Property Sheet.

2. Explore the objects that exist in the endpoint.

After registering the machine in the Provisioning Manager, you can explore its contents. The exploration process finds all Kerberos objects. You can correlate the principals with global users at this time, or you can wait to correlate them.

3. Correlate the explored principals to global users. You can choose to:
  - Use existing global users. Do this when there are already global users in the Provisioning Manager and you want to connect the existing global users to the Kerberos principals.
  - Create global users as needed. Do this when there are no global users and you want to populate the Provisioning Manager from the Kerberos principals.

When you correlate principals, the Provisioning Manager creates or links the principals on an endpoint with global users, as follows:

- The Provisioning Manager attempts to match the Kerberos principal name with each existing global user name. If a match is found, the Provisioning Manager associates the Kerberos principal with the global user. If a match is not found, the Provisioning Manager performs the next step.
- The Provisioning Manager attempts to match the Kerberos principal name with each existing global user's full name. If a match is found, the Provisioning Manager associates the Kerberos principal with the global user. If a match is not found, The Provisioning Manager performs the next step.
- The Provisioning Manager associates the Kerberos principal with the [default user] object or a new global user is created depending on your choice.

## Acquire a New Endpoint

You must acquire and register a Kerberos endpoint before you can administer it with the Provisioning Manager.

### To acquire a new endpoint

1. In the Provisioning Manager, click the Endpoints button.
2. In the Object Type list, select KRB Policy, then click New.  
The KRB Account Template dialog appears.  
The KRB Directory dialog appears.
3. Complete the fields on the KRB Directory tab, then click OK.  
The parameters you need to acquire and register a KRB Directory are specified.
4. Complete the fields on the Properties tab, and then click OK.  
The Kerberos Server, Realm and the credentials used for the connection are specified.
5. Complete the fields on the Endpoint Settings tab.  
The various settings that apply to controlling endpoints, such as password propagation and synchronization are specified.
6. Complete the fields on the Program Exits Reference tab.  
Program exits are viewed added edited or removed as specified.
7. Complete the fields on the Custom Settings tab.  
The supported encryption types and salt pairs for this endpoint are specified.
8. Complete the fields on the Attribute Mapping tab.  
The default attribute mapping defined in the schema file for the endpoint type are specified.
9. Complete the fields on the Logging tab.  
The logging settings for the new endpoint are specified.
10. Click Apply.

### More information:

[KRB Directory Tab](#) (see page 174)

[Endpoint Custom Settings Tab](#) (see page 175)

[KRB Endpoint Property Sheet](#) (see page 173)

## Modify an Endpoint

You can modify the parameters of an already registered KRB endpoint, such as the default account template used and the authentication mode used.

**Note:** If you modify any of the connection-related fields (for example, kerberos server, port, realm, security credentials), the connector will, as when acquiring a new endpoint, run a kadmin command to validate the changed values.

### To modify an endpoint

1. In the Provisioning Manager, acquire the endpoint you want to modify.
2. Explore and correlate the endpoint you want to modify.
3. In the EndpointName column on the leftmost side of the Provisioning Manager, double-click the endpoint you want to modify.

The KRB Endpoint Property Sheet dialog appears.

4. Modify the fields on the KRB Endpoint tab as required, and then click OK.

**Note:** You can only change comments and the default account template. You cannot change the name of the endpoint.

5. Modify the fields on the Properties tab as required, and then click OK.

You have specified the Kerberos Server, Realm and the credentials used for the connection.

6. Complete the fields on the Endpoint Settings tab.

The various settings that apply to controlling endpoints, such as password propagation and synchronization are specified.

7. Complete the fields on the Program Exits Reference tab.

Program exits are viewed added edited or removed as specified..

8. Complete the fields on the Custom Settings tab.

The supported encryption types and salt pairs for this endpoint are specified.

9. Complete the fields on the Attribute Mapping tab.

The default attribute mapping defined in the schema file for the endpoint type are specified.

10. Complete the fields on the Logging tab.

The logging settings for the new endpoint are specified.

11. Click Apply.

**More information:**

[KRB Directory Tab](#) (see page 174)

[Endpoint Custom Settings Tab](#) (see page 175)

## Change Administrator Passwords

If the admin principal password has been changed or reset or due to expire, you can update the Provisioning Directory with the new password.

**Note:** You cannot update the password for an endpoint that uses keytab.

**To change administrator passwords**

1. In the Provisioning Manager, acquire the endpoint you want to view principals for.
2. Explore and correlate the endpoint you want to view principals for.
3. In the EndpointName column on the leftmost side of the Provisioning Manager, double-click on the endpoint you want to change the administrator password for.

The KRB Endpoint Property Sheet appears.

4. Click the Properties tab.

The Properties tab appears.

5. Complete the Password field on the Properties tab.

The password for the principal is specified.

6. Click Apply.

The updated password is applied.

## Explore and Correlate Principals

You can correlate the explored principals with global users.

**To explore and correlate principals**

1. In the Provisioning Manager, right-click on an acquired KRB endpoint and then click Explore/Correlate.

The Explore and Correlate Endpoint dialog appears.

2. Complete the fields on the Explore and Correlate Endpoint dialog.

3. Click Start.

The Explore & Correlate Principals process starts.

When the process is finished, the Provisioning Manager displays the number of objects created in the endpoint in the Results section of the Explore and Correlate Endpoint dialog.

## View All Principals

After you acquire an endpoint you can view all principals, or you can specify search criteria to view specific principals.

### To view all principals

1. In the Provisioning Manager, acquire the endpoint you want to view principals for.
2. Explore and correlate the endpoint you want to view principals for.
3. In the EndpointName column on the leftmost side of the Provisioning Manager, right-click on an endpoint and click Content.

The Endpoint Content dialog appears.

4. In the Container tree, select KRB Accounts.
5. Complete the fields on the Endpoint Content dialog as required, then click Search.

The Provisioning Manager displays the KRB accounts in the endpoint in the KRBAccount column.

6. In the main the Provisioning Manager window, double-click the KRB principal you want to view the properties for.

The KRB Account Property sheet appears and displays the KRB account settings.

### More Information:

[KRB Account Property Sheet](#) (see page 176)

## Add a Principal

After you acquire an endpoint, you can add principals as required.

### To add a principal

1. In the Provisioning Manager, acquire the endpoint you want to add principals to.
2. Explore and correlate the endpoint you want to add principals to.
3. In the EndpointName column on the leftmost side of the Provisioning Manager, right-click on an endpoint and then click Content.
4. The Endpoint Content dialog appears.
5. In the Container tree, select KRB Accounts.
6. Click New.  
The KRB Account Property sheet appears and displays the KRB account settings.
7. Complete the fields on the Profiles tab.  
The userid and provisioning status information are specified.
8. Complete the fields on the Account Properties tab.  
The account properties of the principal and account template are specified.
9. (Optional) Click enc:salt.  
The Encryption Type and Salt Pairs dialog appears.  
Complete the fields on the Encryption Type and Salt Pairs dialog, and then click OK.  
The encryption types and salt pairs are specified.
10. Click OK.  
Kerberos adds the principal you specified.

### More Information:

[Acquire a New Endpoint](#) (see page 159)

[Profiles Tab](#) (see page 176)

[Account Properties Tab](#) (see page 177)

[Encryption Type and Salt Pairs Dialog](#) (see page 182)

[Naming Limitations](#) (see page 140)

## Modify a Principal

You can modify the properties of a principal such as user options and the associated the KRB account templates.

### To modify a principal

1. In the Provisioning Manager, acquire the endpoint that contains the principal you want to modify.
2. Explore and correlate the endpoint that contains the principal you want to modify.
3. In the EndpointName column on the leftmost side of the Provisioning Manager, right-click on an endpoint and then click Content.

The Endpoint Content dialog appears.

4. In the Container tree, select KRB Accounts.
5. Complete the fields on the Endpoint Content dialog as required, then click Search.  
The Provisioning Manager displays the KRB accounts in the endpoint in the KRBAccount column.
6. In the main Provisioning Manager window, double-click the KRB principal you want to modify the properties for.

The KRB Account dialog appears and displays the KRB account settings.

7. Complete the fields on the Profiles tab.  
The userid and provisioning status information are specified.
8. Complete the fields on the Account Properties tab.  
The account properties of the principal and account template are specified.
9. (Optional) Click enc:salt.

**Note:** The enc:salt button is only available if you select the Choose Random Password check box or if you modify the Password field.

The Encryption Type and Salt Pairs dialog appears.

Complete the fields on the Encryption Type and Salt Pairs dialog, and then click OK.

The encryption types and salt pairs are specified.

10. Complete the fields on the Account Templates tab.  
The account properties of the principal are specified.

11. Click OK.

Kerberos modifies the principal you specified.

**More Information:**

[Acquire a New Endpoint](#) (see page 159)

[Explore and Correlate Principals](#) (see page 161)

[Profiles Tab](#) (see page 176)

[Account Properties Tab](#) (see page 177)

[Encryption Type and Salt Pairs Dialog](#) (see page 182)

## Delete a Principal

Once you have explored an endpoint, KRB principals can be deleted as required.

**To delete a principal**

1. In the Provisioning Manager, acquire the endpoint that contains the principal you want to delete.
2. Explore and correlate the endpoint that contains the principal want to delete.
3. In the KRB Account column, right-click the principal you want to delete, then click Delete.
4. When prompted, confirm that you want to delete the principal.

The Provisioning Manager removes the Kerberos principal from the Kerberos database.

## Duplicating a KRB Account

When you duplicate a KRB account, you must make sure the following attributes are duplicated properly:

- eTKRBPasswordExpireDateTime
- eTKRBUserExpireDateTime
- eTKRBEncSalts
- eTKRBMaxTicketLife
- eTKRBMaxTicketRenewLife

## Kerberos Default Account Template

The Kerberos default account template, provided with the Kerberos Connector, gives a user the minimum security level needed to log in using Kerberos authentication. You can use it as a model to create new account templates. The account template contains the following values:

Account Template	Value
-expiry dates	Never

<b>Account Template</b>	<b>Value</b>
-ticket lives	Connector specified defaults
-flags	Default Kerberos flags
-password policy	None

## View KRB Account Templates

You can view all KRB account templates, or you can specify search criteria to view specific KRB account templates.

To view password policies, you can specify search criteria to view all or specific KRB password policies.

### To view KRB account templates

1. Click the Roles button.
2. In the Object Type list, select KRB Policy, then click Search.

The Provisioning Manager displays the KRB account templates in the AccountTemplateName column.

## Add a KRB Account Template

After you acquire an endpoint, you can add KRB account templates as required.

### To add a KRB account template

1. Click the Roles button.
2. In the Object Type list, select KRB Policy, then click New.

The KRB Account Template dialog appears.

3. Click the Account Template tab.

The Account Template tab appears.

4. Complete the fields on the Account Template tab.

The Provisioning Manager specifies general information about the Account Template.

5. Complete the fields on the Profiles tab.

The Provisioning Manager specifies the attribute values of the principal.

6. Complete the fields on the Account Properties tab.

The Provisioning Manager specifies the attribute values of the principal.

7. (Optional) Click enc:salt.  
The Encryption Type and Salt Pairs dialog appears.
8. Complete the fields on the Encryption Type and Salt Pairs dialog, and then click OK.  
The Provisioning Manager specifies the encryption types & salt pairs.
9. Complete the fields on the Program Exits Reference dialog.  
The Provisioning Manager specifies the Program Exits.
10. Complete the fields on the Workflow tab.  
The Provisioning Manager assigns approvers to an account template.
11. Complete the fields on the KRB Endpoints tab.  
The Provisioning Manager populates the password policies on the Account Properties tab.
12. Complete the fields on the Roles tab.  
The Provisioning Manager associates the provisioning roles with KRB account templates.
13. Click OK.  
The Provisioning Manager creates a new KRB account template.

**More Information:**

[Profiles Tab](#) (see page 176)

[KRB Endpoints Tab](#) (see page 181)

[KRB Account Property Sheet](#) (see page 176)

## Modify a KRB Account Template

You can modify the properties of a KRB account template such as attributes and the encryption types and salt pairs.

### To modify a KRB account template

1. Click the Roles button.
2. In the Object Type list, select KRB Policy, then click Search.  
The KRB Account Template dialog appears.
3. Click Search.  
The Provisioning Manager displays the KRB account templates in the AccountTemplateName column.
4. In the AccountTemplateName column, right click the account template you want to modify.
5. To modify general information about an account template, complete the fields on the Account Template tab.
6. To modify the attribute values of a principal, complete the fields on the Profiles tab.  
The Account Template Property dialog displays.
7. To modify the attributes of a principal, complete the fields on the Account Properties tab.
8. To modify the encryption types & salt pairs, do the following:
  - a. Click enc:salt.  
The Encryption Type and Salt Pairs dialog appears.  
**Note:** The enc:salt button is only available if you select the Choose Random Password check box or if you modify the Password field.
  - b. Complete the fields on the Encryption Type and Salt Pairs dialog, and then click OK.  
**Note:** The enc:salt and random passwords are account template-only attributes, and so changes will not be propagated to associated accounts.
9. To modify program exits, complete the fields on the Program Exits Reference dialog.
10. To assign approvers to a account template, complete the fields on the Workflow tab.
11. To associate provisioning roles with KRB account templates, complete the fields on the Roles tab.
12. Click OK.
13. When prompted, confirm that you want to apply the changes to the associated accounts.

---

## Delete a KRB Account Template

You can delete KRB account templates as required.

**Note:** You may not be able to delete the account template if there are accounts that have this template assigned.

### To delete a KRB account template

1. Click the Roles button.
2. In the Object type list, select KRB Policy.
3. Click Search.

The Provisioning Manager displays the KRB account templates in the AccountTemplateName column.

4. In the Provisioning Manager, right click the KRB account template you want to delete and then click Delete.
5. When prompted, confirm that you want to delete the KRB account template.

## Synchronize Accounts with Account Templates

To synchronize an account with a KRB account template, right-click on the KRB account template and select Synchronize Accounts with Account Template.

## View a KRB Password Policy

After you acquire an endpoint you can view all KRB password policies, or you can specify search criteria to view specific KRB password policies.

### To view a KRB password policy

1. In the Provisioning Manager, acquire the endpoint you want to view password policies for.
2. Explore and correlate the endpoint you want to view password policies for.
3. In the EndpointName column, right-click the endpoint you want to view password policies for, then click Content.

The Endpoint Content dialog appears.

4. In the Container tree, select KRB Password Policies.
5. Complete the fields on the Endpoint Content dialog as required, then click Search.
6. In the main the Provisioning Manager window, double-click the KRB password policy you want to view the properties for.

The Password Policy Properties dialog appears and displays the parameters of the password policy.

**More information:**

[Acquire a New Endpoint](#) (see page 159)

[Explore and Correlate Principals](#) (see page 161)

[Password Account Template Properties Tab](#) (see page 180)

## Add a KRB Password Policy

After you acquire an endpoint, you can add KRB password policy as required.

**To add a KRB password policy**

1. In the Provisioning Manager, acquire the endpoint you want to view password policies for.
2. Explore and correlate the endpoint you want to view password policies for.
3. In the EndpointName column, right-click the endpoint you want to add a password policy for, then click Content.

The Endpoint Content dialog appears.

4. In the Container tree, select KRB Password Policies.
5. Click New.

The Password Policy Properties dialog appears.

6. Complete the fields on the Password Policy Properties dialog, and then click OK.

The connector creates the password policy in the endpoint, and is now available to be assigned to principals.

**More information:**

[Acquire a New Endpoint](#) (see page 159)

[Explore and Correlate Principals](#) (see page 161)

[Password Account Template Properties Tab](#) (see page 180)

## Modify a KRB Password Policy

After you acquire an endpoint, you can modify KRB password policies as required.

When you modify a Kerberos password policy, the accounts that refer to that policy are not affected until the account's password is changed. When the password is changed, the new password must conform to the properties of the modified policy.

**Note:** If the password policy is assigned to principals, you can only modify the account template in a way that is below the current rule enforcement. For example, if the minimum password length is specified as eight characters, you cannot change it to ten characters.

### To modify a KRB password policy

1. In the Provisioning Manager, acquire the endpoint you want to view password policies for.
2. Explore and correlate the endpoint you want to view password policies for.
3. In the EndpointName column, right-click the endpoint you want to view password policies for, then click Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select KRB Password Policies.
5. Complete the fields on the Endpoint Content dialog as required, then click Search.  
The Provisioning Manager displays the password policies in the main Provisioning Manager window.
6. In the main Provisioning Manager window, double-click the KRB password policy you want to modify the properties for.  
The Password Policy Properties dialog appears.
7. Modify the fields on the Password Properties dialog as required, and then click OK.  
The Provisioning Manager modifies the password policy.

### More information:

[Password Account Template Properties Tab](#) (see page 180)

## Delete a KRB Password Policy

After you acquire an endpoint, you can delete KRB password policies as required.

**Note:** You cannot remove a password policy if a principal is assigned to it.

### To delete a KRB account template

1. In the Provisioning Manager, acquire the endpoint you want to view password policies for.
2. Explore and correlate the endpoint you want to view password policies for.
3. In the EndpointName column, right-click the endpoint you want to view password policies for, then click Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select KRB Password Policies.
5. Complete the fields on the Endpoint Content dialog as required, then click Search.  
The Provisioning Manager displays the password policies in the main Provisioning Manager window.
6. In the Provisioning Manager, right click the KRB password policy you want to delete, then click Delete.
7. When prompted, confirm that you want to delete the password policy.  
The connector removes the password policy from the endpoint.

### More information:

[Acquire a New Endpoint](#) (see page 159)

[Explore and Correlate Principals](#) (see page 161)

## KRB Endpoint Property Sheet

Use this property sheet to register or view the properties of a Kerberos endpoint. The following property pages apply to Kerberos endpoints:

### **KRB Endpoint**

Specifies information about the endpoint.

### **Endpoint Settings**

Specifies endpoint attributes.

### **Properties**

Specifies the Kerberos Server and Realm and the credentials used for connection.

### **Custom Settings**

Specifies the supported encryption type and salt pairs of the endpoint and how the disablement of the principal is implemented.

### **Program Exits Reference**

Specifies the priority, name, and type of program exit to be used.

### **Attribute Mapping**

Specifies endpoint mapping configuration information.

### **Logging**

Specifies logging information.

### **Statistics**

Provides read-only information reporting on activity for this object.

The fields in this property sheet are listed below:

### **OK/Apply**

Accepts or saves the information in the property sheet or dialog.

### **Cancel/Reset**

Exits or resets the values in the property sheet or dialog.

## KRB Directory Tab

Use this tab to register or view the properties of a Kerberos endpoint.

The fields in this tab are listed below:

### Directory Name

Specifies the name of the Kerberos directory.

**Size/Type:** 1 to 100 characters

This is a required field.

### Comments

User-supplied description field.

**Size/Type:** 1 to 128 characters

### Default Domain

Specifies the name of the domain where the default account template exists.

This drop-down list box displays your personal domain list only. This list is a local list and is unique for each account on the client workstation. This list is intended for the domains that you use frequently. Selecting a domain from this list does not require a request to a network server and is therefore very fast.

To display and access every domain in your entire network, click the Domains button. When you do so, you can add one or more domains to your personal domain list.

### Default Account Template

Specifies the default account template of the endpoint.

The default account template is used to create new accounts on the endpoint. You must define a default account template to activate the drag-and-drop feature on an organization or organizational unit. If the organization or organizational unit is not associated with an account template, the default account template at the tree level is applied.

The drop-down list box contains all the account templates defined for KRB endpoints.

### Domain

Displays every domain in the entire network and makes them available for you to access. Clicking this button displays the Full Domain List Selector dialog.

If desired, you can add one or more of these domains to your personal domain list, which is stored in the Default Domain drop-down list box.

Clicking the Domain button issues a request to a network server, and may take longer than using the Default Domain drop-down list box.

**More Information:**

[KRB Endpoint Property Sheet](#) (see page 173)

## Endpoint Custom Settings Tab

Use this tab to specify the supported encryption type and salt pairs for the endpoint.

The fields in this tab are listed below:

**Supported Encryption Type and Salt Pairs List Box**

When acquiring a directory for the first time, this list is pre-populated with the following six items:

- aes128-cts-hmac-sha1-96:normal
- arcfour-hmac-md5:normal
- arcfour-hmac-md5-exp:normal
- des-cbc-crc:normal
- des-cbc-md5:normal
- des3-cbc-sha1:normal

You can also manually add the type and pairs here and they will be made available at the Principal and Account Template property sheets. Once the pairs have been added, you can select a pair to be removed or edited.

To remove an encryption type and salt pair from this list box, select the encryption type and salt pairs and click the down arrow (Delete).

**Supported Encryption Type and Salt Pairs**

Specifies the supported encryption type and salt pairs to be added for this endpoint. To add an encryption type and salt pair, type the encryption type and salt pair in this field and click the up arrow (Add).

**Disable Principal Will Set "ALLOW TIX" to False**

When checked, specifies that the DISALLOW\_ALL\_TIX flag is set when the principal is disabled. This results in the suspended principal's ALLOW TIX check box on the Account Properties Tab to be unchecked.

**Disable Principal Will Expire the Principal**

When checked, specifies that the expiration date is set to a date in the past so that the principal is disabled.

**More Information:**

[KRB Endpoint Property Sheet](#) (see page 173)

## KRB Account Property Sheet

Use this property sheet to create, view, or modify the current properties of a KRB account. The following property pages apply to KRB accounts:

### Profiles

Specifies user information such as userid and status information of the account.

### Account Properties

Specifies account properties including the password, password account template, and advanced Kerberos options.

### Account Templates

Maintains account template inclusions.

### Statistics

Provides read-only information reporting on activity for this object.

The fields in this property sheet are listed below:

### OK/Apply

Accepts or save the information in the property sheet or dialog.

### Cancel/Reset

Exits or reset the values in the property sheet or dialog.

## Profiles Tab

Use this tab to view and modify the userid and provisioning status information.

The fields in this tab are listed below:

### UserId

Specifies the name of the Kerberos principal.

**Rule String:** %AC%

This is a required field.

### Provisioning information: Status

Specifies whether or not the user profile is suspended:

- 0 - active
- 1 - suspended

### More Information:

[KRB Account Property Sheet](#) (see page 176)

[KRB Account Template Property Sheet](#) (see page 179)

## Account Properties Tab

Use this tab to view and modify the account properties of a principal and account template.

The fields in this tab are listed below:

### **Password**

Specifies the password of the Kerberos principal.

**Size/Type:** 0 to 64 alpha-numeric characters

**Rule String:** %p%

### **Choose Random Password Check Box**

When checked, specifies that the password of the principal is randomly generated. The generated password conforms to the selected password account template.

### **enc:salt Button**

Displays the Encryption Type and Salt Pairs dialog where you can view or edit the encryption types and key salt pairs.

**Note:** If there is no password change, the dialog is read-only. If the password is changed or Choose Random Password is selected, the dialog is enabled and can be edited.

### **Maximum Ticket Life**

Specifies the maximum ticket life of the Kerberos principal in days, hours minutes and seconds.

### **Maximum Renewable Life of a Ticket**

Specifies the maximum renewable life of a ticket for the Kerberos principal in days, hours, minutes and seconds.

### **Password Account Template**

Specifies the password account template that is assigned to the principal.

**Size/Type:** up to 128 alpha-numeric characters

### **Expiration Date Time: User**

Specifies the expiration date of the principal.

### **Expiration Date Time: Password**

Specifies the expiration date of the principal's password.

### **ALLOW POST DATED Check Box**

When checked, specifies that the principal is can receive post-dated tickets.

**ALLOW PROXIABLE**

When checked, specifies that the principal can receive proxiable tickets.

**REQUIRES HWAUTH**

When checked, specifies that the principal must pre-authenticate using a hardware device before being allowed to kinit.

**ALLOW TIX**

When checked, specifies that the principal can be issued tickets.

**ALLOW FORWARDABLE**

When checked, specifies that the principal can receive forwardable tickets.

**ALLOW DUP SKEY**

When checked, specifies that the principal can receive a session key for another user.

**ALLOW SVR**

When checked, specifies service tickets can be issued to this principal.

**NEED PWD CHANGE**

When checked, specifies that a flag is set to force a password change.

**ALLOW RENEWABLE**

When checked, specifies that the principal is *not* prohibited from obtaining renewable tickets.

**REQUIRES PREAUTH**

When checked, specifies that the principal must pre-authenticate before being allowed to kinit.

**ALLOW TGS REQ**

When checked, specifies that a Ticket-Granting Service request for a service ticket is permitted for this principal.

**PWD CHANGE SERVICE**

When checked, specifies that a flag is set to mark this principal as a password change service.

---

## KRB Account Template Property Sheet

Use this property sheet to create, view, or modify the current properties of a KRB account template. The following property pages apply to KRB account templates:

### **Account Template**

Specifies general information about an account template.

### **Profiles**

Specifies the userid of the principal.

### **Account Properties**

Specifies the account properties of the account template including password, password account template, and advanced Kerberos options.

### **Program Exits Reference**

Specifies the priority, name, and type of program exit to be used.

### **Workflow**

Specifies the name of the technical approver for this account template.

### **KRB Endpoints**

Maintains endpoint group inclusions.

### **Roles**

Maintains provisioning role inclusions.

### **Statistics**

Provides read-only information reporting on activity for this object.

The fields in this property sheet are listed below:

### **OK/Apply**

Accepts or saves the information in the property sheet or dialog.

### **Cancel/Reset**

Exits or resets the values in the property sheet or dialog.

## Password Account Template Properties Tab

Use this tab to add a new or modify an existing password account template.

The fields in this dialog are listed below:

### Account Template Name

Specifies the name of a Kerberos password account template.

**Size/Type:** 1 to 128 alphanumeric characters.

This is a required field.

### Description

Specifies the description of the password account template.

This description only exists in the Provisioning repository.

**Size/Type:** 1 to 128 alphanumeric characters.

### Maximum Password Life

Specifies the maximum password life in days, hours, minutes, and seconds.

### Minimum Password Life

Specifies the minimum password life in days, hours, minutes, and seconds.

### Minimum Password Length

Specifies the minimum password length in number of characters.

### Minimum Number Password Character Class

Specifies the minimum number of password characters. You can choose one of the following valid values:

- 1 - only letters
- 2 - both letters and numbers
- 3 - letters, numbers, and punctuation

### Number of Old Keys Kept

Specifies the number of old keys to be kept to disallow reuse.

### Reference Count

Specifies the number of principals that reference this password account template.

This is a read-only field.

## KRB Endpoints Tab

Use this tab to associate one or more KRB endpoints in order to pre-populate password policies on the Account Property Tab.

The fields on this page are listed below:

### Available

Specifies the objects that are available for inclusion.

### Included

Specifies the objects that have been added as inclusions.

### Add

After selecting an object in the Available list, click the Add (>) button to add it to the Included list.

### Add All

After selecting an object in the Available list, click the Add All (>>) button to add all the objects to the Included list.

### Remove

After selecting an object in the Included list, click the Remove (<) button to remove it to the Available list.

### Remove All

After selecting an object in the Included list, click the Remove All (<<) button to remove all the objects to the Available list.

### Domain

Specifies the domain for the search.

### Domain

Displays the Full Domain List Selector dialog to add domains to the Domain field.

### Attribute

Specifies a simple attribute that is used to search.

### Advanced

Displays the Advanced Search Attributes dialog. Use this dialog to set more advanced search criteria.

**Tip:** This is useful if you want to narrow down the list of objects in the class. Click the Search button to start the search.

**Value**

Specify a value in the Value field to restrict the search criteria, and click the Search button. By default, the wildcard character (\*) is specified, which causes the search to return all entries.

**Note:** If you perform an advanced search for an attribute, this field is disabled.

**Search**

Starts the search.

**More Information:**

[KRB Account Template Property Sheet](#) (see page 179)

## Encryption Type and Salt Pairs Dialog

Use this dialog to view and edit the encryption type and salt pairs.

The fields in this dialog are listed below:

**Available List Box**

Specifies the encryption types and salt pairs that are available.

**Add Button**

Adds the selected available pair into the Included List box.

**Note:** If you try to add two pairs of the same type, only one will be added.

**Remove Button**

Removes the selected pair from the Included List Box.

**Included List Box**

Specifies the encryption type and salt pairs that have been included. Once you have clicked OK, the pairs are kept in memory and committed to the KDC together with the password change of the principal.

If there are invalid entries, an error message is displayed. To correct the error, you must go back to the Customization Tab of the endpoint property sheet.

**Note:** The encryption type and salt pairs listed here are sorted per Java's implementation of the natural ordering of strings. When two similar encsalts are passed to Kerberos, only the first one is used. For example, if both des-cbc-crc:normal and des-cbc-md5:normal are listed, only des-cbc-crc:normal is used because "c" has a lower value than "m".

## Known Issues

This section contain the following topics:

[Account Creation Fails with Invalid Date Specification](#) (see page 183)

[Account Creation Fails with Parameter is Incorrect](#) (see page 183)

### Invalid Date Specification on Account Creation

#### Valid on Windows and Solaris

**Symptom:**

When I enter an account expiry date greater than 2038 in the User or Password Expiration fields on the Account on the Account Properties tab on the KRB Account dialog I receive an invalid date specification message.

**Solution:**

Enter a date before 2038. kadmin only supports dates from 1970 to 2038.

### Account Creation Fails with Parameter is Incorrect

#### Valid on Windows and Solaris

**Symptom:**

When I enter an account expiry date greater than 2038 in the User or Password Expiration fields on the Account on the Account Properties tab on the KRB Account dialog I receive an invalid date specification message.

**Solution:**

Enter a date before 2038. kadmin only supports dates from 1970 to 2038.

## LDA Connector Migration to DYN JNDI

You can perform a migration of the LDA C++ connector included in CA Identity Manager r12, to DYN JNDI in the current release of CA Identity Manager. The migration changes the parser table from LDA to DYN, and changes the connector implementation.

The LDAMigrate script provides support for the migration of the LDA Connector to DYN JNDI and is part of the CA IAM CS installation.

**Note:** You must upgrade or install the 12.6.4 CA IAM CS and register it with the CA Identity Manager Provisioning Server before running the migration.

When you upgrade to CA Identity Manager, the upgrade process retains all existing LDA data. Retaining all existing data lets you run the LDA Connector migration against the environment. However, the LDA connector is not functional after you upgrade. The LDA connector is not functional because the migration does not update the LDA connector and the CA Identity Manager Provisioning Manager GUI plug-in to the new version of Visual Studio.

**Note:** A new CA Identity Manager installation does not install any LDA components, such as parser tables, the C++ Connector, or the CA Identity Manager Provisioning Manager plug-in.

## Custom Extensions to the LDA Schema

The LDA connector included an SDK that allowed you to make custom extensions to the LDA schema. To make custom extensions, you ran a make step that created a customized parser table, and created a custom CCS connector and CA Identity Manager Provisioning GUI DLLs.

If you have made extensions to the LDA schema, copy the.txt files describing your auxiliary class extensions to the correct directory before you start the LDAMigrate script.

## Vendor Support

For a list of vendors that support the inetOrgPerson schema (with minor variations), see the CA Identity Manager support matrix on the [CA Support Site](#).

## How the LDAMigrate Script Migrates the LDA Connector

During the migration, the LDAMigrate script does the following:

- Rolls the LDA extension mapping files from the mappings/ directory into an equivalent metadata document against the DYN schema (including visual grouping metadata). The LDAMigrate script then uses this document to create a DYN JNDI namespace named LDAP DYN.
- Copies all LDA directories and LDA account templates to the new DYN JNDI namespace.
- Updates all provisioning roles referencing LDA account templates to reference the equivalent DYN JNDI account templates.
- Creates a DYN JNDI namespace named LDAP DYN which replaces the superseded LDA namespace.
- Creates equivalents to any existing LDA directories under LDAP DYN.
- Creates equivalents of all existing LDA account templates under LDAP DYN.

**Note:** Before running the migration script, you must be able to contact the LDA endpoint because the LDAMigrate script must validate the password. To ensure that the migration runs smoothly:

- Wait until the endpoint becomes available before running the LDAMigrate script (preferred method), or
- Skip the unavailable endpoint by entering 'B' for its password when prompted by LDAMigrate.

### Migration Phases

The migration consists of two phases. During the migration, the LDAMigrate script does the following:

- [Constructs DYN metadata](#) (see page 185) for existing (possibly customized through custom extensions) LDA parser tables and schemas.
- [Creates equivalent DYN objects](#) (see page 187) that match existing LDA objects.

## DYN Metadata Construction

The LDAMigrate script uses some in-built base DYN JNDI metadata documents as a starting point.

These base metadata documents include the matching LDA attribute name for each DYN attribute in their <doc> sections. The LDAMigrate script captures this mapping information in the .properties files written to the mappings/ directory.

If you specify that you have extensions to the LDA schema during the migration process, the script appends the extensions to the base metadata.

The migration process writes the compiled metadata and some supporting .properties files showing the LDA to DYN attribute to the mappings/ directory.

During this phase of the migration, you can review the output metadata, make any manual adjustments if necessary, and ask the script to read the file you edited again.

## DYN Object Creation

After the migration process calculates metadata for the new endpoint type, the script prompts you for the connection details to a target CA Identity Manager Provisioning Server. The migration process makes the following changes to the Provisioning Server that you specified:

- Creates a DYN JNDI endpoint type named LDAP DYN and populates the endpoint with the calculated metadata. The LDA namespace remains unchanged.
- Searches under the LDA namespace and clones any directories discovered into equivalent DYN endpoints under the LDAP DYN endpoint type. This process maps LDA attributes on directories to their DYN equivalents. The migration script prompts you for the password for each directory, because the migration process cannot discover the passwords. The migration does not affect the LDA directories.
- Searches and clones all LDA account templates (policies) by mapping their LDA attributes to their DYN equivalents, and puts them in the following container:

```
eTDYNPolicyContainerName=DYN Policies, eTNamespaceName=LDAP DYN,...
```

**Note:** The migration process does not affect the LDA account templates.

- Searches for all role and account template inclusions which name LDA account templates. The script changes all references to point to the equivalent DYN account templates, optionally deleting the existing LDA references. This deletion is the only change that the script makes to the LDA data that existed before the migration.
- Creates a list of the existing LDA inclusions in the LDAMigrate.log file.
- Performs the policy and directory inclusions migration.

For example, the script creates a clone of an entry in the first container in the second container listed, as shown in the following example:

```
eTSubordinateClass=eTLDADirectory,eTSuperiorClass=eTLDAPolicy,eTIInclusionContainerName=Inclusions,eTNamespaceName=CommonObjects,dc=...
```

```
eTSubordinateClass=eTDYNDirectory,eTSuperiorClass=eTDYNPolicy,eTIInclusionContainerName=Inclusions,eTNamespaceName=CommonObjects,dc=...
```

## How to Perform the LDA Connector Migration

To perform the LDA Connector migration, do the following:

1. Upgrade your CA Identity Manager installation to 12.6.4.  
The installation preserves all LDA data.
2. Run the LDA migration script specifying the file names of any custom LDA extension files you have made.
3. [Reexplore and recorrelate your new LDAP DYN endpoints and validate their behavior.](#) (see page 190)

4. Synchronize global users with roles.

**Note:** For more information, see *Synchronize Global Users or Roles* in the *Administration Guide*.

5. [Remove LDA data.](#) (see page 191)

6. Reactivate program exits manually.

**Note:** Although the script migrates program exits, you still need to reactivate program exits manually.

7. (Optional) Remove the LDAMigrate log files.

**Note:** To perform a new mapping, manually remove the output .xml and .properties files from the mappings/ directory, and then rerun the LDA migration.

## Run the LDA Migration Script

To migrate the LDA connector, run the LDAMigrate scripts.

### To run the LDA migration script

1. If you have made extensions to the LDA schema, copy any relevant LDA extension mapping .txt files to the following directory:

*cs-home/resources/jndi/mappings/*

2. (Windows) Do the following:

- a. Open a command prompt window.
- b. Navigate to following folder of the connector server:

*cs-home/resources/jndi*

- c. Enter the following command, including the file names of any custom LDA extension files you have made.

LDAMigrate

**Example:** LDAMigrate mappings\myext1.txt mappings\myext2.txt

3. (UNIX) Do the following:

- a. Open a terminal window.
- b. Navigate to the bin folder of the connector server:

*cs-home/resources/jndi*

- c. Enter the following command, including the file names of any custom LDA extension files you have made:

LDAMigrate

**Example:** LDAMigrate mappings/myext1.txt mappings/myext2.txt.

**Important! (Windows and UNIX)** The order in which you specify these files defines the order in which the screens appear for the extensions in the CA Identity Manager Provisioning Manager, and the CA Identity Manager GUIs.

**Note:** If you do not provide any extension files, the unextended LDA schema is migrated.

4. If you are running the migration for the first-time, the process prompts you for connection details to a provisioning server.

The script displays default connection details in square [] brackets.

**Note:** For security reasons, the migration process does not echo password characters.

After the script makes a successful connection to the provisioning server, the script saves all the connection details, except the password. The migration script runs a query that finds all the existing LDA endpoints that are registered on the provisioning server.

5. When prompted, confirm that you want to review the metadata generated to match your .txt mapping files. Do the following:
  - a. Edit the `dyn_ldap_metadata.xml` file in the following location:  
`cs-home/resources/jndi/mappings/dyn_ldap_metadata.xml`
  - b. Make any manual adjustments required.
  - c. Confirm that you want the script to read the manually adjusted file again.

6. When prompted, confirm that you want clean LDA inclusions.

**Note:** If you do not confirm that you want to clean up LDA inclusions, then delete any LDA inclusions manually. Deleting the files helps ensure the roles that reference them are usable, as there is no LDA connector in CA Identity Manager 12.6.4.

7. When prompted, confirm that you want to delete the obsolete LDA references.

**Note:** You can safely delete the obsolete references as all role to LDA account template links are logged to `LDAMigrate.log`. Also, the roles are not functional until the LDA references are deleted (either automatically or manually).

8. When prompted, enter the password for each endpoint.

When the migration process makes a successful connection to the LDA endpoint, the migration saves the connection details in the provisioning server and the data migration starts.

The name of the newly created endpoint type is LDAP DYN.

## Reexplore and Recorrelate the New LDAP DYN Endpoints

After the migration is complete, we recommend that you reexplore and recorrelate your new LDAP DYN endpoints and validate their behavior. Adjust the data on the endpoints in the cases where there are:

- Direct inclusions between global users and account templates, but a role was not used to establish these links.
- Incorrect inclusions that the correlation established that you adjust manually.
- Configuration settings such as preferred exploration algorithm, which are persisted externally to the namespace and Directory objects.

We recommend that you correlate using the Use existing global users option. As you are doing a migration, all the required global users should already exist. If correlation attributes were not set correctly then using this option prevents the creation of unexpected global users. Once the correlation is complete, you can validate whether the accounts linked to the [default user] are expected or not. If it is necessary to create a Global User, then start a new correlation with the Create Global User as needed option. Starting a correlation with this option helps ensure that the correlation does not create a large amount of spurious accounts.

## Remove LDA data

To remove all LDA data, validate the LDAP DYN endpoint, then run the `cleanendpointtype` utility included with the CA Identity Manager Provisioning Server.

### Valid on Windows and UNIX

#### To remove LDA data

1. Copy the deprecated endpoint's `.dxc` or `.schema` file (for example, `etrust_lda.dxc`) into the `cleanendpointtype` directory.

The `cleanendpointtype` utility will find these files when you run it based on the file extension.

2. (Windows) Enter *either* of the following commands from the `cleanendpointtype` sub-directory of either the Provisioning Directory or the Provisioning Server:

```
C:\Program Files\CA\Identity Manager\Provisioning Directory\cleanendpointtype  
-password <password>
```

```
C:\Program Files\CA\Identity Manager\Provisioning Server\cleanendpointtype  
-password <passwordfile.txt>
```

3. (UNIX) Enter *either* of the following commands from the `cleanendpointtype` sub-directory of either the Provisioning Directory or the Provisioning Server:

```
/opt/CA/IdentityManager/ProvisioningDirectory/cleanendpointtype -password  
<password>
```

```
/opt/CA/IdentityManager/ProvisioningServer/cleanendpointtype/cleanendpoint  
type <passwordfile.txt>
```

The `cleanendpointtype` utility removes all LDA data from the endpoint.

## Cleanendpointtype Utility

The cleanendpointtype utility removes all LDA data from the endpoint.

This command has the following format for both UNIX and Windows:

```
cleanendpointtype {-password <password>} [-hostname <hostname>] [-port CA Portal]
[-username <username>] [-filename "[set the File Name variable]"] [-readonly]
[-createundo] [-verbose]
```

**-password <password>**

(Required) Specifies the password string or the filename that contains the password required to connect to the Provisioning Directory.

**-hostname <hostname>**

(Required if the Provisioning Directory is installed on a different computer) Specifies the hostname for the Provisioning Directory.

**Default:** local hostname

**-port CA Portal**

(Optional) Defines the port for the Provisioning Directory.

**Default:** 20394

**-username <username>**

(Optional) Defines the username to connect to the Provisioning Directory.

**Default:**

eTDSAContainerName=DSAs,eTNamespaceName=CommonObjects,dc=etadb)

**-filename "[set the File Name variable]"**

(Optional) Specifies the relative or absolute filename(s) for deprecated dxc/schema file(s), comma-delimited. If not specified, the utility uses all .dxc and .schema files in the current directory.

**-readonly**

(Optional) Runs the utility in read-only mode. The utility displays the changes that would occur, and produces LDIF files but does not change the endpoint data.

**-createundo**

(Optional) Creates undo LDIF files that allow you to undo any modifications or deletions made by the utility.

**-verbose**

(Optional) Displays additional operational messages and results.

## Remove the LDAMigrate Log Files

To remove the log files generated by the migration process, delete the log files in the following directory:

```
cs-home/resources/jndi/LDAMigrate.log
```

## Post Migration Step

If you want to edit the default screen definitions generated by LDAMigrate, you can use Connector Xpress to generate the account screens to view them in CA Identity Manager.

For more information, see the topic *How you Generate CA Identity Manager User Console Account Screens* in the *Connector Xpress Guide*.

For more information on the Role Definition Generator command, see the *Connector Xpress Guide*.

## Connector Xpress Templates

Connector Xpress includes templates to help you when you start new JNDI mappings. These templates provide a useful starting point for all JNDI mapping projects, and include specialized JavaScript mark-up that CA Identity Manager uses to render account management screens.

You can use these templates for creating new JNDI endpoint types rather than new LDA endpoints.

**Note:** For more information about Connector Xpress templates, see the *Connector Xpress Guide*.

Project Name Setting	Endpoint type	Description	Metadata File Name
JNDI NIS NetGroup	JNDI	For use with LDAP endpoints supporting NIS Netgroup Schema. This template demonstrates advanced association handling.	jndi_assoc_nisnetgroup_metadata
JNDI inetOrgPerson (Common)	JNDI	LDAP inetOrgPerson. This template should be used when no vendor-specific template is required.	jndi_inetorgperson_common_metadata

Project Name Setting	Endpoint type	Description	Metadata File Name
Lotus Notes Domino	JNDI	Lotus Notes Domino Server. This template allows easy mapping of eTLNDCustomAttribute* and eTLNDCustomCapabilityAttribute* attributes (the latter set are relevant for account template synchronization).	Ind_metadata
SDK DYN Compound	Any	Like SDKDYN but demonstrates use of Compound Values. This template uses compound values which allow complex data to be represented as a single string in JSON syntax, for instance '{"attr1": 42, "attr2": [ "a", "b" ], attr3: { "objName" : "jack" } }' represents a top level object with three attributes, the first is an integer (42), the next is an array of strings and the last a nested object.	sdkcompound_metadata
SDK DYN	Any	Software Development Kit demo connector. This template is a flat (i.e. non-hierarchical) case-sensitive connector that uses the recommended eTDYN* schema to save provisioning information to local files on the CA IAM CS host computer. Because it is flat, its containers are Virtual Containers not actually stored on the endpoint.	sdkdyn_metadata
SDK DYN Script	Any	Like SDKDYN but implemented in JavaScript. This template demonstrates how to implement an entire connector (all operation bindings) in JavaScript, as well as configuration information usually found in a connector.xml file, using the connectorXML metadata setting on the top-level namespace.	sdkscript_metadata
SDK DYN UPO Script	Any	Like SDK DYN Script but sends emails rather than writing to local files. This connector has similar functionality to the deprecated C++ UPO connector except that it sends emails rather than writing information to local files.	sdkuposcript_metadata

## Lotus Domino Connector

The Lotus Domino Connector lets you administer accounts and groups on Lotus Domino servers and provides a single point for all user administration by letting you do the following:

- Register multiple endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage Lotus Domino accounts using Lotus Domino-specific account templates
- Create and manage Lotus Domino groups and organizational units
- Activate accounts in one place
- Synchronize global users with their roles or synchronize global users' accounts with their account templates
- Assign Lotus Domino endpoints to your Lotus Domino endpoints
- Use the default Endpoint Type account template to create accounts with the minimum level of security needed to access the Lotus Domino endpoints
- Recertify, rename, and move Lotus Domino accounts in the hierarchy
- Generate and print reports about Lotus Domino accounts and groups

The Lotus Domino Connector uses the inherent object model and administrative processes underlying the Lotus Domino product. The next sections introduce the native Lotus Domino object model, the security application databases, and the administrative processes used by the Lotus Domino Connector to perform user management.

## Privileges Required to Connect to Lotus Domino

The user account that the connector uses to acquire a Lotus Domino endpoint must have the same access level, privileges, and roles as the Lotus Domino domain administrator in the following databases:

- names.nsf
- admin4.nsf
- certlog.nsf

**Important!** Consider logging in to the Lotus Domino Administrator application using the ID file for the user that the connector uses to access the endpoint. Using the same ID file helps ensure that the user has the necessary access level, privileges, and roles to complete user management actions.

## LND Support for FIPS and IPv6

For this release of CA Identity Manager, the LND Connector does not support FIPS or IPv6.

## Set Up the Connector for Lotus Domino

Before you connect to a Lotus Domino endpoint, complete the following steps:

1. Install or upgrade CA IAM CS.  
The installation registers CA IAM CS with the provisioning server, creates the endpoint, and populates it with its associated metadata.
2. Verify your access to the Lotus Notes Domino databases.
3. [Enable the administration process \(Adminp\)](#) (see page 196).
4. [Add encryption keys to the server ID](#) (see page 197).
5. [Configure remote access to the Domino Server](#) (see page 198).
6. [Sign the agents used by the connector](#) (see page 199).
7. [Enable SSL between Lotus Domino and CA IAM CS](#) (see page 200).
8. [Add NCSO.jar to the Lotus Domino connector](#) (see page 201).

**Note:** If you currently use the older C++ connector to Lotus Domino, you can migrate to the newer Java connector. For advice, see [LND Java Implementation Considerations](#) (see page 202).

### Enable the Administration Process (Adminp)

This procedure is for the Lotus Domino administrator.

This step helps ensure that you can use all of the Administration Process (Adminp) features. By default, Adminp runs when a Lotus Domino server is started; however, it is not automatically enabled for the domain.

**Follow these steps:**

1. Designate a server in the domain as the administration server for the Lotus Domino endpoint (Public Address Book).
2. Verify that the administration server for the endpoint is running the most recent version of Lotus Domino.

**Note:** After assigning an administration server to the endpoint, use the server copy of the Public Address Book for Adminp tasks. Do not use the local copy of the Address Book.

## Add Encryption Keys to the Server ID

This procedure is for the Lotus Domino administrator.

To allow CA IAM CS to communicate with the Lotus Domino server, add encryption keys to the server ID file. These keys let CA IAM CS encrypt and decrypt the archive and certifier databases (RegXArchive and RegXCertifier).

### Follow these steps:

1. Create an encryption key, naming it RegXArchive.

**Note:** To create this key, follow "To create a secret encryption key" in this document:

[http://publib.boulder.ibm.com/infocenter/domhelp/v8r0/topic/com.ibm.notes85.help.doc/sec\\_encryp\\_doc\\_t.html](http://publib.boulder.ibm.com/infocenter/domhelp/v8r0/topic/com.ibm.notes85.help.doc/sec_encryp_doc_t.html)

2. Repeat the previous step to create another key, naming it *RegXCertifier*.

**Note:** If you have already set up the connection between Lotus Domino and CA IAM CS, you have already created these encryption keys. To import these existing keys instead of creating new ones, use these instructions:

[http://publib.boulder.ibm.com/infocenter/domhelp/v8r0/topic/com.ibm.notes85.help.doc/sec\\_encryp\\_doc\\_imp\\_t.html](http://publib.boulder.ibm.com/infocenter/domhelp/v8r0/topic/com.ibm.notes85.help.doc/sec_encryp_doc_imp_t.html)

## Configure Remote Access to the Domino Server

This procedure is for the Lotus Domino administrator.

### Follow these steps:

1. Verify that the Domino server is accessible through the network, using TCP/IP. You must be able to ping the server using its Internet host name.
2. Enable the HTTP and DIIOP tasks on the Domino server, in one of these ways:
  - Add these tasks to the ServerTasks variable in the server's notes.ini file
  - Load these tasks at the server console
3. Use Domino Administrator to modify the server document to allow and restrict access as desired. The following are some suggested settings:
  - a. On the Security tab, in the Server Access section:
    - Access server – All users can access this server
    - Not access server – blank
    - Create new databases – blank (= everyone)
    - Create replica databases – LocalDomainAdmins, LocalDomainServers, and the Domino Administrator account used by the LND Connector if that account is not a member of LocalDomainAdmins
  - b. On the Security tab, in the Programmability Restrictions section:
    - Run unrestricted methods and operations – the Domino server name, the Domino Administrator account used by the LND Connector
    - Run restricted LotusScript Java agents – the Domino Administrator account used by the LND Connector
  - c. On the Security tab, in the Internet Access section:
    - Internet authentication – Few name variations with higher security
  - d. On the Ports tab, under Internet Ports, for DIIOP:
    - Authentication options
    - Name & password - Yes
    - Anonymous - Yes
  - e. On the Internet Protocols tab, under HTTP, in the R5 Basics section
    - Allow HTTP clients to browse databases – Yes

## Sign the Agents Used by the Connector

This procedure is for the Lotus Domino administrator.

To allow the connector to access the Lotus Domino endpoints, sign the agents that the connector uses. Use the keys discussed in Add Encryption Keys to the Server ID.

### Follow these steps:

1. Copy the `regarchv.ntf` and `regcerts.ntf` database templates from this location:

`cs_home\resources\lnd`

2. Place the copies in the data folder of the Domino Server endpoint:

- **Windows:** `lotus_home\Data`

- **UNIX:** `/local/notesdata`

3. Log in to Domino Designer using the account used by the connector.

4. Update the `regarchv.ntf` database template:

- a. Open the `regarchv.ntf` database template.

- b. In the Database View window on the right, expand Shared Code and click Agents.

A list of agents located in each template is displayed.

- c. For each agent, select the agent then click Sign.

This signs each of the agents that the connector is deployed within your environment.

5. Repeat step 4 for the `regcerts.ntf` database template.

If the `regarc.nsf` and `regcert.nsf` databases have not already been created, skip to the last step.

If these databases have already been created, follow the next steps to refresh the database designs.

6. Switch to the file view in Domino Designer.

7. Select `regarc.nsf` and click File, Database, Refresh Design.

8. Select `regcert.nsf` and click File, Database, Refresh Design.

The designs for these databases have been refreshed.

9. Close Domino Designer.

## Enable SSL between Lotus Domino and CA IAM CS

Communication between the Lotus Domino connector and the endpoint is not encrypted by default. To secure the connection, use SSL encryption. This is optional, but recommended.

### Follow these steps:

1. The Domino administrator does the following:
  - a. Configure the Lotus Domino endpoint to accept SSL connections.
  - b. IBM provides the following documentation on SSL Encryption:  
[http://publib.boulder.ibm.com/infocenter/domhelp/v8r0/topic/com.ibm.help.domino.admin85.doc/H\\_ABOUT\\_SETTING\\_UP\\_SSL\\_ON\\_A\\_SERVER.html](http://publib.boulder.ibm.com/infocenter/domhelp/v8r0/topic/com.ibm.help.domino.admin85.doc/H_ABOUT_SETTING_UP_SSL_ON_A_SERVER.html)  
[http://www.ibm.com/developerworks/lotus/library/ls-Java\\_access\\_2/index.html](http://www.ibm.com/developerworks/lotus/library/ls-Java_access_2/index.html)  
[http://www.ibm.com/developerworks/lotus/library/ls-Java\\_access\\_2/index.html](http://www.ibm.com/developerworks/lotus/library/ls-Java_access_2/index.html)
  - c. After the keyring files are on the server, start or restart the DIIOP task. This generates a file named `TrustedCerts.class` in the following location:  
`lotus_home/Lotus/Domino/data/domino/Java/`
  - d. Send the file to the CA Identity Governance integrator (if applicable).
2. The CA Identity Manager administrator does the following:
  - a. Save the `TrustedCerts.class` file in this location:  
`cs_home/extlib/`
  - b. Restart the CA IAM CS service (`im_jcs`).

In the next procedure, you add this class to the connector.

## Add NCSO.jar to the Lotus Domino Connector

The Lotus Domino connector uses the Domino Java API to access the Domino server using CORBA, and it requires the CORBA interface jar (NCSO.jar). Before you use the connector, create a bundle that contains this JAR, and then add the bundle to the connector.

Although the Notes client is not required on the client system, it must contain NCSO.jar in the classpath.

### Follow these steps:

1. Ask the Lotus Domino administrator to send you a copy of NCSO.jar, which is in the following location:

*lotus-home/Data/domino/java*

2. Save NCSO.jar locally.
3. Run the *Ind\_post\_install* script, which is in the following location:

*cs-home/bin*

The script asks for the location of the following items:

- **NCSO.jar**—This file is essential to the connector.
- **TrustedCerts.class**—(Optional) This file is required only if you want the connector to use SSL when communicating with the endpoint.

The script then creates a bundle and saves it in the same location as the script.

4. [Log in to CA IAM CS](#) (see page 31).
5. At the top, click the Connector Servers tab.
6. In the Connector Server Management area, click the Bundles tab.
7. Add the new bundle:

Note: You can deploy the OSGI bundle from the connector server GUI or copy the jar files to *ca-home/jcs/data/bundles/restore*. Then restart the connector server and wait up to ten minutes for it to load.

- a. In the Bundles area on the right, click Add.
- b. Browse to the bundle that the script created, then select the connector server on which this connector will be available.
- c. Click OK.

The new bundle appears in the Bundles list.

8. Find the main connector bundle in the Bundles list, then right-click its name in the list and select Refresh Imports from the popup menu.

The Lotus Domino connector can now use NCSO.jar.

## LND Java Implementation Considerations

The Java version of the LND Connector (installed with JCS) provides the same functionality as the previous (eTrust Admin r8.1) C++ version of the LND Connector with the added benefit of DJX support, but there are a few things to consider when switching from the C++ version.

- To add the Java LND connector to an existing system:
  1. Run the Provisioning Server install to reconfigure and add the LND connector.
  2. Run CA IAM CS installer and select Register with the Provisioning Server.

Doing this routes requests from the Provisioning Server to JCS for the LND endpoint type. See "Install the LND Connector" for more information.

- For this release it is no longer required to have Lotus Notes Client software installed, or a Notes.ini file available on the computer where the Provisioning Manager is running. The same is true for the computer where CA IAM CS hosting the LND connector is run.
- Connector operation, as well as migration requires the Lotus Notes Domino remote Corba interface jar (NCSO.jar) to be copied to

<jcs-home>/extlib/

from the server installation directory

(Windows) <lotus-home>\Data\domino\java

(UNIX) /local/notesdata/domino/java

and im\_jcs restarted.

- If existing Regarc and Regcert databases are used, these encryption Keys must be imported from the Admin ID used previously, to the Server ID, or all documents in the database created using the old encryption keys will show an error.
- ID file paths should be specified local to the endpoint or use a UNC style path.
- Organization names and organizational unit names no longer appear prefixed by "O:" and "OU:".
- There are new choices for mail systems that correspond to the available choices in Domino R6 and R7
  - Lotus Notes
  - POP
  - IMAP
  - Domino Web Access
  - Other Internet
  - Other
  - None

- The mapping information for the custom attributes is now contained in  
`<jcs-home>/conf/override/lnd/lnd_custom_metatdata.xml`  
Two sample files with the prefix of "SAMPLE" are provided including one covering DJX mappings. the override connector.xml file of the Java LND Connector. For existing LND endpoints, the credential information currently stored in the registry is no longer required.
- The following settings must be made to the Domino server's notes.ini file:
  - *\$Reg\_TempDir* variable representing the temp directory on the Domino server, must be added to the notes.ini file. If you add or change the variable, the Domino server must be restarted.  
**Note:** The directory specified must already exist. The LND Connector will not create the directory. An example of this setting:  
(Windows) *\$Reg\_TempDir*=c:\lotus\domino\data\temp  
(Windows) *\$Reg\_TempDir*=\user01w2k3\c\$\lotus\domino\data\temp  
(UNIX) *\$Reg\_TempDir*=/local/notesdata/temp  
The value is necessary for the temporary placement of ID files during ID password changes. For ID password changes to be successful, the ID must be located on the server at the time of the change. The value is also necessary for the temporary placement of ID files during account and certifier creation if another location is not specified for the ID.
- Two new fields are required when acquiring an LND Endpoint:
  - **DIOP Port**  
The LND connector uses the remote access support provided in the Lotus Domino Toolkit for Java/CORBA 2.1 to communicate with the endpoint.
  - **Use SSL/TLS**
- The connector is now case insensitive. Objects existence is checked ignoring case. If duplicate objects already exist during an explore operation, only one is managed (silently) by the Provisioning Manager.
- If connection to the endpoint is temporarily lost, the default retry settings of six retries 10 seconds apart are enforced. As for all CA IAM CS connectors, these settings can be adjusted using the *exceptionRetryMap* settings in the connector.xml file located in:  
`<jcs-home>/conf/override/lnd/.`
- Search results are streamed so the connector passes search results on to the Provisioning Server immediately rather than buffering all results before passing any on. This keeps the memory usage of the Connector Server to a minimum, regardless of the number of objects in an LND endpoint.

- Custom delete of an account in a secondary directory is not supported by the Administration Process (adminp) JAVA API used by the connector so the connector explicitly deletes only the person document itself. You must manually clean up any references to the person's name in group members/ACL's and so forth, where they exist.

**Note:** Account operations are not supported on accounts that are in a secondary directory and require the intervention or spawning of requests from the Domino administration process 'adminp'.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

### Acquire a Lotus Notes/Domino Server Using the User Console

You must acquire the Lotus Notes/Domino server before you can administer it with CA Identity Manager.

#### To acquire a Lotus Notes/Domino server using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select Lotus Domino Server from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create Lotus Domino Server Endpoint page to register a Lotus Notes/Domino server. During the registration process, CA Identity Manager identifies the Lotus Notes/Domino server you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all Lotus Notes/Domino accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:
  - a. Fill in Explore and Correlate name with any meaningful name.  
Click Select Container/Endpoint/Explore Method to click a Lotus Domino Server endpoint to explore.
  - b. Click the Explore/Correlate Actions to perform:
    - **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
    - **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
    - **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.
7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.  
You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.  
  
**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.
8. Click Submit.

#### To use an explore and correlate definition

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire a Lotus Notes/Domino Server Using the Provisioning Manager

Acquiring an LND endpoint is the first task you must perform before you can manage Lotus Notes/Domino accounts.

### From the Endpoint Type task view

1. Register the server as an LND endpoint using the Provisioning Manager.

Use the LND Endpoint property sheet to register a Domino Server. During the registration process, the Provisioning Server identifies the Domino Server you want to administer and gathers information about it.

**Note:** Regarc and Regcert databases are created when a new endpoint is acquired. For the LND Connector to work, you must copy the database templates, REGARCHV.NTF and REGCERTS.NTF, from the <jcs-home>\resources\lnd folder to the data folder of the domino server endpoint, (<lotus-home>\Data), prior to acquiring the endpoint for the first time.

2. Explore the objects that exist on the endpoint.

After registering the server with the Provisioning Manager you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all LND accounts, organizations, organizational units, and groups that exist on the server. You can correlate the accounts with global users at this time or later

3. Correlate the explored accounts with global users.

When you correlate accounts, the Provisioning Server creates or links the accounts on an endpoint with global users. By correlating accounts, you can specify what fields are matched with global user fields. The Provisioning Server provides a default correlation account template for Lotus Notes/Domino endpoints. This account template performs the following actions in this order:

1. The Provisioning Server attempts to match the Lotus Notes/Domino Account short name with each existing global user's unique name. If a match is found, the Provisioning Server associates the Lotus Notes/Domino account with the global user. If a match is not found, the Provisioning Server performs the next step.
2. The Provisioning Server attempts to match the Lotus Notes/Domino Account name with each existing global user's full name. If a match is found, The Provisioning Server associates the Lotus Notes/Domino account with the global user. If a match is not found, the Provisioning Server performs the next step.
3. If Create Global User is checked, the Provisioning Server creates a new global user; otherwise, it associates the Lotus Notes/Domino account with the [default user] object.

Once the endpoint is acquired, your Lotus Notes/Domino server appears as an endpoint object and your accounts are organized according to their respective certifier container.

The position of user objects within the endpoint is specified by its context. The complete context or path from an object to the country of the endpoint tree identifies and forms the object's hierarchical name, for example, eTLNDAccountName=xx,eTLNDOrganizationUnitName=yy,eTLNDOrganizationName,eTLNDCountryName=zz. All hierarchical names must be unique in the endpoint.

Before accounts can be created under the explored organizations or organizational units, each of the account containers must have their certifier details registered in the regcert.nsf database.

#### **To register the certifier details**

1. Search for the appropriate certifier (eTLNDOrganization or eTLNDOrganizationalUnit) in Provisioning Manager, and select it.
2. Right click the certifier, and from the popup menu, select custom.
3. Select 'Certifier Detail' and provide the certifier ID location on the Domino server and the certifier ID password and type.

## Managed Objects

CA Identity Manager organizes the following objects into a hierarchical endpoint tree:

- **Country object** depicts the country that is selected as the organizational root. This object is generally implicit in the Lotus Notes/Domino representation of the organizational hierarchy. Countries appear directly under the root container and their use is optional. Only Organization objects can be their direct children.
- **Organization objects** represent the Lotus Notes/Domino organization level certifiers that are registered with the Domino Administration Server and stored in the Domino Address Book. These can contain organizational unit objects or account objects. They can only appear under a Country object or root level.
- **Organizational Unit objects** represent the Lotus Notes/Domino organizational unit level certifiers that are registered with the Domino Administration Server and stored in the Domino Address Book. These can contain other organizational unit objects or account objects. (Maximum four OU objects).
- **Group objects** represent the groups on the Lotus Notes/Domino server. Group objects are leaf objects, but all appear directly under the single eTLNDGroupContainer container.

**Note:** LND groups cannot be added to other LND groups that are not in the same Domino directory. A group in the primary Domino directory cannot be added to a group that is in the secondary Domino directory, and vice versa.

- **Account objects** represent the accounts on the Lotus Notes/Domino server. Account objects are leaf objects and can appear under any Organization or Organizational Unit.

For more information about the managed objects or the endpoint schema, see the appendix "Endpoint Schema and Structure."

## How Managed Objects are Referred to in the Java LND Connector

The LND Connector uses Provisioning Server DNs to refer to all managed objects (except the DN of the administrative account used to connect to the endpoint). This includes syntax used to distinguish LND "Unique OUs" from real Organizational Units. For example, previously a group may have named an account (with a Unique OU) that was a member of the group as, "CN=user,OU=uou,O=Acme". An equivalent reference using the new connector is "eTLNDAccountName=user/uou,eTLNDOrganizationName=Acme".

## Update Notes.ini Settings

The following settings must be made to the Domino server's notes.ini file:

- *LDAP\_Disable\_QRCache* must be set to 1 to allow immediate updates to LND accounts through CA Identity Manager. The cache stores user names and attributes that have been previously searched for in order to speed up frequently performed searches.
- *\$Reg\_TempDir* variable representing the temp directory on the Domino server, must be added to the notes.ini file. The value for this variable must reflect the URL of the directory as it can be accessed from the client system. If you add or change the variable, the Domino server must be restarted.

**Note:** The directory pointed to by the URL must already exist. The LND Connector does not create the directory. An example of the of this setting:

(Windows) *\$Reg\_TempDir*=\\user01w2k3\c\$\lotus\domino\data\temp

(UNIX) *\$Reg\_TempDir*=\local\notesdata/temp

The value is necessary for the temporary placement of ID files during ID password changes. For ID password changes to be successful, the ID must be located on the server at the time of the change. The value is also necessary for the temporary placement of ID files during account and certifier creation if another location is not specified for the ID.

- The *DIIOPIORHOST* parameter accepts fqdn as the format for the hostname. For example, *DIIOPIORHOST*=<fqdn hostname>

## System Databases

The Provisioning Server uses five system databases to manage users. The first three databases originate from the Lotus Notes/Domino product. The last two databases are created when an LND endpoint is acquired and their templates have been copied to the Domino\data folder from <jcs-home>\resources\lnd folder.

Database	Description
ADMIN4.NSF	The Administration Process (Adminp) uses this database to post and respond to requests. You can approve requests that move users to different organization hierarchies, delete objects, delete mail files, and monitor Administration Process errors.
CERTLOG.NSF	Lists the names of all registered and certified users in a domain. This database is required if you want to use the Administration Process to simplify user management.
NAMES.NSF	Provides a domain-wide directory of the server, including its users, certifiers, foreign domains, and groups. This database includes documents that manage server-to-server communication and server programs.

Database	Description
REGARC.NSF	Stores archive documents for all managed accounts. Each archive document includes the login name, password, certificate expiration date, and a copy of the user ID file. <b>Note:</b> Agents in this template must be signed by the Admin account used by the Provisioning Server to connect to the Domino Server.
REGCERT.NSF	Stores certifier documents for all organization and organizational unit certifiers that certify accounts. Each certifier document includes the certifier name, type, password, and ID file. <b>Note:</b> Agents in this template must be signed by the Admin account used by the Provisioning Server to connect to the Domino Server.

**Note:** For details on the access privileges that you need to perform user management in your Lotus Notes/Domino domain, see the section, *Configure the Lotus Notes/Domino Connector.*

Each time a request is sent or received, the Provisioning Server opens these databases and makes changes to the information stored in them.

### Locations for Storing IDs

You can choose to store user and certifier IDs on the LND server or on a separate server. The following table lists the supported ID types and how to configure CA Identity Manager to store them.

ID Type	ID Location	Steps
User ID	On LND Server	<ol style="list-style-type: none"> <li>Select the User ID File Path check box on the UserID tab.</li> <li>Specify the absolute path (on the LND server) and filename as follows: <ul style="list-style-type: none"> <li>Windows: C:\Program Files\Lotus\Domino\data\user.id</li> <li>Unix: /local/notedata/user.id</li> </ul> </li> </ol>

ID Type	ID Location	Steps
	On separate system	<p>1. Select the User ID File Path check box on the UserID tab.</p> <p>2. Enter the full UNC path, including the drive as follows:</p> <p>\\server\c\$\share\user.id</p> <p>Do not omit the c\$.</p>
Certifier ID	On LND Server	<p>1. Select the Specify a Location for the Certifier ID check box on the Organization Certifiers tab.</p> <p>2. Specify the absolute path (on the LND server) and filename as follows:</p> <ul style="list-style-type: none"> <li>■ Windows: C:\Program Files\Lotus\Domino\data\certifier.id</li> <li>■ Unix: /local/notedata/certifier.id</li> </ul>
	On separate system	<p>1. Select the User ID File Path check box on the UserID tab.</p> <p>2. Enter the full UNC path, including the drive as follows:</p> <p>\\server\c\$\share\certifier.id</p> <p>Do not omit the c\$.</p>

## DJX Support

DJX extensions are now supported by LND Connector and are managed through the Custom Attributes tab.

See Custom Attribute Support, for more information on this feature.

## Custom Attribute Support

Several enhancements have been made for custom attribute support. They include:

- The connector supports up to 50 custom attributes eTLNDCustomAttribute01-50 and up to 50 custom capability attributes eTLNDCustomCapabilityAttribute01-50 (policySync="yes").
- Connector Xpress must be used to map custom attributes and custom capability attributes. Mapping custom attributes using XML file <jcs-home>/conf/override/Ind/Ind\_custom\_metatdata.xml is no longer available.
- Only power users should modify the custom metadata file and should take precautions like saving a backup copy of any existing file before updating. Tests to verify mapping changes should be conducted immediately after modifications are made, as any syntax errors introduced will render any LND connector hosted by the modified CA IAM CS inoperable until a valid custom file is reinstated (or the offending custom mapping file deleted).
- If customized mappings need to be active on multiple CA IAM CS installations, the same metadata needs to be deployed on each of them.
- Attribute values entered on the Custom Attributes tab are subject to validation by the connector. For example, integer fields emit a validation failure when non-digit characters are present.
- The values provided for any custom attribute configured to be date or dateTimes on the Custom Attributes tab, must be entered in the UTC time zone, not local time, unless the computers on which the client is running and the LND endpoint are configured to use the same time zone.

## Use Connector Xpress to Map Custom Attributes and Custom Capability Attributes

To specify custom attributes for LND, use Connector Xpress. To add custom attributes and map them, do the following:

### From Connector Xpress

1. Select Project, Create New from Template.
2. From the pop-up, select the relevant template, for example, 'Lotus Domino Server.con' or 'Lotus Notes Domino (DJX).con'.
3. Edit the custom attributes in Classes, eTLNDAccount, Attributes.
4. Save the updated 'Lotus Domino Server.con' or 'Lotus Notes Domino (DJX).con' file.
5. Right-click the Lotus Domino Server endpoint and select 'Deploy Metadata'.

## Alternative Languages Support for both Organization and Organizational Unit Certifiers

You can now Add, Delete, Query, and Modify the alternative language list from the Provisioning Manager. When adding an alternate language, both the normal (long) name and short name for the language is accepted. For example, both Japanese and ja are valid names. You must separate multiple languages by commas. The normal (long) name of the language is now displayed from the Provisioning Manager. The short name is stored in the repository the same as the previous C++ Connector.

The following are the alternative languages available for this Connector:

- Arabic [ar]
- Byelorussian [be]
- Bulgarian [bg]
- Catalan [ca]
- Czech [cs]
- Danish [da]
- German [de]
- Greek [el]
- English [en]
- Spanish [es]
- Estonian [et]
- Finnish [fi]
- French [fr]
- Gujarati [gu]
- Hebrew [he]
- Hindi [hi]
- Croatian [hr]
- Hungarian [hu]
- Indonesian [id]
- Icelandic [is]
- Italian [it]
- Japanese [ja]
- Korean [ko]
- Lithuanian [lt]
- Latvian [lv]
- Macedonian [mk]

- Marathi [mr]
- Malay [ms]
- Dutch [nl]
- Norwegian [no]
- Polish [pl]
- Portuguese [pt]
- Romanian [ro]
- Russian [ru]
- Slovak [sk]
- Slovenian [sl]
- Albanian [sq]
- Serbian [sr]
- Swedish [sv]
- Tamil [ta]
- Telugu [te]
- Thai [th]
- Turkish [tr]
- Ukrainian [uk]
- Vietnamese [vi]
- Konkani [x-KOK]
- Chinese (Simplified) [zh-CN]
- Chinese (Traditional) [zh-TW]

## Organizations and Organizational Units Handling Extended

Organizations and Organizational Units can now be deleted. However, it is not possible to delete these objects while they still contain child objects.

**Note:** Organizations cannot be created using the Provisioning Manager, although explored and listed organizations can be deleted.

## Correlate on Shortname

The default correlation attribute used by the Lotus Notes/Domino Connector is the Shortname attribute. When creating new global users, they will, by default, have the LND account shortname as the global user name. Accounts are then correlated to existing global users if the global user name matches the LND account's shortname value.

To use another attribute as the correlation attribute, for example, the full name, follow these steps:

1. From the System task in Provisioning Manager, select Domain Configuration.  
Several folders appear in the right-hand frame.  
Select Explore and Correlate, Correlation attribute from the right-hand frame  
The Domain Configuration tab appears.
2. From the Domain Configuration tab, modify the Correlation attribute appropriately.  
For example, to change the correlation attribute to the full name, you would set the Correlation Attribute to "GlobalUserName=Lotus Domino Server:Name".

## Configure Shortname Verification

The LND connector automatically generates unique short names. By default the LND connector searches existing Address Books for short names. However, if you store short names in non-standard locations and want to verify that short names that are automatically generated do not conflict with existing short names, you can change the default search behavior. You can specify the databases and views you want to search for shortnames by configuring the connector.xml file.

### Follow these steps:

1. Navigate to the folder `cs_home/conf/override/Ind/connector`.
2. Add the following to the `<property name="defaultConnectorConfig">` section of the `SAMPLE.connector.xml` file:

```
<property name="shortNameSearchViews">
  <map>
    <entry key="names.nsf"><value>$Users</value></entry>
  </map>
</property>
```

This configuration specifies the databases and views to search for short names. This configuration replaces the default connector behavior of searching existing Address Books for short names.

**Note:** For more information about customizing a connector.xml file, see [Configuring a Connector](#).

3. To search multiple views, add extra `<entry>` lines. For example:

```
<property name="shortNameSearchViews">
  <map>
    <entry key="db1.nsf"><value>$view1</value></entry>
    <entry key="db2.nsf"><value>$view2</value></entry>
    <entry key="db3.nsf"><value>$view3</value></entry>
  </map>
</property>
```

**Note:** You can only specify one view per database. For example, you cannot do the following:

```
<property name="shortNameSearchViews">
  <map>
    <entry key="db1.nsf"><value>$view1</value></entry>
    <entry key="db1.nsf"><value>$view2</value></entry>
    <entry key="db1.nsf"><value>$view3</value></entry>
  </map>
</property>
```

4. Rename the `SAMPLE.connector.xml` file to `connector.xml`.
5. Copy the file to the following folder on CA IAM CS:  
`conf/override/Ind`

6. [Restart the connector](#) (see page 26).

## Attribute Mapping

In order to improve performance, a minimum number of attributes is retrieved from the Domino server during exploration. By default, most Domino attributes are not mapped to the Global Users. If you need to populate Global User information from the Domino database, this information can be retrieved by defining additional attribute mappings. Follow these steps to set up attribute mapping:

1. Select Use custom settings from the Attribute Mapping tab.
2. Click Set Default and define at least one additional attribute mapping.

The LND Connector is now forced to retrieve all data from the Domino server.

**Note:** Exploration times are likely to increase due to extra information retrieval from the Domino endpoint.

## LND Account Templates

The Lotus Notes/Domino Default Policy, provided with the Lotus Notes/Domino Connector, gives a user the minimum security level needed to access an endpoint. You can use this account template as a model to create new account templates.

CA Identity Manager lets you manage provisioning roles and account templates from the User Console. For example, with Lotus Notes/Domino you can give a person access to the Lotus Notes/Domino server by registering the person using the Lotus Notes Domino Client. When registering a user, the connector creates a Person document in the Public Address Book (PAB), a user ID file, and a server-based mail file that defines the types of mail the user can receive. (The PAB is also called the Domino Endpoint.)

Similarly, an Internet user is defined as someone who is required to provide a password when accessing a Lotus Notes/Domino server or someone who uses client authentication with Secure Sockets Layer (SSL). In addition, this user uses either no mail or Internet mail, in which case a user ID and mail file are not necessary. An Internet user can be added by the connector creating a Person document in the Public Address Book (PAB). The document contains information about the user's name and Internet password.

In CA Identity Manager, you register both of these users by adding them to a provisioning role that has a Lotus Notes/Domino account template defined and a Lotus Notes/Domino endpoint associated with the account template.

## Archive Database Data Collection

Before password synchronization can take place, all current Notes account ID files with their passwords need to be obtained. The repository for these account IDs and passwords is the existing Archive database. Keeping this repository current allows for ID and password recovery. If you lose your account ID, the Administrator can retrieve the current account ID and password from the Archive database and send them to you.

To obtain the current account IDs and passwords, the archive database on the Domino server needs to be designated as “Mail-in” database and the *Send ID to Archive* DB hidden agent needs to be copied to all user mailfiles by the Administrator. The agent can be copied in one of the following ways:

- Using the Domino Designer client, copy the hidden agent from the Archive DB to each mailfile individually.
- Using the Domino Designer client, copy the hidden agent from the Archive DB to the mail template and let the Designer task automatically update the mailfiles. (recommended) By default, the Designer task runs daily at 1:00 a.m.

This agent gets the user's Notes account ID specified by the “KeyFilename” entry in their notes.ini file on the Domino Client, prompts the user to enter his or her password and then mails these items to the Archive database. The Archive DB must be configured as a Mail-in Database in the Domino endpoint using the Mail-in name “Archive Database”.

Once the agent is present in the user mailfiles, a mail message is sent notifying them that their account ID and password need to be sent to the Archive database. This message contains a button that activates the *Send ID to Archive* DB hidden agent which retrieves the ID file and mails both ID and password to the Archive database.

You must sign the agents with a signature that is valid in your organization in order for the new agents to run successfully. To do this, edit and save each agent in the Domino Designer client.

If a database is designed to receive mail, you must create a Mail-In Database document in the Domino Directory. This document must exist in the Domino Directory of every server that stores a replica of the database. The database cannot receive mail until you create this document.

To create a Mail-In Database Document

1. Make sure you have at least Author access with the Create Documents privilege selected.
2. From the People & Groups tab of the Domino Administrator, choose the Mail-In Databases Resources view, and click Add Mail-In database.
3. On the Basics tab, complete these fields:
  - Mail-in name:** “Archive Database”
  - Domain:** <Your domain name>

**Server:** <Your server>

**File name:** regarc.nsf

4. Save the document.

Another hidden agent called *Update ID File* has been added to the Archive database. This agent gets the current Archive documents for the user whose ID has been received and replaces the ID and password values on the document with those received in the mailed-in document. If a previous Archive document exists for that user, a new document containing the new ID and password is linked to the Archived document.

The RegXArchive encryption key must also be available in the current User.ID of the Administrator as well as the Server.ID of the Registration server to let the mail-triggered background agent in the Archive database run successfully. Alternatively, the agent can be run manually in the foreground by the Administrator if the encryption key cannot be added to the Server.ID.

You must have at least Designer access with Create LotusScript/Java agent to the user mailfiles in order to copy the hidden agent.

Add the following parameter to the NOTES.INI file on the Registration server:

```
Mgr_DisableMailLookup = 1
```

This parameter lets the mail-triggered agent in the Archive database to run even if the server is not the mail server for the Administrator.

A third, optional agent, *Remove ID Agent from User Mailfiles* can be added to the Archive database. This agent can be run manually by the administrator to remove the hidden agent from user mailfiles after the ID repository has been created.

## Password Synchronization

The administrative user of CA Identity Manager can change the password associated with an account's ID file in one of the following ways:

- Directly modifying the account
- Propagate a Global User password change to associated accounts.

Once the password is changed, an email is sent to the account, optionally, including the new server ID file.

To customize the subject and body of the email that is sent, set the following parameters in the NOTES.INI file on the Domino server:

"\$Password\_Change\_Subject=" specifies the message body to be used: If not specified, the parameter defaults to a generic subject.

"\$Password\_Change\_Message=" specifies the message body to be used. If not specified, the parameter defaults to a generic body.

"\$Password\_Change\_Attach\_ID=" specifies whether the new ID file is attached to the message. If not specified, the default is "Yes". Any value other than a case-insensitive match to "Yes" is interpreted as "No."

"\$Password\_Send\_To=" specifies who receives the message.

## Suspend/Resume

A combobox called Status located on the Profile tab of the Account and Account Template Property sheets provides a form of suspension using Deny Access groups.

When Status is set to Active, the account is not in a Deny Access group on the Domino server. When Status is set to Suspended, the account has been added to a Deny Access group on the Domino server.

**Note:** This functionality is currently limited in the number of accounts that can be concurrently suspended. For Domino 6.x, the limit is 64 KB. For Domino 7.x, the limit is 32 KB.

## LND Accounts

To manage LND Accounts, some manual steps are required.

Each Organization or Organizational Unit must have an entry in RegCert.nsf to permit CA Identity Manager access.

To create this entry, do the following:

1. Explore the Lotus/Domino endpoint.
2. Expand Organizations or Organizational Units in the List Tab.
3. Select an item and right-click it to select Custom, then Certifier Details.
4. Fill in all mandatory fields (Name, Storage location, and Password of the Certifier ID).

### Account Custom Operation (Rename, Recertify, Move In Hierarchy)

For Account Custom Operation (Rename, Recertify, and Move In Hierarchy), you must add an entry in RegArc.nsf for explored accounts. This is only for Accounts created with native tool and explored with the Provisioning Server.

To create this entry, do the following:

1. Explore the Lotus/Domino endpoint.
2. Expand Accounts in a List Tab.
3. On the History tab of each account for which you want to add an archive entry, click the Add/Update Archive button.
4. Fill in all mandatory fields (Location and Password of the Certifier Id).
5. Click OK.

## Cannot Create Notes Account When Mail Home Server Is not the Registration Server

### Symptom:

When I create a Notes user, I specify a mail home server that is not the same as the registration server. The user creation fails.

My organization uses the following separate Domino servers:

- A registration server
- A mail server

### Solution:

When you acquire a Lotus Domino endpoint, you specify the registration server.

When you attempt to create a new user, you specify the mail home server. The connector looks for the mail template file on the mail server. If it is not there, CA Identity Manager cannot create the new user.

To allow CA Identity Manager to create new Lotus Domino users, configure the registration server to allow the connector to find the file.

### Follow these steps:

1. Ensure that the registration server and the mail server are in the same Domino domain.
2. On the registration server, enable the Domain Catalog server task, then include the mail server in the catalog.

## Modify Home Server

The Provisioning Manager allows the Home Server field to be modified on LND accounts. Changing the Home Server only changes the value on the LND account. The mail file is not moved to the new server. You must still ensure that a mail file exists on that server.

## Management of Alternate Names on LND Accounts

The LND connector supports the management of alternate names on your LND accounts. The account ID must be certified by a certifier ID that has at least one alternate name configured for it in order to add alternate name information. To include the management of alternate languages on certifier files, the administrator must perform the following steps prior to using this new functionality:

1. Use the Domino Administrator (see Domino Administrator Help for more information) to configure the certifier ID with alternate names.
2. Update the existing Certifier documents for each certifier in the Certifiers database by using the Domino Administrator client to delete the existing certifier ID file from the Certifier document and then attach the updated certifier ID. You must also supply a password for the password field.

**Note:** This step is necessary any time the alternate name information is changed in a certifier ID file.

3. Update each Organization or Organizational Unit certifier that contains alternate information within the Provisioning database. The multi-valued attribute eTLNDOrgCertAltLanguageList for Organization and Organizational Unit objects must contain all the languages supported by the certifier.

You can Add, Delete, Query, and Modify the language list from the Provisioning Manager by using the LND Organization and Organization Unit management dialogs. The language codes are automatically expanded to language names when added. However, you can still use `etaultil` to add or update the list. See [Sample etaultil Commands](#) (see page 227) for an example.

Only those valid languages added to the Organization or Organizational Unit objects in the Provisioning database are displayed as choices when creating accounts using that Org or OU. For a list of languages and associated codes, see [Alternative Languages Support for both Organization and Organizational Unit Certifiers](#). (see page 213)

## How New Short Names are Created and Verified

Every Lotus Notes/Domino account has a unique short name.

When you create a new LND account in CA Identity Manager, you can enter the account's short name, or you can allow the connector to create it for you. The connector uses the account's first name, last name, and (if necessary) numbers to generate a unique short name.

It works like this:

1. You create a new LND account in CA Identity Manager, leaving the Short Name field blank.
2. After you click Submit, the connector uses an algorithm to create a short name.

The short name includes the first letter of the first name, some or all letters from the last name, and some numbers if necessary.

3. The connector checks the new short name against the existing short names in the available address books.
4. If the short name already exists, the connector modifies the new short name and checks it again.
5. When the new short name is found to be unique, the new account is created.

**Note:** If the connector cannot create a unique short name, the creation of the new account fails. If this happens, you should enter the new short name yourself, instead of allowing the connector to create it.

#### Example: How the connector generates a short name

In this example, you create a new account with the following details:

- First name: Peter
- Last name: Smith

When you create the new LND account, you leave the Short Name field blank.

The connector creates the short name *psmith*, and checks it for uniqueness. In this example, the short name *psmith* already exists.

The connector creates the new short name *psmith1*, and checks it for uniqueness. This short name is not in the available address books, so the new account is created.

## Configure the Location for Verifying Short Names

Normally, the new short name is checked for uniqueness in the available address books. However, you can configure CA Identity Manager to check the new short name's uniqueness in one or more other databases. To set this up, you need to edit a configuration file.

### Follow these steps:

1. Find CUSTOM\_SHORTNAME\_VALIDATION.connector.xml, in *cs-home/conf/override/*Ind.
2. Copy the file into the same directory, and rename it to connector.xml.
3. Open the new XML file, and find the <property name="shortNameSearchViews"> section, which is commented out.
4. Remove the comment marks to activate the shortNameSearchViews section.
5. Edit the <entry> section to point to the database view that contains the short names:

```
<property name="shortNameSearchViews">
  <map>
    <entry key="database-name.nsf"><value>$view-name</value></entry>
  </map>
</property>
```

where

#### **database-name**

Specifies the name of a database in which to search for matching short names

#### **view-name**

Specifies the view in that database. You can specify only one view for each database.

**Note:** To search multiple database views, add extra <entry> lines.

6. Save the file.
7. [Restart the connector](#) (see page 26)

### Example: Point to multiple databases

```
<property name="shortNameSearchViews">
  <map>
    <entry key="db1.nsf"><value>$view1</value></entry>
    <entry key="db2.nsf"><value>$view2</value></entry>
    <entry key="db3.nsf"><value>$view3</value></entry>
  </map>
</property>
```

## Etutil Script Considerations

For this release of the Java LND connector, there are several things to be aware of regarding etutil scripts:

- The connector now uses Provisioning Server DNs to refer to all managed objects (except the administrative user value during an acquire). Any existing scripts will have to be changed to comply.
- AddCert objects only need to appear in LDAP ADD requests achieve their intended goal as effective function calls. No error will be returned if an LDAP DELETE request targeting an AddCert object is received, but such a request is not necessary (the AddCert object is transient and immediately deleted once the ADD request is processed).

**Note:** An AddCert request targeting an object can be used to update the object where it already exists, It behaves like an LDAP MODIFY request.

- The **etutil\_addarchive.bat** script installed into **C:\Program Files\CA\Identity Manager\Provisioning Server\etc\Ind** has been updated to match the new connector behaviour.

## LND Etutil Conventions

Use the following Lotus Notes/Domino conventions in your etutil commands:

- The endpoint type name (eTNamespaceName) is Lotus Domino Server
- The endpoint type prefix is LND. For example, some of the Lotus Notes/Domino object class names are as follows:
  - eTLNDDirectory for an endpoint
  - eTLNDPolicyContainer for an account template container
  - eTLNDPolicy for an account template

## Sample etaultil Commands

### Update Language List

The following is an example etaultil command to update the Language List for an Organization or Organizational Unit using etaultil:

```
etaultil -d DOEJ003W2K3 -u etaadmin -p password update
'eTLNDDirectoryName=doeja03w2k3,eTNamespaceName=Lotus Domino
Server,dc=DOEJA03W2K3,dc=eta' eTLNDOrganization eTLNDOrganizationName='
eTLNDOrganizationName=cai' to +eTLNDOrgCertAltLanguageList='ko'
+eTLNDOrgCertAltLanguageList='fr'
```

### Modify Home Server

The following is an example etaultil command to modify the Home Server on an LND account using the Provisioning Manager and etaultil:

```
etaultil -d DOEJA01XP -u <eta administrator> -p <eta password>
'eTLNDOrganizationName=cai,eTLNDDirectoryName=doeja01w2k3,eTNamespaceName=Lotus
Domino Server' eTLNDAccount eTLNDAccountName='mail location03'
eTLNDHomeServer='CN=doeja01w2k3/O=cai'
```

You must ensure that the Mail Server attribute in the user's person document is updated correctly.

**Note:** The mail file must be manually created on the new server.

### Modify Mail Quota and Warning Threshold

The following is an example etaultil command to modify the Mail Quota and Warning Threshold values of an LND account using the Provisioning Manager and etaultil:

```
etaultil -d DOEJA01XP -u <eta administrator> -p <password> update
'eTLNDOrganizationName=cai,eTLNDDirectoryName=doeja01w2k3,eTNamespaceName=Lotus
Domino Server' eTLNDAccount eTLNDAccountName='file test02' eTLNDMailFileQuota=500
eTLNDMailFileThreshold=400
```

### Delete Accounts (With and Without Mail Files)

The following is an example etautil command to delete LND accounts using etautil:

```
etautil -d DOEJA01XP -u <eta administrator> -p <password> update  
'eTLNDOrganizationName=cai,eTLNDDirectoryName=doeja01w2k3,eTNamespaceName=Lotus  
Domino Server' eTLNDAccount eTLNDAccountName='mail file02' eTLNDAdminp=1  
eTLNDAccountOperation=2 eTLNDAccountState=2 eTLNDDelFlag=0
```

The possible values for eTLNDDelFlag, which controls deletion of the mail file are as follows:

- 0 = Don't delete mail file(s)
- 1 = Delete primary mail file
- 2 = Delete primary mail file and all replicas

### Rename Accounts

The following is an example etautil command to rename LND accounts using etautil:

```
etautil -d DOEJA01XP -u <eta administrator> -p <password> update  
  
eTLNDOrganizationName=cai,eTLNDDirectoryName=doeja01w2k3,eTNamespaceName=Lotus  
Domino Server' eTLNDAccount eTLNDAccountName='rename me107' eTLNDAdminp=1  
eTLNDAccountOperation=3 eTLNDAccountState=3 eTLNDNewLastName=me107  
eTLNDNewInitials='' eTLNDNewFirstName=renaming
```

### Move Accounts in Hierarchy

The following is an example etautil command to move LND accounts using etautil:

```
etautil -d DOEJA01XP -u <eta administrator> -p <password> update  
'eTLNDOrganizationalUnitName=ou1,eTLNDOrganizationName=cai,eTLNDDirectoryName=doe  
ja01w2k3,eTNamespaceName=Lotus Domino Server' eTLNDAccount eTLNDAccountName='move  
me202' eTLNDAdminp=1 eTLNDAccountOperation=5 eTLNDAccountState=5  
eTLNDNewOrganization='eTLNDOrganizationName=cai'
```

### Recertify Accounts (by Exact Date and by Number of Months)

The following are example etautil commands to recertify users by using both Provisioning Manager and etautil.

*By exact date:*

```
etautil -d DOEJA01XP -u <eta administrator> -p <password> update  
'eTLNDOrganizationName=cai,eTLNDDirectoryName=doeja01w2k3,eTNamespaceName=Lotus  
Domino Server' eTLNDAccount eTLNDAccountName='exp date01' eTLNDAdminp=1  
eTLNDAccountOperation=1 eTLNDAccountState=1 eTLNDExpiration='10/13/2010 12:00:00  
PM'
```

*By number of months:*

```
etautil -d DOEJA01XP -u <eta administrator> -p <password> update  
'eTLNDOrganizationName=0:cai,eTLNDDirectoryName=doeja01w2k3,eTNamespaceName=Lotus  
Domino Server' eTLNDAccount eTLNDAccountName='exp date01' eTLNDAdminp=1  
eTLNDAccountOperation=1 eTLNDAccountState=1 eTLNDExpireMonths=24
```

To confirm that the ID was recertified correctly, perform a “Refresh Status” on the account in Provisioning Manager to update the Archive document. Also view the account in Provisioning Manager to ensure the expiration date displays properly.

## Troubleshooting

### Cannot Open Database on Remote System

**Symptom:**

To open a database on a remote system, that system must list the server where the agent is running as a trusted server.

**Solution:**

Run the explore and correlate on the LND endpoint to remove the eTLNDHomeServer attribute from the repository.

## Improve the Performance of Explore and Correlate for Lotus Domino

In some situations, exploring and correlating a Lotus Domino endpoint can take a very long time. The poor performance can be caused by the following:

- Exploring the ExpirationDate attribute from certlog.nsf. This takes about three seconds for each account.
- Exploring accounts with a user organizational unit (UOU). The connector uses a Two Level search for each Organization Unit and Organization. This means that almost every account is explored twice.

To improve performance, edit the following settings in the Lotus Domino connector configuration. These new settings change the way the connector explores the endpoint:

### Follow these steps:

1. Enable custom configuration:
  - a. Browse to this location:  
`cs_home/jcs/conf/override/lnd`
  - b. Rename connector.xml so that you can revert to it if you need to.
  - c. Rename SAMPLEconnector.xml to connector.xml. This file now overrides the main configuration file. Any settings that you change here will apply after you restart the connector.

2. Edit one or more of the following settings in the new connector.xml file:

#### **readExpirationDateInSearch**

Change the value to FALSE. The connector no longer reads the ExpirationDate from the certlog.nsf.

#### **readOuFromPrimaryAddressBookOnly**

Change the value to TRUE. The connector now searches for OUs in the Primary Address Book (names.nsf) only. If you leave this set to FALSE, the connector searches all available address books for OUs.

#### **readAcctFromPrimaryAddressBookOnly**

Change the value to TRUE. The connector now searches for accounts in the Primary Address Book (names.nsf) only. If you leave this set to FALSE, the connector searches all available address books.

#### **enableUouDetection**

If the endpoint contains no UOUs, change the value to FALSE. The connector will no longer search for UOUs.

3. Save connector.xml and then [restart the connector](#) (see page 26).
4. (Optional) Read the expiration date into the provisioning directory using the following etauil commands:

```
etutil -d <Domain> -u <Administrator> -p <Password> add
'eTLNDDirectoryName=<LND Endpoint Name>,eTNamespaceName=Lotus
Domino Server,dc=<Domain>' eTLNDAAddCert eTLNDAAddCertOperation=2
eTLNDAAddCertOUName='eTLNDAAccountName=<LND Account
Name>,eTLNDOrganizationName=<Org Name>'
eTLNDAAddCertIDLocation='<ID FileLocation>'
eTLNDAAddCertSecretOUPwd='<User ID password>'
eTLNDAAddCertName='<temporary name>'
```

```
etutil -d im -u etaadmin -p etaadmin delete
'eTLNDDirectoryName=<LND Endpoint Name>,eTNamespaceName=Lotus
Domino Server,dc=<Domain>' eTLNDAAddCert
eTLNDAAddCertName='<temporary name>'
```

**Note:** Make sure the eTLNDAAddCertName values are the same in those two commands.

**More information:**

[Customize the Configuration for a Connector](#) (see page 29)

## Prevent Quota and Threshold Failure for LND Accounts

**Symptom:**

If Mail File ACL is set to Manager and you attempt to update quotas and threshold for existing LND accounts with Provisioning Manager, the update fails and you receive an error message starting with:

```
ERROR [provisioning] javax.naming.OperationNotSupportedException:
[LDAP: error code 53 - :ETA_E_0008<MAC>
```

**Solution:**

Update quotas and threshold in Provisioning Manager or CA Identity Manager. The error message no longer displays.

## Microsoft Active Directory Connector

This guide does not contain information about the Microsoft Active Directory connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Microsoft Exchange Connector

This guide does not contain information about the Microsoft Exchange connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Microsoft Office 365

This guide does not contain information about the Office 365 connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Microsoft SQL Server Connector

This guide no longer contains information about the MS SQL Server connector.

Instead, download the new endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Microsoft Windows Connector

The Windows NT option provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage Windows NT accounts using Windows NT-specific policies
- Change account passwords and account activations in one place
- Synchronize global users with their roles or synchronize global users' accounts with their policies
- Assign a Windows NT account template to each of your Windows NT endpoints
- Manage Windows NT Trust relationship between your Windows domains
- Use the default Endpoint Type account template to create accounts with the minimum level of security needed to access a Windows NT endpoint
- Create and manage Windows NT user groups
- Create and manage Windows NT shared folders
- Generate and print reports about Windows NT accounts, groups, and hosts

This connector is managed using the Connector and agent installation process. For more information and requirements, [click here](#).

This connector can also be managed using the Connector and C++ Server installation process as well.

## Configuring

If you plan to acquire that Provisioning Server system as an endpoint, you must install the Provisioning Agent for Windows Local Users and Groups.

**Note:** After installing the Provisioning Agent for Windows Local Users and Groups, add the local machine to the Caft host list.

## Upgrading the Provisioning Server

After upgrading the Provisioning Server to 12.6.4, you must install the Provisioning Agent for Windows Local Users and Groups if you want to acquire and manage the Provisioning Server host as an endpoint. After installing the Agent, you may need to re-authorize the Provisioning Server with caftost by issuing the following command from the SharedComponents\CAM\bin directory:

```
caftost -a hostname/IP address
```

## Installing the Provisioning Agent for Windows Local Users and Groups with setup.exe

In this example, we install the Provisioning Agent for Windows Local Users and Groups by using the setup.exe command. Perform the following steps:

1. Copy the contents of the folder ~\RemoteAgent\Windows200x from the CD to your local machine. For example, C:\temp\RN16.
2. Open a Command Prompt and navigate to the directory where you copied the folder.
3. Issue the following command:

```
setup.exe
```

The graphical installer will launch and the Remote Agent can be installed by following the prompts.

4. (Optional) To perform a silent install, add the qn argument and the licence=Accept line found at the bottom of the EULA. (Read the EULA in graphical mode first):  

```
setup.exe /w /S /v"/qn LICENSE=Accept /norestart"
```

## Configure the CAM and CAFT Service for Windows NT

The CAM/CAFT service is used to communicate between the C++ Connector Server and the Windows NT targets.

## Install the CAM and CAFT Service for Windows NT

You must install the Provisioning Agent for Windows Local Users and Groups and configure the CAM and CAFT Service on any Windows NT machine that you want to administer.

**Important!** For installing both the Provisioning Agent for Windows Local Users and Groups **and** the CA Identity Manager Microsoft Exchange Agent on the same machine, use the CAM and CAFT configuration steps for the Microsoft Exchange Agent in the Groupware Connectors section. Be sure to update the CAM and CAFT service logon account, as described in that section.

## How to Configure the CAM and CAFT Service for Windows NT

There are two ways to configure the CAM and CAFT service.

### To configure the CAM and CAFT Service using the command prompt

1. Log on to your Windows NT machine as the domain administrator or log on to your Windows NT Workgroup machines as the local administrator.
2. Issue the following command from a command window:

```
CAFTHOST -a NT_node_name
```

#### **NT\_node\_name**

Name of the C++ Connector Server if used.

**Note:** If the Provisioning Server is networked using DHCP or you do not use DNS for name resolution, the network name will not be recognized. Under these conditions, use the TCP/IP address for the Windows NT node name or add a Windows NT node entry in the local hosts file on your Windows NT machine.

3. Verify the previous command by issuing the following command:

```
CAFTHOST -l
```

**Note:** Firewalls may need to be configured to allow communications using the CAM/CAFT service.

### To configure the CAM and CAFT Service using the Host to Caft Definition dialog

1. Log on to your Windows NT machine as the domain administrator or log on to your Windows NT Workgroup machines as the local administrator.
2. Run Host to Caft Definition located in the default CA Identity Manager Start program group.

Start > Programs > CA > Identity Manager > Host to Caft Definition

3. In the Enter a server name field, enter the name of the C++ Connector Server if used. Click Add.

**Note:** The same conditions regarding DHCP and DNS listed in the previous section also applies here.

4. Verify that the server name added is listed in the Permitted managing servers list. Click OK.

Note: Firewalls may also need to be configured to allow communications using the CAM/CAFT service.

## Activate the CAM and CAFT Encryption for Windows NT

If your CA Identity Manager installation is using the CAM/CAFT encryption, ask your CA Identity Manager administrator for a copy of the Public Key keyfile and password in use.

If this is an initial installation of Provisioning Server, Provisioning Manager or CA Identity Manager Agent, and you want to activate CAM/CAFT encryption for the communication between the Provisioning Server and other CA Identity Manager servers or system endpoints, you must generate a Public Key file by entering the following command at the command prompt:

```
>caftkey -g keyfile password
```

### **keyfile**

Defines the name that you assign to the key file.

### **password**

Defines the password that you assign to the key file.

### **To activate the CAM and CAFT encryption**

1. Install your Public Key on both CAFT Agent and CAFT CA Identity Manager boxes using the previously-generated key file (see above) by entering the following command at the command prompt:

```
>caftkey -policy_setting keyfile password
```

- keyfile and password must have the values that you specified while generating the Public Key file.
- policy\_setting must be -i, -m, or blank.

The policy\_setting governs the communication between this computer (the local computer) and other computers that have the CAM and CAFT service installed, but may or may not have the CAM and CAFT encryption certificates installed.

- Policy -1 (caftkey -i keyfile password)

The -i option specifies Policy -1. This policy lets computers running previous versions of the CAM and CAFT service execute commands on this computer and lets this computer execute commands on those computers. Policy -1 encrypts messages if the other computer has these certificates installed. This policy does not encrypt messages if the other computer does not have these certificates installed.

- Policy 1 (caftkey -m keyfile password)

The -m option specifies Policy 1. This policy prohibits other computers from executing commands on this computer if they are running previous versions of the CAM and CAFT service without the encryption certificates. This policy also prohibits this computer from executing commands on those computers.

If both computers have the CAM and CAFT encryption certificates installed, but have different Public Key Files installed when Policy 1 is set, the command requests between the two computers always fails.

- Blank Option

The blank option specifies Policy 0. This policy is set if no Public Key File is installed, the CAM and CAFT encryption certificates were not installed properly, or if you do not specify a policy setting when you enter the caftkey command. Policy 0 specifies no encryption.

2. Recycle the CAM Service on each box where you install the new Key as follows:

```
prompt> cam close           //stop Cam/Caft service and processes
prompt> cam start           //start CAM service and process
```

3. After recycling the CAM service, recycle the CAFT service by issuing the following statement:

```
prompt> caft
```

4. Check the log produced by the CAFT service, and confirm the policy setting by issuing the following statement:

```
prompt> type "%CAI_MSQ%\ftlogs\dg000"
```

The output will be similar to the following example:

```
D:\> type "%CAI_MSQ%\ftlogs\dg000"
Thu Feb 16 09:05 Starting CAFT version 1.12 (Build 28)
Thu Feb 16 09:05 Encryption Policy -1
Thu Feb 16 09:05 ----- CAFT initialize complete -----
```

## Check the Policy Setting

To see what mode the machine is operating in, look in the following file:

```
%CAI_MSQ%/ftlogs/dg000
```

The log is as it was lastly generated by the CAFT command. After you change the configuration, you must initiate a new CAFT command so that the log will reflect the latest configuration. You can do this by issuing the following command:

```
Prompt> caft
```

## Manage the CAM and CAFT Service for Windows NT

**Note:** The CAM and CAFT Service allows encryption through certificates.

The CAM and CAFT Service is a daemon process. You can control this process using the Services panel on your Control Panel. To view the Services panel, click the Services icon. The CAM and CAFT Service is called CA Message Queuing.

## View the CAM and CAFT Service for Windows NT

Perform the following procedure to view the CAM and CAFT service.

### To view the CAM and CAFT service

1. Open the Windows Task Manager.
2. Click the Processes tab on the Windows Task Manager.

The CAM and CAFT daemon processes appear. The following is a sample of these processes:

Image Name	User Name	CPU	CPU Time	Mem Usage	
Caftf.exe	Administrat	00	00	0:00:16	1,600 K
Cam.exe	SYSTEM	00	00	0:00:08	704 K

## Start the CAM and CAFT Service for Windows NT

Although the CAM and CAFT Service starts automatically, there may be times when you have to manually start it.

### To start the CAM and CAFT Service

1. Double-click the Services icon on the Control Panel.

The Services dialog appears.

2. Select CA Message Queuing Server from the Service window, and click the Start button.
3. Click Close.

## Stop the CAM and CAFT Service for Windows NT

Perform the following procedure to stop the CAM and CAFT service.

### To stop the CAM and CAFT Service

1. Double-click the Services icon on the Control Panel.

The Services dialog appears.

2. Select CA Message Queuing Server from the Service window, and click the Stop button.
3. Click Close.

**Note:** After you stop the CAM and CAFT Service, the service must be restarted so CA Identity Manager can communicate with the Windows NT Remote Agent.

## Windows NT Support for FIPS and IPv6

For this release of CA Identity Manager, the Windows NT Connector supports both FIPS and IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

### Acquire a Windows NT Machine Using the User Console

You must acquire the Windows NT machine before you can administer it with CA Identity Manager.

#### To acquire a Windows NT machine using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select Windows NT from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create Windows NT Endpoint page to register a Windows NT machine. During the registration process, CA Identity Manager identifies the Windows NT machine you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all Windows NT accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.

6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click an Windows NT endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.

- a. Click Schedule.

- b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### To use an explore and correlate definition

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire the Windows NT Machine Using the Provisioning Manager

You must acquire the Windows NT machine before you can administer it with CA Identity Manager. Perform the following procedure to acquire a Windows NT machine.

### From the Endpoint Type task view

1. Register the machine as an endpoint in CA Identity Manager.

Use the Windows NT Endpoint property sheet to register a Windows NT machine. During the registration process, CA Identity Manager identifies the Windows NT machine you want to administer and gathers information about it.

2. Explore the objects that exist on the endpoint.

After registering the machine in CA Identity Manager, you must explore its contents by means of the Explore and Correlate Endpoint dialog. The Exploration process finds all the Windows NT objects.

3. Correlate the explored accounts with global users.

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the username with each existing global user name. If a match is found, CA Identity Manager associates the Windows NT account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the full name with each existing global user's full name. If a match is found, CA Identity Manager associates the Windows account with the global user. If a match is not found, CA Identity Manager performs the next step.
- c. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and associates the Windows account with the global user. If the Create Global Users as Needed button is unchecked, then CA Identity Manager associates the Windows account with the [default user] object.

**Note:** You can correlate the accounts with global users at this time, or you can do it later.

## Significant Fields in the Endpoint Tab of the Endpoint Property Sheet

The Endpoint Tab of the Endpoint Property Sheet includes the following significant fields:

**Explore timeout:**

Specifies, in seconds, the maximum duration time a request takes for the explore operation (one level and sub-tree searches). Default is 7200 seconds (2 hours).

**Operations timeout:**

Specifies, in seconds, the maximum time any CAM/CAFT request can take, except the explore option (based searches). The minimum value that can be entered in this field is 30 seconds. The default is 300 seconds (5 minutes).

**Changing password**

Removes expired flag field. When this field is checked and a password is changed by an administrator, the expired password flag is removed (W2K and Win2003 behavior). If the field is not checked, the expired flag remains (NT behavior), and you must change your password on the first logon.

## Terminal Server Attributes Management for Accounts

On the Windows NT Node Property Tab (Windows NT Endpoint Property Sheet), the Terminal Server field is used to identify the Terminal Services family machines. If there are no Terminal Server machines, the field is blank.

For each account in the Terminal Services systems, you can see and manage the attribute from the Environment and Sessions Tab and Terminal Services Profile Tab (Windows NT Account Template or Windows NT Account Property Sheets).

The values associated with the fields on these tabs are the same as those that are provided in the NT native tools, as listed below:

### Starting program

When checked, the program in the Program file name field from the directory in the Start in field is launched.

### Client devices

When checked, each box causes the action it describes to be performed at account login.

### Sessions

Lets you specify actions to be taken in case of long time idle sessions or disconnected sessions.

### Terminal Services Profile

Lets you specify the user profile, home directory and login to the terminal server.

**Important!** Do not use the @ symbol in an NT account name if you are managing NT systems (NT4, 2000, 2003, XP) with the terminal services option.

## Synchronize BDC Systems

**Note:** This feature is only available using the Provisioning Manager.

If a Backup Domain Controller (BDC) has been promoted to a PDC (Primary Domain Controller) using NT native tools, you can synchronize BDC promotions.

### To synchronize BDC systems

1. Right-click the endpoint and select Custom, Synchronize BDC Promotion.  
The NT4 Synchronize with BDC promotion dialog appears.
2. If the selected machine is a BDC, that has been promoted to PDC using NT native tools, fill in the dialog and click Start.

When the operation has run, the BDC is flagged as being the action PDC.

**Note:** Once the Start button has been clicked, the action cannot be stopped.

## Rename Accounts

**Note:** This feature is only available using the Provisioning Manager.

You have the ability to rename accounts.

### To rename an account

1. Right-click the required account, and select Rename from the menu.

The Windows NT account renaming dialog appears.

2. Enter a new name into the New name field and click OK.

At the end of the action, the old name is deleted and the new name is added.

**Note:** If the name is empty or longer than 20 characters, an error message is displayed.

## Windows NT Groups

**Note:** This feature is only available using the Provisioning Manager.

You can create and maintain Windows NT groups using the Endpoint Type task view. Use the Windows NT Group property sheet to manage your groups.

## Trust Relationships

**Note:** This feature is only available using the Provisioning Manager.

You create and maintain Windows NT trust relationships using the Endpoint Type task view. Use the Windows NT Endpoint property sheet to manage your trust relationships. The endpoint containing the trust relationships must be a PDC.

In managed NT4 PDC properties, you can create or delete inclusions between objects by clicking the Group Settings or Account Settings buttons in the Trust Relationship page.

Search filters for the local groups and for the global objects, where you can specify the attribute and corresponding value, enable you to restrict lists to see only a portion of the available objects.

## Shared Folders

**Note:** This feature is only available using the Provisioning Manager.

You can create and maintain shared folders on Windows NT machines from the Endpoint Type task view. Use the Windows NT Shared Folder property sheet to manage your shared folders.

## Size Limit Exceeded

When result size limits are exceeded, every panel only returns as many items as possible. The following are particularly affected:

- Endpoint screens where inclusions are made for trust relationships
- Local Group tab for global group inclusions

For more information, see the following:

- *The Administrator Guide*
- The Working with Endpoints, Windows NT topic in the *Procedures* help

## Well-Known Attribute %ENDPOINT\_DESCRIPTION%

This applies to the following connectors: Windows, Oracle RDBMS, Siebel, UNIX NIS, MS SQL Server, and OpenVMS.

These endpoint types do not define the endpoint description in the eTDescription attribute. This means that until recently, you could not search on the endpoint description. In addition, the search screen did not display the endpoint description.

You can now use the new well-known attribute %ENDPOINT\_DESCRIPTION% for the affected connectors.

The DefaultEndpointSearch role definition has been updated, to allow the Default Endpoint Search screen to use the new well-known attribute. If you are upgrading from an older version of CA Identity Manager, import this modified screen after upgrading. For more information, see the Environment Changes section in your Upgrade Guide.

## Exit Commands

The following native program exits are supported for the NT connector:

- Pre-Exit: The Windows NT agent executes a user command *before* it performs its own operation.
- Post-Exit: The Windows NT agent executes a user command after it performs its own operation.

Resources to write program exits comes with the Provisioning SDK. For more information, see the *Programming Guide for Provisioning*.

## Configuration File

Currently, CA Identity Manager implements the pre-exits and post-exits in the NT Domain. Therefore, to trigger the user add-on commands, you must define them in the ExitSetup.ini file that is installed by CA Identity Manager. By default, this file does not activate any specific command.

The ExitSetup file is located in the following directory:

*Agent Home Dir*\Config\ExitSetup.ini

For example:

C:\Program Files\CA\Identity Manager\Provisioning Agent for Windows Local Users and Groups\data\ExitSetup.ini

The following table describes the typical contents of the configuration file:

Headers and Variables	Value	Description
[Pre-exit]		Pre-exit section header
Command=	Provided by the user	User command specified with an absolute path
Stop on error=	Yes/No	Yes-indicates that the agent command is not launched if the pre-exit fails No-indicates that the agent command is launched even if the pre-exit fails. This is the default value.
[Post-exit]		Post-exit section header
Command=	Provided by the user	User command specified with an absolute path

## Requirements for the User Commands

The requirements, that are needed to implement the pre-exit and post-exit commands, are as follows:

- For CA Identity Manager, the execution of a command is successful when its return code (RC) is equal to 0; any other value indicates that the execution failed. This is important because the values that are retrieved by CA Identity Manager are processed according to this value.
- The argument values, which are sent to CA Identity Manager agents, are also sent to the user program.
- The pre-exit and post-exit user commands are logged in the CA Identity Manager log files.
- The pre-exit and post-exit commands are executed each time the agent is executed.

## Oracle Applications Connector

The Oracle Applications Connector lets you administer users of Oracle E-Business Suite applications and provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage Oracle Applications users by using Oracle-specific account templates
- Manually manage an Oracle Applications user responsibility list or automatically manage a group of users based on provisioning roles and account templates
- Change account passwords and account activations in one place
- Synchronize global users with their provisioning roles or synchronize global users' accounts with their account templates
- Assign an Oracle Applications account template to each of your Oracle Applications directories
- Generate and print reports about Oracle Applications users

## How the Connector Accesses Oracle Applications

The connector communicates with Oracle Applications using ODBC.

When you create an Oracle Applications endpoint, you select the mode of communication:

- **AOL Only mode**—Uses only the database stored procedures (the Application Object Library) to perform updates.
- **Normal mode**—Performs some direct updates to database fields. In previous releases, this mode provided more functionality than AOL Only mode, however this is no longer the case.

## Oracle Applications Installation and Configurations

This connector is managed using the Connector and C++ Server installation process.

**Note:** For more information and requirements, see *Connector and C++ Connector Server Installation*.

The following sections provide installation and configuration information for this connector.

### Oracle Applications Prerequisite

To set up Oracle applications endpoint, as a system administrator, you require an administrator access to the Oracle applications object library, which includes the following access rights:

- Access to "FND\_USER\_PKG"
- Read permission to the "FND\_USER" table.

**Note:** If it is not running in AOL mode, you also require Update permissions.

- Read and Update permissions to the user responsibilities.

To manage Oracle Applications as an endpoint, set the NLS\_LANG as a system environment variable, with a value of *.UTF8*

**Note:** There must be a period (.) before UTF8 on the computer where the Connector Server is installed.

## Oracle Applications Limitations

The known limitations and issues with the Oracle Applications Connector are as follows:

- The Oracle Applications Connector can assign or remove Oracle Applications users from the responsibilities. However you cannot create, update, or delete the responsibilities. The Oracle Applications System Administrator must perform these operations using native Oracle Applications administrative tools (JInitiator).
- An Array Index Out of Bounds Exception error is displayed when you log into Oracle Applications with no responsibilities assigned. The same error occurs when you create the user using Oracle Applications without associating any responsibilities.

## How to Configure the Oracle Applications Connector

Before installing the Oracle Application Connector, install the Oracle Client on the same machine that the Oracle Application Connector will be installed on.

After installing your Oracle Administrative Client from the Oracle Client CD, do the following to configure it:

1. Create a service for your Oracle client.
2. Configure ODBC on your Oracle client.

**Note:** You must install the 32-bit version of the Oracle Client package.

## Creating a Service for Your Oracle Client

Create a service for your Oracle client using the Oracle Net Configuration Assistant for Oracle Client Release 9i or 10g.

### From the Oracle Configuration and Migration Tools program group

1. Start Oracle Net Configuration Assistant.  
The Oracle Net Configuration Assistant wizard appears.
2. Select Local Net Service Name Configuration.
3. Select Add New Service.
4. Enter the Service Name.
5. Select TCP/IP (Internet Protocol).
6. Enter the host name for the computer where the database is located.
7. Change the port number to match your Oracle server port number.
  - For Windows systems, the default port number on Oracle systems is 1521.
  - For UNIX systems, the default port number on Oracle systems is 1526.
8. Select Yes to perform a connection test.
9. Enter a name for the net service name.
10. Click Finish to save the information.

You can view configured services by scanning the list of names on the Service Naming node of the Oracle Net Manager.

## Configure ODBC on Your Oracle Client

To configure ODBC on your Oracle client, use this procedure.

### From the Control Panel

1. Select ODBC Manager/Data Sources, DSN tab, Add.  
The Create New Data Source wizard appears.
2. Select the Oracle ODBC Driver, and click Finish.  
The Oracle ODBC Driver Setup dialog appears.
3. Enter the data source name for the Oracle server in the Data Source Name text box.
4. Enter the service name that you created in Creating A Service For Your Oracle client
5. Enter the Oracle administrator's ID in the UserID text box.
6. Click OK.

After configuring the Oracle client, you are ready to install the Oracle Applications Connector.

## Required Oracle Administrator Account Privileges

The Oracle Applications Connector requires the user names and passwords of two users when you set up an endpoint:

### Database User

This account is used when connecting to the database. The database user must have the appropriate privileges to manage the Oracle Applications tables.

### Applications User

This account is used when managing Oracle applications. You can use any user that has already been created in Oracle Applications and that has the System Administrator standard responsibility.

## Oracle Applications Support for FIPS and IPv6

For this release of CA Identity Manager, the Oracle Applications Connector does not support FIPs or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

## Acquire an Oracle Applications System Using the User Console

You must acquire the Oracle Applications system before you can administer it with CA Identity Manager.

### To acquire an Oracle Applications system using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select Oracle Applications from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create Oracle Applications Endpoint page to register an Oracle Applications system. During the registration process, CA Identity Manager identifies the Oracle Applications system you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all Oracle Applications accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:
  - a. Fill in Explore and Correlate name with any meaningful name.  
Click Select Container/Endpoint/Explore Method to click an Oracle Applications endpoint to explore.
  - b. Click the Explore/Correlate Actions to perform:
    - **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
    - **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
    - **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.
7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.  
You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### To use an explore and correlate definition

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire an Oracle Application System Using the Provisioning Manager

You must acquire the Oracle Applications system before you can administer it with CA Identity Manager.

### From the Endpoint type task view

1. Register the Oracle Applications system as an endpoint in Provisioning Manager.

Use the Oracle Applications Endpoint property sheet to register an Oracle Applications system. During the registration process, CA Identity Manager identifies the Oracle Applications system that you want to administer and gathers information about it.

**Note:** Use the native Oracle tools to verify that the Oracle Applications system can be accessed using the given system login ID and password.

2. Explore the objects that exist on the endpoint.

After registering the server in CA Identity Manager, you can explore its contents using the Explore and Correlate Endpoint dialog. The Exploration process finds all Oracle Applications users. You can correlate the accounts with global users at this time or you can correlate them later. The topic “Explore and Correlate Endpoint Dialog” in Provisioning Manager help provides a complete explanation of this dialog.

3. Correlate the explored accounts with global users.

When you correlate accounts, the CA Identity Manager creates or links the accounts on an endpoint with global users as follows:

- a. CA Identity Manager attempts to match the Oracle Applications user name with each existing global user name. If a match is found, CA Identity Manager associates the Oracle Applications user with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and associates the Oracle Applications user with the global user. If the Create Global Users as Needed button is unchecked, CA Identity Manager performs the next step.
- c. CA Identity Manager associates the Oracle Applications user with the [default user] object.

**Note:** Use the User Console to add or remove the Oracle roles to any of the Oracle Account Templates. When you add or remove the Oracle roles to Oracle Account Template and execute the Synchronize Accounts with Account Templates task using the Provisioning Manager, the eTORACompoundRoles attribute does not hold any value causing problems such as automatic detachment of Oracle roles.

---

## Update Endpoint Responsibilities Tab in User Console

After creating an FND Endpoint in the User Console, you must update the Attribute Oracle Applications User and Security Context details on the Endpoint Responsibilities Tab to successfully create the provisioning account.

To update this information, follow this procedure:

### From the User Console

1. Select the Endpoints, Manage Endpoints, Modify Endpoints.  
The Modify Endpoint: Select Endpoint screen appears.
2. Select Oracle Applications from the drop-down list, enter the endpoint name in the search box, and click Search.  
The endpoint appears in the search table results.
3. Select the endpoint and click Select.  
The Endpoint property page appears.
4. Select the Endpoint Responsibilities Tab and enter the Attribute Oracle Applications User and Security Context details and click Submit.  
The Modify Endpoint task has been submitted.

## Changing the Oracle Account Password

Before changing the password of an Oracle account in the User Console, you must reset the user password first.

## Oracle Applications User Provisioning Roles and Account Templates

The Oracle Applications Default Account Template, provided with the Oracle Applications Connector, does not give a user the minimum security level needed to access an endpoint. One or more responsibilities need to be assigned for the account to be active. The list of responsibilities depends on which Oracle Applications are installed. However, you can use it to as a model to create new account templates.

**Note:** The Oracle Applications Default Account Template automatically sets the user name and password to the global user account ID so that the user can access Oracle Applications.

**Note:** An endpoint must first be included (associated) with an account template before responsibilities can be added to it.

## Create Account Templates

The Default Account Template, provided with each connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

### To create an account template

1. Click the Provisioning Roles task button, select the connector's Account Template in the Object Type drop-down list box and click New.

The Account Template Property Sheet for the specified connector appears.

2. Complete the Account Template Property Sheet by:
  - a. Selecting an endpoint to populate the drop-down and group selection lists.
  - b. Selecting group memberships and other account settings.
  - c. Clicking OK.

A new account template is created for your connector.

## Responsibilities List and Account Synchronization

The Responsibilities List is a capability attribute in the Oracle Applications account template. During account synchronization, the Provisioning Server merges the Responsibilities List attributes from multiple account templates. Each account template can specify different effective periods for a responsibility.

CA Identity Manager applies the following rules to reconcile different effective periods:

- The Provisioning Server applies the earliest (or blank) Valid-From date.
- The Provisioning Server applies the latest (or blank) Valid-To date.
- The Valid-From and Valid-To values can belong to different account templates. They do not have to come from the same account template.
- For each responsibility, the Provisioning Server assumes that the effective periods from multiple account templates form an uninterrupted effective period.
- Shortening or expiring the responsibility entry effective period on an account template and then synchronizing the account does **not** shorten the effective period on the associated account. The value on the account is more capable.

CA Identity Manager includes the following synchronization options for Responsibility Lists:

- Synchronization/Remove Account Template Values From Accounts

When the Synchronization/Remove Account Template Values From Accounts setting is enabled, deleting a responsibility entry from the Responsibilities List triggers the SyncRemoveValues procedure. The SyncRemoveValues procedure expires a responsibility if no value is specified for it in an applicable account template. In this case, the Valid-To date becomes the current date.

**Note:** The Oracle Applications endpoint does not support deleting a responsibility entry on an account. Instead, the endpoint expires the Responsibility entry.

If you add an account with an expired responsibility to an account template with an efficient period, the expired responsibility is reactivated after account synchronization.

- Synchronization/Remove Deleted Account Template Attribute Values From Accounts

To support this option, add the eTFNDResponsibilityList to the parameter.

## Manage Oracle Applications User Accounts

To manage FND accounts in the Provisioning Manager, use this procedure:

### From the Endpoint Type task view

1. Select an endpoint and click Search.  
A list of endpoints for the selected endpoint type is presented.
2. Right-click an endpoint, and select Content from the context menu.  
The Endpoint Content appears.
3. Select the Users container from the container tree and enter the search criteria in Search For Content, and then click Search.
4. Click Done.  
A list of the user accounts in that endpoint appears.

## Oracle Connector

The Oracle Connector lets you administer accounts and groups on Oracle systems and provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage Oracle accounts using Oracle-specific account templates
- Change account passwords and account activations in one place
- Synchronize global users with their provisioning roles or synchronize global users' accounts with their account templates
- Assign an Oracle account template to each of your Oracle endpoints
- Use the default Oracle Policy to create accounts with the minimum security level needed to access an Oracle endpoint
- Create and manage Oracle profiles and roles
- Generate and print reports about Oracle accounts
- Assign Oracle packages and procedures to Oracle accounts

## Oracle Configuration

The Oracle connector is managed by CA IAM CS.

Communication between the Provisioning Server and the Oracle server relies on a JDBC connection. A URL specifies connection details to each server, as illustrated in the following example:

```
jdbc:oracle:thin:@hostname:port:servicename
```

**hostname**

The hostname or IP address of the Oracle Server

**port**

The port number of the Oracle service. **Default:** 1521.

**servicename**

Oracle Service Name to connect to.

**Example URL**

The following URL connects to an Oracle instance named ORACLE running on the default port on the server named oracle\_server\_host:

```
jdbc:oracle:thin:@oracle_server_host:1521:ORACLE
```

For more information, search for JDBC on the Oracle site.

## Required Oracle Administrator Account Privileges

The Oracle administrator account that you use with CA Identity Manager is the account name that you enter in the System Logon field of the Endpoint tab of the Oracle Endpoint property sheet.

Give this account at least the following privileges:

### System privileges

- Alter Profile
- Alter Any Role
- Alter User
- Create Profile
- Create Role
- Create Session
- Create User
- Drop Profile
- Drop User
- Drop Any Role
- Grant Any Privilege
- Grant Any Role

### SELECT object privilege on the following views in the SYS schema

- DBA\_OBJECTS
- DBA\_PROFILES
- DBA\_ROLES
- DBA\_ROLE\_PRIVS
- DBA\_TABLESPACES
- DBA\_TAB\_PRIVS
- DBA\_TS\_QUOTAS
- DBA\_USERS

### Sufficient privileges to Oracle accounts for packages and procedures

Grant these privileges in ONE of the following ways:

- The account is the owner of these packages and procedures.
- The account has execute privileges with the Admin Option for these packages and procedures.

## Oracle Migration Steps

To migrate from the C++ Oracle connector to the Java Oracle connector, you must do the following:

- Install the Oracle Java connector using the CA IAM CS installation
- Add the URL as defined in Oracle Configuration to each existing Oracle endpoint. To do this, edit the endpoint and supply the URL in the JDBC URL field.
- You can remove your DSN if it is not being used for another other purpose

Once this has been done, all types of operations can be executed against the existing Oracle endpoints seamlessly.

## Oracle Support for FIPS and IPv6

For this release of CA Identity Manager, the Oracle Connector does not support FIPs or IPv6.

## Limitations

### Connector Cannot Manage Some Privileges

You cannot use the Oracle connector manage the following operations:

- Manage system privileges or object privileges that apply to Oracle accounts
- Manage system privileges or object privileges that apply to Oracle roles

Instead, use native Oracle administrative tools to work with these privileges.

### Suspend Operation Locks User Accounts

After suspending an Oracle account from the User Console, the user account status shows both Suspended and Locked.

The Oracle connector considers both Suspend and Lock as one operation. The Oracle account cannot be suspended and unlocked nor can it be active and locked.

### Resume Operation Resumes and Unlocks Suspended User Accounts

When performing a Resume operation on a Suspended account, the Oracle Connector both resumes and unlocks the account.

## Enable the Fix for Oracle Bug 6376915

The Oracle bug 6376915 causes high water (HW) enqueue contention when the database is busy handling large objects (LOB) and the database is configured to use automatic segments space management (ASSM).

This bug causes performance and scalability problems with CA software, including CA Identity Manager and CA CloudMinder.

The fix for this problem introduces a mandatory event. Set this new event to make the ASSM architecture allocate LOB chunks more efficiently.

This bug was introduced in Oracle 10.2.0.3. It was fixed in both Oracle 10.2.0.4 and Oracle 11.1.0.7. However, the fix is not enabled by default.

The steps in this procedure assume that spfile is used for configuration.

### Follow these steps:

1. Enter the following command:  

```
ALTER SYSTEM SET EVENT='44951 TRACE NAME CONTEXT FOREVER, LEVEL 1024' scope=spfile;
```
2. Restart the database.
3. To test the fix, use the following measures:
  - Use Bulk Loader to measure the task throughput in CA Identity Manager and CA CloudMinder.
  - Measure the wait time for HW enqueue contention.

## Oracle Etautil Conventions

Use the following Oracle conventions in your etautil commands:

- The endpoint type name (eTNamespaceName) is Oracle Server
- The endpoint type prefix is ORA. Therefore, the Oracle class names are:
  - eTORADirectory for an endpoint
  - eTORAPolicyContainerName for an account template container
  - eTORAPolicy for an account template

## Oracle Account Templates

The Oracle Default Policy automatically sets the user name and password to the global user account ID and the authentication type to LOCAL.

## Well-Known Attribute %ENDPOINT\_DESCRIPTION%

This applies to the following connectors: Windows, Oracle RDBMS, Siebel, UNIX NIS, MS SQL Server, and OpenVMS.

These endpoint types do not define the endpoint description in the eTDescription attribute. This means that until recently, you could not search on the endpoint description. In addition, the search screen did not display the endpoint description.

You can now use the new well-known attribute %ENDPOINT\_DESCRIPTION% for the affected connectors.

The DefaultEndpointSearch role definition has been updated, to allow the Default Endpoint Search screen to use the new well-known attribute. If you are upgrading from an older version of CA Identity Manager, import this modified screen after upgrading. For more information, see the Environment Changes section in your Upgrade Guide.

## PeopleSoft Connector

This guide does not contain information about the PeopleSoft connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## RACF Connector

This guide no longer contains information about the RACF connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## RACF v2 Connector

This guide does not contain information about the RACF v2 connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## RSA ACE (SecurID) Connector

The RSA ACE (SecurID) Connector lets you administer the users, groups of users, and tokens of RSA ACE/Server machines and provides a single point for all user administration by letting you do the following:

- Retrieve the existing users from the RSA ACE/Server database
- Display, create, modify, or delete a user
- Assign or un-assign a token to a user
- Create remote users
- Add or remove users on an Agent Host
- Add or remove a user to a group
- Retrieve existing groups from the ACE/Server repository
- Create and delete groups
- Enable or disable a group on an Agent Host
- Retrieve a token's details
- Active operations on a token

## RSA Installation

This connector is managed using the Connector and agent installation process. For more information and requirements, [click here](#).

This connector can also be managed using the Connector and C++ Server installation process as well.

The following sections detail the post installation and configuring requirements for this connector.

## RSA Post Installation Requirements

The following must be done after the connector installation:

- The user named SYSTEM must be added to the Primary RSA ACE/Server and registered as an Administrator.
- CAM CAFT service must be configured on the Primary RSA/ACE Server. For more information, see the following section.
- The RSA Authentication Manager 5.x and higher Administration Toolkit must be installed on the Primary RSA ACE/Server. For token management, the 6.1 Administration Toolkit is required.
- If you plan to install the RSA remote agent on Solaris 8 or 9, you may be required to tune certain kernel parameters if the values are set lower than required. If this is necessary you are notified by an error message during the install. For further details, refer to the readme\_install.txt file, found in:

```
./<install path>/RemoteAgent/RSA/solaris/ecs-installation"
```

## RSA Limitations

For this release, the following limitations should be considered when using the RSA Connector:

- If the PIN change option is selected for an eTPassword change event propagation, only numeric values for the password change event will be accepted regardless of the PIN options settings specified in the System Parameters of the RSA ACE/Server Administration Tool. This limitation is due to handling of the PIN change by RSA Administration Toolkit function Sd\_SetPin(). This restriction is also imposed by the type of the devices (like RSA SecurID PINPAD Token) that are not allowed the use of alphanumeric PINs.
- Management for multiple tokens is not supported. The Agent component processes modify requests for token objects one at a time.
- The assignment of the tokens to the accounts created for global users cannot be done using the RSA Account Template. A token cannot be associated with more than one user at the same time. To do this, you must create the accounts first and then assign tokens using the RSA Connector GUI or RSA native administration tools.

## Install the RSA Remote Agent

To install the RSA Remote Agent, follow this procedure.

### To install the RSA Remote Agent

1. Locate the Provisioning Component installation media.
2. Run the RSA installer from the following locations:

- For Windows

RemoteAgent/RSA/setup.exe

- For Solaris

RemoteAgent/RSA/setup

Answer the questions to provide information about your system.

## How to Configure the CAM and CAFT Service

Install the RSA Remote Agent and configure the CAM and CAFT Service on any RSA ACE/Server machine that you want to administer.

To configure the CAM and CAFT Service, perform the following procedure.

### From the RSA ACE/Server machine

1. Log on as the domain or local administrator
2. Issue the following command from a command window:

```
cafthost -a RSA_node_name
```

#### **RSA\_node\_name**

Specifies the name of the Connector Server.

Note: If the Connector Server is networked using DHCP or you do not use DNS for name resolution, the network name will not be recognized. Under these conditions, use the TCP/IP address for the RSA ACE node name or add an RSA ACE node entry in the local hosts file on your RSA ACE/Server machine.

3. Verify this command by issuing the following command:

```
cafthost -l
```

## RSA Support for FIPS and IPv6

For this release of CA Identity Manager, the RSA Connector does not support FIPS or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

### Acquire an RSA ACE Server Using the User Console

You must acquire the RSA ACE server before you can administer it with CA Identity Manager.

#### To acquire an RSA ACE server using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select RSA from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create RSA Endpoint page to register an RSA ACE server. During the registration process, CA Identity Manager identifies the RSA ACE server you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all RSA accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click an RSA endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

**To use an explore and correlate definition**

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire an RSA ACE Server Using the Provisioning Manager

You must acquire the RSA ACE/Server machine before you can administer it with CA Identity Manager. When acquiring an RSA ACE/Server machine, perform the following steps.

### From the Endpoint type task view

1. Register the machine as an endpoint in CA Identity Manager.

Use the RSA ACE (SecurID) Endpoint property sheet to register an RSA ACE/Server machine. During the registration process, CA Identity Manager identifies the RSA ACE/Server machine you want to administer and gathers information about it.

2. Explore the objects that exist in the endpoint.

After registering the machine in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all RSA ACE (SecurID) objects. You can correlate the accounts with global users at this time or you can correlate them later.

3. Correlate the explored accounts to global users

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the username with each existing global user name. If a match is found, CA Identity Manager associates the RSA ACE (SecurID) account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the account name with each existing global user's full name. If a match is found, CA Identity Manager associates the RSA ACE (SecurID) account with the global user. If a match is not found, CA Identity Manager performs the following step.
- c. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and associates the RSA ACE (SecurID) account with the global user. If the Create Global Users as Needed button is unchecked, then CA Identity Manager performs the next step.
- d. CA Identity Manager associates the RSA ACE (SecurID) account with the [default user] object.

## RSA Endpoint Property Sheet

The RSA Endpoint Property sheet lets you register or view the properties of an RSA ACE server. From the RSA Endpoint Tab you can specify the endpoint name, host name, account template information, and the password change propagate mode.

## Password Change Propagate Mode

The password change propagate mode on the Endpoint Tab of the Endpoint Property Sheet, specifies the way that the Password and PIN changes are handled during a change event. The following scenarios are possible:

1. If neither the Password Change nor PIN Change check boxes are checked, the password change will not occur.
2. If the Password Change check box is selected, but the PIN Change check box is not selected, only the user password will be changed to the value provided in the eTPassword attribute. No modifications will be applied to the assigned tokens.
3. If the Password Change check box is not selected, but the PIN Change check box is selected, only the value of the PIN for the assigned tokens will be changed to the value provided in the eTPassword attribute.
4. If both the Password Change check box and PIN Change check box are selected, both the user password and assigned tokens PINs will be changed to the value provided in the eTPassword attribute.

**Note:** For 4, if the user does not have any tokens assigned to them, the request to modify the eTPassword attribute is treated as a request to assign the password to the user using the value provided in the eTPassword attribute.

**Note:** For 3 and 4, if the user has more than one token assigned, the PIN reset applies to ALL of the tokens that are in possession of the user. The PIN associated with each assigned token is changed to the value provided in the eTPassword attribute.

## RSA Account Templates

The RSA DefaultPolicy, provided with the RSA ACE (SecurID) connector, gives a user the minimum security level needed to access an endpoint. You can use it as a model to create new account templates.

**Note:** You can create RSA account templates that are associated with multiple endpoints. These account templates can only be used to grant privileges to existing accounts.

## RSA Groups

You can create and maintain RSA ACE (SecurID) groups using the Endpoint type task view. Use the RSA Group property sheet when managing your groups.

## Token Management

The Token management features of the RSA Connector let users view and manage RSA Tokens and simulate suspending RSA accounts through a global user or Token properties.

## RSA Tokens Property Sheet

The RSA Tokens property sheet lets you view a token's details and initiate operations on the token. The following property pages apply to RSA tokens:

- Token Profile
- Token Operations

## Tokens Profile Tab

The Tokens Profile tab is a read-only page that displays the following details of a token:

- Serial Number
- Token Type
- Assigned...to..
- Enabled
- Lost
- New PIN Mode
- Expired
- Replacement Status

## Token Operations Tab

The Token Operations tab is used to initiate operations on a token.

**Note:** Operations are initiated on a single token at a time.

Using this tab, you can initiate the following operations:

### **Enable Token**

Enables the token.

### **Disable Token**

Disables the token

### **Set New PIN Mode**

When the Set New PIN operation is selected, you can check the Clear PIN check box to clear the token immediately. A new PIN is assigned the next time you log in with your token code only.

If the Clear PIN check box is not checked, the PIN is cleared the next time you log in with your current PIN and token code.

### **Set Emergency Mode Off**

Sets the emergency mode to off.

### **Set Emergency Mode On**

When the set emergency mode operation is selected, you can specify the temporary password to be used, how long the emergency access mode is to last, and that the token is not automatically declared lost during the emergency access mode.

### **Set Replacement Mode**

When the replacement mode operation is selected, you can search for a replacement token from all the available tokens or narrow the search by specifying specific attributes to search.

#### *Enable a Token*

Perform this procedure to run the enable token operation.

#### **From the Token Operations Tab**

1. Select Enable Token from the Operation field drop-down list.
2. Click Apply/OK to enable the token.

The enable token operation is performed.

#### *Disable a Token*

Perform this procedure to run the disable token operation.

**From the Token Operations Tab**

1. Select Disable Token from the Operation field drop-down list.
2. Click Apply/OK to disable the token.

The disable token operation is performed.

*Set Emergency Mode Off*

Perform this procedure to run the set emergency mode off operation.

**From the Token Operations Tab**

1. Select Set Emergency Mode Off from the Operation field drop-down list.
2. Click Apply/OK to turn emergency mode off.

The set Emergency Mode Off operation is performed.

*Set New PIN Mode*

Perform the following procedure to run the set new PIN mode operation.

**From the Token Operation Tab**

1. Select Set New PIN Mode from the Operations field drop-down list.

The Set New PIN Mode controls are activated.

2. Check the Clear PIN check box if the PIN for the token is to be cleared immediately.

A new PIN must be assigned the next time you log in with your token code. Your current PIN will not work.

If the Clear PIN check box is not checked, the PIN is cleared when you log in again with you current PIN and token code.

3. Click Apply/OK to put the token into new PIN mode.

The Set New PIN Mode operation is performed.

*Set Emergency Mode On*

Perform the following procedure to run the set emergency mode on operation.

**From the Token Operation Tab**

1. Select Emergency Mode On from the Operations field drop-down list.  
The Set Emergency Mode On controls are activated.
2. Enter the temporary password in the Temporary Password field to be used during the emergency operation.
3. Enter the length in the Life time field, in hours, that the emergency mode will be in effect.
4. Check the Auto not lost check box if the token should not be declared lost during emergency mode. If the check box is not selected, the token will be declared lost during the emergency operation.

**Note:** Auto not lost is only available for RSA 6.1 or higher.

5. Click Apply/OK to turn Emergency Mode on.

The Set Emergency Mode On operation is performed.

*Set Replacement Mode*

Perform the following procedure to run the set replacement mode operation.

**From the Token Operation Tab**

1. Select Set Replacement Mode from the Operations field drop-down list.  
The Set Replacement Mode Operations controls are activated.
2. Check the Keep Current Pin check box if the replacement token should be given the same PIN as the token being replaced. Leave this check box unchecked if the replacement token should start in new PIN mode.
3. Search for the available tokens by clicking the Search button to list all of the available tokens or specify the seed size, token type, and serial number to narrow the token search.

The available tokens appear in the Available Tokens List Box.

4. Select a token from the Available Tokens list box and click the Add (>) button to add the token to the replacement serial number field.
5. Click Apply/OK to perform the selected replacement.

The Set Replacement Mode operation is performed.

## Suspending and Resuming RSA Accounts

The RSA Connector can simulate account suspension by removing all tokens from an account. This approach restricts a user's ability to access the system. Resumption of an account is implemented by re-assigning tokens to an account. Two following two attributes are included in the connectors account class:

- eTSuspensionState
- eTPreSuspensionState

If these two attributes are defined, the following requests on an RSA account are affected:

- Account Search
- Account Modify
- Account Suspend
- Account Resume

### *Account Search*

If the eTSuspensionState attribute is explicitly mentioned in a search request the agent plug-in retrieves a list of tokens assigned to an account, generates a corresponding XML document and returns it as an eTSuspensionState value.

### *Account Modify*

If the eTSuspensionState attribute is included in a modifications list, an account is considered to be already suspended. If a list of modifications in a request contains any updates of the eTRSATokenNumber multi-value attribute, that request is rejected with an LDAP\_OPERATIONS\_ERROR code and proper message being sent.

### *Account Suspend*

If the eTSuspended attribute is set to "1", the agent plug-in removes all eTRSATokenNumber values from an account. The account is then suspended.

### *Account Resume*

To resume an account, a modify operation with eTSuspended set to 0 must be run. If the eTSuspensionState attribute is present in the modifications list, the attribute must be used to restore the eTRSATokenNumber values of an account.

## RSA Authentication Manager SecurID 7 Connector

The RSA SecurID 7 Connector provides a single point for all user administration and lets you administer the following objects on RSA SecurID endpoints:

- [Accounts \(Local and trusted\)](#) (see page 296)
- [Administrative roles](#) (see page 309)
- [RADIUS profiles](#) (see page 329)
- [Tokens](#) (see page 345)
- [Security domains](#) (see page 342)
- [Trusted groups](#) (see page 326)
- [User groups](#) (see page 316)

In addition, you can view read-only information about the following objects on RSA SecurID endpoints:

- [Authentication agents](#) (see page 359)
- [Authentication grade policies](#) (see page 360)
- [Identity sources](#) (see page 360)
- [Lockout policies](#) (see page 361)
- [Off-line authentication policies](#) (see page 361)
- [Password policies](#) (see page 361)
- [Self-service troubleshooting policies](#) (see page 363)
- [Token policies](#) (see page 362)
- [Trusted realms](#) (see page 364)

**Note:** The RSA SecurID 7 connector only supports RSA SecurID 7.1 endpoints.

## Set Up the RSA SecurID 7 Connector

For the RSA SecurID 7 Connector to work, it requires files that are installed with the RSA Authentication Manager server.

Before you use the connector, create a bundle that contains these files, and then add the bundle to the connector.

### Follow these steps:

1. Install or upgrade CA IAM CS.

The installation registers CA IAM CS with the provisioning server, creates the Salesforce.com endpoint, and populates it with its associated metadata.

2. Ask the SecurID administrator to send you a copy of the following files from the RSA Authentication Manager server, in `RSA_AM_HOME/appserver/`:

- `license.bea`
- `.../modules/com.bea.core.process_5.3.0.0.jar`
- `.../weblogic/server/lib/EccpressoAsn1.jar`
- `.../weblogic/server/lib/EccpressoCore.jar`
- `.../weblogic/server/lib/EccpressoJcae.jar`
- `...weblogic/server/lib/wlcipher.jar`
- `.../weblogic/server/lib/wlfullclient.jar`

**Note:** You will need to generate the `wlfullclient.jar` file. For more information, see the *RSA Authentication Manager 7.1 Developer's Guide*.

3. Ask the SecurID administrator to log in to <https://knowledge.rsasecurity.com>, and download and extract the contents of the RSA Authentication Manager 7.1 SDK file named `am-7.1-sp3-sdk.zip`. The connector needs the following files:

- `am-client.jar`
- `ims-client.jar`
- `commons-beanutils-1.7.0.jar`
- `iScreen-1-1-Orsa-2.jar`
- `iScreen-ognl-1-1-Orsa-2.jar`
- `ognl-2.6.7.jar`
- `systemfields-o.jar`
- `hibernate-annotations-3.2.1.jar`

4. Export the Server Root Certificate from the RSA Authentication Manager server and copy it to the CA IAM CS computer.

**Note:** For more information about exporting the Root Certificate, see the *RSA Authentication Manager 7.1 Developer's Guide*. The post-installation utility that you run later in this process automatically imports the Server Root Certificate.

5. Save the files on the CA IAM CS computer.
6. Run the `rsa7_post_install` script in the following location:

`cs-home/bin`

The script asks for the location of the SecurID files. It then creates a bundle and saves it in the same file as the script.

7. [Log in to CA IAM CS](#) (see page 31).
8. At the top, click the Connector Servers tab.
9. In the Connector Server Management area, click the Bundles tab.
10. Add the new bundle:

Note: You can deploy the OSGI bundle from the connector server GUI or copy the jar files to `ca-home/jcs/data/bundles/restore`. Then restart the connector server and wait up to ten minutes for it to load.

- a. In the Bundles area on the right, click Add.
- b. Browse to the bundle that the script created, then select the connector server on which this connector will be available.
- c. Click OK.

The new bundle appears in the Bundles list.

11. Find the main connector bundle in the Bundles list, then right-click its name in the list and select Refresh Imports from the popup menu.

The RSA SecurID 7 connector can now use the extra files.

## Acquire an RSA SecurID 7 Endpoint

To acquire and manage the RSA SecurID endpoint, you must get the command client user name and password from the RSA Authentication Manager.

**Note:** For more information about getting the command client user name and password, see the *RSA Authentication Manager 7.1 Developer's Guide*, available in the RSA Authentication Manager 7.1 SDK.

The command client credentials let you acquire and manage an RSA SecurID endpoint.

## Upgrade the RSA SecurID 7 Connector

The RSA SecurID 7 connector supports RSA Authentication Manager 7.1 SP3 or higher.

If you have a previous version of the RSA SecurID 7 connector, upgrade your RSA Authentication Manager 7.1 installation to SP3 and run the RSA SecurID 7 Connector post-installation utility.

The utility replaces the current SDK files installed on CA IAM CS computer with RSA 7.1 Authentication Manager SP3 SDK files. To download the required RSA SP3 SDK files, RSA login credentials are required.

### Follow these steps:

1. Upgrade your RSA Authentication Manager 7.1 endpoint to RSA Authentication Manager 7.1 SP3.

**Note:** For more information about upgrading your RSA Authentication Manager 7.1 endpoint, see <https://knowledge.rsasecurity.com/scolcms/set.aspx?id=8624>.

2. Go to the RSA SecurCare Online website:

<https://knowledge.rsasecurity.com>

Download and extract the following file:

am-7.1-sp3-sdk.zip

3. Navigate to `cs_home\Resources\rsa7` and enter the following command:  
`RSA7_post_install.bat -rsasdk`

**Note:** The utility is installed as part of the CA IAM CS installation.

4. When prompted, enter the location of the RSA SP3 SDK files you copied in step 2.
5. Restart the CA IAM CS computer.

You have upgraded your RSA SecurID 7 connector SDK files and they are now compatible with RSA Authentication Manager 7.1 SP3.

## Upgrade RSA SecurID 7 Connector After CA Identity Manager Upgrade

If you are upgrading CA Identity Manager from a previous version, run the RSA SecurID 7 Connector post-installation utility. The utility replaces the current SDK files installed on CA IAM CS computer with RSA 7.1 Authentication Manager SP3 SDK files. To download the required RSA SP3 SDK files, RSA login credentials are required.

### Follow these steps:

1. Upgrade your RSA Authentication Manager 7.1 endpoint to RSA Authentication Manager 7.1 SP3.

**Note:** For more information about upgrading your RSA Authentication Manager 7.1 endpoint, see <https://knowledge.rsasecurity.com/scolcms/set.aspx?id=8624>.

2. Go to the RSA SecurCare Online website:

<https://knowledge.rsasecurity.com>

Download and extract *am-7.1-sp3-sdk.zip*.

3. Navigate to *cs\_home\Resources\rsa7* and enter the following command:  
`RSA7_post_install.bat`

**Note:** The utility is installed as part of the CA IAM CS installation.

4. When prompted, enter the location of the RSA SP3 SDK files you copied in step 2.
5. When prompted, enter the location of the Weblogic files, and the RSA server certificate.
6. Restart the CA IAM CS computer.

You have upgraded your RSA SecurID 7 connector SDK files and they are now compatible with RSA Authentication Manager 7.1 SP3.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, account template, and group information specifically for your connector.

**Note:** For a general overview of the Provisioning Manager and its main features, see *Managing the Connectors*. For more detailed information about the Provisioning Manager, see the *Provisioning Guide*.

## RSA 6.x Connector Data Migration

You can use the RSA SecurID 7.1 migration utility, RSA7Migrate, to migrate existing RSA 6.1 account templates to the new RSA 7.1 connector data. The migration utility creates new RSA 7.1 account templates; RSA 6 templates are preserved during the migration process.

The migration utility does not migrate RSA 6.1 endpoint data because such migration requires retrieval of all accounts from an RSA 6.1 endpoint. Instead, reexplore the RSA 7.1 endpoint that contains the RSA 6.1 migrated data. Or, to be precise, perform subtree exploration only on an RSA 7.1 security domain where you migrated the RSA 6.1 data.

RSA only supports data migration from RSA Authentication Manager 6.1. As a result, the RSA7Migrate utility only supports the migration of RSA 6.1 endpoint data. The utility cannot differentiate between acquired RSA 5.x, 6.0 and 6.1 endpoints.

**Important!** Verify that all relevant RSA data has been successfully migrated before running the RSA7Migrate utility,

## RSA7Migrate Command

### Valid on Windows and Solaris

Use the RSA7Migrate command to migrate existing RSA 6.1 account templates to the new RSA 7.1 connector data, or migrates tokens from RSA 6.1 endpoints to RSA 7.1 endpoints.

This command has the following format:

(Windows and UNIX) RSA7Migrate [-tokens]

### **-tokens**

(Optional) Migrates tokens from RSA 6.1 endpoints to RSA 7.1 endpoints and populates the CA Identity Manager Provisioning Directory with RSA 7.1 tokens.

## RSA7Migrate Processing Modes

When you run the RSA7Migrate utility to migrate account templates, you are prompted to run the utility in one of the following modes:

- **Mode 0 – Do nothing, that is report only**  
We recommend that you first run the utility in this mode, to identify any errors.
- **Mode 1 – Create a template only if there are no errors**  
If no errors are found after running the utility in mode 0, run the utility in mode 1.
- **Mode 2 – Create a template even if errors found, but do not associate it with a namespace.**
- **Mode 3 – Create a template and associate it with a namespace even if errors found.**  
Use this mode to identify and solve problems after you run the migration utility.
- **Mode 4 (interactive mode) – Modify a template to make it compatible with a namespace. In interactive mode, you are prompted to specify an existing trusted realm.**  
Use this mode to resolve problems with templates. For example, if the utility does not find RSA objects automatically, use this mode to specify the names and locations of the missing RSA7.1 endpoint objects.

## Migration Utility Prerequisites

Before you run the RSA7Migrate utility, do the following:

- Perform a migration of the RSA 6.1 endpoint data to RSA 7.1 endpoint data
- Acquire and explore RSA 7 namespaces that contains the migrated RSA data

You are required to supply the following information during the migration process:

- CA Identity Manager Provisioning Server connection details:
  - Host name
  - Port
  - TLS status
  - TLS port (if TLS status is enable)
  - User name
  - Password
- RSA 6 namespace name
- RSA 7 namespace name, that corresponds to the above RSA 6 namespace
- Security domain where the migrated RSA 6.1 data is located. This domain is always specified during the data migration process on the RSA side.
- Suffix you want to add to the RSA 6 template name to create the RSA 7 template name.

## What the Migration Utility Does

The migration utility does the following:

- Searches for all RSA 6 account templates which are associated with the specified RSA 6 namespace. You are asked to specify a search pattern. If the search operation does not return anything, the migration utility prompts you to specify a new search pattern.
- For each account template returned by search operation, the migration utility does the following:
  - Returns all template attributes
  - Verifies that the RSA7 template with the name you specified exists
    - If the name exists, the utility prompts you for a different name
    - If you use an existing RSA7 template, the utility skips template generation and proceeds to verification and association with the specified RSA7 namespace.

- Generates a new RSA 7 template

If a template is a local template (that is, the realm name is not specified in the RSA 6 template) the utility represents each group listed in the RSA 6 template as a local group in the RSA 7 template. For example, the group Rsa6\_group is represented as the following in the RSA 7 template:

```
eTDYNGroupName= rsa6_group,eTDYNContainerName=Security_Domain,...
```

For example, the group Rsa6\_group@site is represented as the following in the RSA 7 template:

```
eTDYNGroupName= rsa6_group,eTDYNContainerName=site,  
eTDYNContainerName=Security_Domain,...
```

Each agent host listed in RSA 6 template is represented in the RSA 7 template as a local group. For example, the agent host Agent\_host.ca.com is represented in the RSA 7 template as:

```
eTDYNGroupName= Agent_host,eTDYNContainerName=Security_Domain,...
```

If a template is a remote template, that is, the realm name is present in the RSA 6 template, trusted group DNs are generated instead of local ones as previously shown, and the account name is represented as *account % realm*.

- Verifies that specified security domain exists in the RSA 7 namespace.

If a domain cannot be found in interactive mode, the utility prompts you to provide a proper name.
- Verifies that the specified realm exists in the RSA 7 namespace, if a template is a remote template.

In interactive mode, you are prompted to choose an existing trusted realm.
- Verifies that all RSA 7 groups (that is, groups corresponding to RSA 6 groups, and groups corresponding to RSA 6 agent hosts) exist in the RSA 7 namespace.

If a group cannot be found in interactive mode, you are prompted to specify a proper group name. Use the following format for DN's composite names:

Realm/SD\_Level\_1/SD\_Level\_2/...

- Creates an RSA7 template and associates it with the RSA 7 namespace.

## Account Template Migration Limitations

Account template migration limits are mostly related to RSA6 templates associated with more than one namespace. Observe the following limitations during account template migration.

All namespaces associated with the same template must:

- Have the same security domain DN
- Contain the same Group DN(s) for all the groups associated with a template
- Have the same Identity Source DN for accounts to be stored
- Expose the same realm in case of remote templates

If any of the objects described previously have different names (or DNs) in different namespaces, such namespaces must have a separate set of templates. If necessary, run the migration utility several times to create the templates correctly.

## Migrate RSA 6.1 Account Templates to RSA 7.1 Connector Data

To migrate RSA 6.1 account templates to the RSA 7.1 connector data, run the RSA7Migrate utility.

### To migrate RSA 6.1 account templates to the RSA 7.1 connector data

1. Verify that the Provisioning Server is running.  
**Note:** The Provisioning server must be running when you migrate templates.
2. Open a command prompt window and navigate to the \bin directory where you installed the Connector Server.
3. Enter the following command:

```
RSA7Migrate
```

The RSA7Migrate utility starts and prompts you for the Provisioning Server connection details.

4. Enter the information requested.

The RSA7Migrate utility creates an RSA7 template and associates it with the RSA 7.1 namespace.

## What the Token Migration Utility Does

The token migration utility does the following:

- Prompts you for the:
  - CA Identity Manager Provisioning Directory connection details
  - RSA 6 namespace name where the templates you want to migrate are located
  - RSA 7 namespace name, corresponding to the above RSA 6 namespace
  - Security domain where the migrated RSA 6.1 data is located. This domain is always specified during data migration process on the RSA side.
- Connects to the CA Identity Manager Provisioning Directory
- Prompts you to provide a search pattern for token serial numbers
- Reads all tokens which satisfy the search pattern, from the RSA 6 explored data in the CA Identity Manager Provisioning Directory
- Writes the RSA 7 token object into the provided security domain in the RSA 7 explored data for each token.

## Token Migration Prerequisites

Before you run the RSA7Migrate token migration utility, do the following:

- Migrate the RSA 6.1 endpoint data to RSA 7.1
- Acquire and explore the RSA 7.1 namespaces that contains the migrated RSA 6.1 data.

You are required to supply the following information during the migration process:

- CA Identity Manager Provisioning Directory connection details:
  - Host name
  - Port
  - TLS status
  - TLS port (if TLS status is enabled)
  - Password
- RSA 6 name
- RSA 7.1 endpoint name, corresponding to the above RSA 6 namespace
- RSA 7. 1 security domain where the migrated RSA 6.1 data is located. This domain is always specified during data migration process on the RSA side.

## Migrate Tokens

To migrate tokens to populate the CA Identity Manager Provisioning Directory with RSA 7.1 tokens, run the RSA7Migrate utility with the `-token` command-line parameter.

### To migrate tokens

1. Stop the CA Identity Manager Provisioning Server.
2. Open a command prompt window and navigate to one of the following directories where you installed the Connector Server.
  - (Windows) `C:\Program Files\CA\Identity Manager\Connector Server\resources\rsa7\`
  - (Solaris) `/opt/CA/IdentityManager/ConnectorServer/resources/rsa7/`
3. Enter the following command:  
`RSA7Migrate -tokens`  
The RSA7Migrate utility starts and prompts you for the Provisioning Server connection details.
4. Enter the information requested.  
The migration utility writes the RSA 7 token object into the provided security domain in the RSA 7 explored data for each token.
5. Start the CA Identity Manager Provisioning Server.

## Local and Remote User Support

The RSA SecurID 7.1 Connector supports both remote users and local users, through the one account object class. Remote users are users that exist in other realms but to whom you want to grant certain rights within the current realm. Local users and remote users (also known as trusted users) can have the same login names within one security domain.

The different account types are distinguished by appending a suffix to the associated RSA user ID and using the percent sign as delimiter. For example, " % ".

**Note:** There is a space before and after the delimiter.

Remote users have special LDAP names with the following format:

*Remote\_username < delimiter > Realm\_name*

An example of a remote user name is *UserName01% CA*

Using a delimiter to distinguish local and remote users has implications on global user correlation and the use of account templates. During correlation, the delimiter becomes part of the global user name. However global users with the delimiter as part of their name cannot be used to create endpoint users using account templates as the delimiter is treated as a special character.

To allow for some alternatives for correlation, you can use the following hidden attributes:

- LoginID

The Login ID attribute is always set to the login name of the user regardless of whether the user is a remote or local user. That is, it does not contain the delimiter and realm suffix for remote users.

Correlating against this attribute means that all global users created can be used with account templates but any users with the same login name as the same user are also correlated. For example, the local user *janesmith* is correlated to the same global user as *janesmith % sales* and *janesmith % dev1*.

- LocalUserLoginID

This attribute is set to the login name of the user only for local users, but is not set for remote users.

Correlating against this attribute creates global users for all local RSA users while correlating all remote RSA users to the default user.

**More information:**

[Create a Trusted User](#) (see page 301)

## Windows Password Integration

If Windows password integration is enabled in RSA, the RSA server caches the Windows password of each user in the security domain. When a user logs in, they are only required to enter their RSA passcode.

When you select the Clear cached copy of Windows credentials check box on the General 1 Tab (User Account Dialog) or General 1 Tab (Account Template Dialog), the connector removes the user's Windows credentials from the cache. The next time the user logs in, the user is prompted for their Windows password in addition to their RSA passcode.

The check box does not show the status of the cache, or whether the check box has been set on a prior transaction.

## Date and Time Considerations

All dates and times that the RSA SecurID 7.1 Connector receives should be in UTC. All dates and time values that specify time zone information other than +00:00, -00:00 or Z, are invalid and any date or time values received without time zone information are treated as UTC.

In Account screens, values are in Provisioning Manager local time. The Provisioning Manager converts these values to UTC then passes them to endpoint. The endpoint then converts the values to the time zone it is in. For example, if the Provisioning Manager is in Perth (UTC + 8) and the endpoint is in Melbourne (UTC + 10), to set an endpoint-based time of Sept 1, 2009 10 am, set the value in the Provisioning Manager to September 1, 2009 8 am. (Provisioning Manager local time).

In Account template screens, although you can enter any value, the valid values are:

- %XD%  
Specifies the date and time of account creation. The Provisioning Manager sets this value to the date and time of account creation converted to UTC, in the format yyyy-mm-ddTHH:MM:SSZ. The endpoint converts the value to the time zone it is in.
- Specific date  
Use the same format as the rule string %XD%, with or without the Z. This string is passed as is (no conversion) to the Provisioning Server, and eventually to the endpoint. The endpoint then converts this value to its local time. Therefore, enter the value to whatever endpoint time you want the endpoint time it to be, converted to UTC, that is, use the equivalent UTC. As in the previous example of the endpoint in Melbourne and the Provisioning Manager in Perth, if you want to set the value to be September 1, 2009 10am Melbourne time, enter 2009-09-01T00:00:00.
- Daylight savings time  
As in the previous example of the endpoint in Melbourne and the Provisioning Manager in Perth, if you want to set the value to Dec 25, 2009 10am Melbourne time, the set the value in the Provisioning Manager to 2009-12-24T23:00:00.
- %UCUnn%  
This value works the same way as with the specific date case. That is, enter the UTC equivalent value.

## Group Access Times

The RSA7.1 endpoint stores group access times as UTC but displays them using the RSA7 Server local time. To make it easier for group administrators to set the access times relevant to other time zones, the RSA Security Console provides the ability to select a time zone and displays the group access times relevant to the select time zone. However, the selected time zone is not stored. Each time the page is displayed the time zone control defaults to the RSA server local time.

Due to limitations in the RSA API, the RSA SecurID 7.1 Connector cannot return the RSA server local time. To resolve this limitation, a time zone attribute has been added to the RSA7.1 endpoint dialog, General 1 tab. You can use this attribute to specify the time zone to use for group access times. This attribute defaults to UTC. All times displayed or entered for group access are assumed to be for this time zone.

This solution is also applicable to time zones specified for trusted user groups.

## Multi-value Assignment Dialogs

The multi-value assignment dialogs let you search for a specific object in a selected system domain, then assign those values to a specific object. For example, you can search all administrative roles in a specific system domain, then assign the administrative roles to a user account.

The multi-assignment dialog contains the following fields:

### **Available List Search**

Displays the containers in the namespace you can search.

### **Class**

Specifies the object class you want to search.

Classes that use the attribute displayed in the Attribute list are displayed in the list.

### **Attribute**

Specifies the attribute you want to search for.

### **Value**

Specifies the value you want to restrict the search to.

**Default:** Wildcard character (\*). The wildcard causes the search to return all entries.

**Note:** If you perform an advanced search for an attribute, this field is not available.

### **Search one level only**

Restricts the search to only the level selected in the Available List Search.

### **Advanced**

Displays the Advanced Search Attributes dialog. Use this dialog to set more advanced search criteria.

**Note:** Specifying advanced search criteria is useful if you want to narrow the list of objects in the class.

## Assign Multi-values to an Object

To assign multiple values to an RSA object, search for the object you want to assign then select the values you want assign to the RSA object.

### To assign multivalues to an object

1. On the [multivalue assignment dialog](#) (see page 292), select a class from the class list.

Selecting a class list specifies the object class you want to search. Classes that use the attribute displayed in the Attribute list appear in the list.

2. In the Attribute list, select an attribute.

Selecting an attribute specifies the attribute you want to search for.

3. Type a value in the Value field.

The value that you want to restrict the search is specified.

**Note:** The default is the wildcard character (\*). The wildcard causes the search to return all entries.

**Note:** If you perform an advanced search for an attribute, this field is not available.

4. Select the Search one level only check box.

Selecting the check box restricts the search to only the level selected in the Available List Search tree.

5. Click Advanced.

The Advanced Search Attributes dialog appears.

6. If necessary, specify more advanced search criteria.

**Note:** Specifying advanced search criteria is useful if you want to narrow the list of objects in the class.

7. Click Search.

The objects you can assign appear in the Available list.

8. Select the objects you want to assign, then move the objects to the Assigned list, then click OK.

You have assigned the objects to the RSA object you are working with.

## How You Acquire and Manage RSA 7.1 Endpoints

Before you can administer an RSA 7.1 endpoint with the Provisioning Manager, acquire the endpoint. When acquiring an RSA 7.1 endpoint, perform the following steps from the Endpoint task view:

1. Acquire the RSA server as an endpoint in the Provisioning Manager.
2. Explore the objects that exist in the endpoint.

After registering the computer in the Provisioning Manager, you can explore its contents. The exploration process finds all RSA objects. You can correlate the accounts with global users at this time, or you can wait to correlate them.

3. Correlate the explored accounts to global users. You can:
  - Use existing global users. Use existing global users when there are already global users in the Provisioning Manager and you want to connect the existing global users to the RSA accounts
  - Create global users as needed. Create global users when there are no global users and you want to populate the Provisioning Manager from the RSA accounts.

When you correlate accounts, the Provisioning Manager creates or links the accounts on an endpoint with global users, as follows:

- The Provisioning Manager attempts to match the RSA account name with each existing global user name. If a match is found, the Provisioning Manager associates the RSA account with the global user. If a match is not found, the Provisioning Manager performs the next step.
- The Provisioning Manager attempts to match the RSA account with each existing global user's full name. If a match is found, the Provisioning Manager associates the RSA account with the global user. If a match is not found, the Provisioning Manager performs the next step.
- The Provisioning Manager associates the RSA account with the [default user] object or a new global user is created depending on your choice.

## Acquire an RSA SecurID 7 Endpoint

Acquire and register an RSA SecurID 7 endpoint before you can administer it with the Provisioning Manager.

### To acquire an RSA SecurID 7 endpoint

1. In the Provisioning Manager, click the Endpoints button.
2. In the Object Type list, select RSA SecurID 7 [DYN Endpoint], then click New.  
The RSA SecurID namespace dialog appears.
3. On the endpoint tab, specify the Username and Password of a privileged RSA local user, and the command credentials for the RSA endpoint.  
**Note:** Command client credentials are generated on an RSA server and work only with that RSA installation. You require different command credentials for each RSA installation. However, although different realms defined on one RSA server correspond to different CA Identity Manager endpoints, you can use the same command credentials to acquire them.
4. Complete the remaining fields on the Endpoint tab, then click OK.
5. Complete the fields on the Endpoint Settings tab.  
The various settings that apply to controlling endpoints, such as password propagation and synchronization are specified.
6. Complete the fields on the General 1 tab.  
You have defined the time zone associated with group access times.
7. Complete the fields on the Program Exits Reference tab.  
Program exits are viewed added edited or removed as specified.
8. Complete the fields on the Attribute Mapping tab.  
The default attribute mapping defined in the schema file for the endpoint type are specified.
9. Complete the fields on the Logging tab.  
The logging settings for the new endpoint are specified.
10. Click OK.  
You have specified the administrative and connection details of an RSA SecurID endpoint.

## Account Management

The RSA 7.1 SecurID connector supports the following account management operations:

- Creating, modifying, renaming, moving and deleting accounts
- Creating, modifying and deleting account templates
- Creating, renaming, moving, modifying, and deleting trusted users
- Adding and removing local and trusted users to and from groups

## Add Accounts

To create an account for a user on the RSA endpoint, create a user and specify the details of their account.

### To add accounts

1. In the Provisioning Manager, click the Endpoints button and select SecurID 7 [DYN Endpoint] in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to add accounts, then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select User Account in the Object Type list and click New.  
The User Account dialog appears General 1 tab appears.
6. On the General 1 tab, specify the basic details of the user account you want to add.
7. On the General 2 tab, specify the authentication details of the user account.
8. On the General 3 tab, specify that you want to assign the next available token and clear the incorrect passcode counter.
9. On the Identity Source tab, select the Identity Source where you want to add the user.
10. On the RADIUS profile tab, assign a RADIUS profile to the user.
11. On the Administrative Roles tab, assign an administrative role to the user.
12. On the SecurID Tokens tab, assign a token to the user.
13. On the Member of tab, add the user to a group.
14. Click Ok.

The user account is created on the RSA endpoint.

## Update Accounts

To modify the details of a user account update the user account on the RSA endpoint.

### To update accounts

1. In the Provisioning Manager, click the Endpoints button and select SecurID 7 [DYN Endpoint] in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to update accounts and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Properties.
7. Modify the properties on the User Account dialog and then click Apply.  
The details of the user account are modified.

## Delete Accounts

If you want to remove an account from an endpoint you can delete the account.

### To delete accounts

1. Click the Endpoints task button and select SecurID 7 [DYN Endpoint] in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove the account and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Delete.
7. When prompted, confirm that you want to delete the account.  
The account is deleted.

## Create an Account Template

You can create account templates that specify a set of attributes and for all users assigned the account template.

### To create account templates

1. Click the Roles task button and select the RSA SecurID 7 [DYN Account Template] type in the Object Type drop-down list.
2. Click New.  
The RSA SecurID 7 Account Template dialog appears.
3. On the Endpoints tab, specify an endpoint for this account template.
4. On the General 1 tab, specify the users details and account credentials for accounts provisioned with this template.  
**Important!** If you are creating an account template for trusted users, delete the rule string %P% from the Password field. If you do not delete the rule string, the account template creation for the global user will fail.
5. On the General 2 tab, specify the authentication settings for users that are provisioned with this account template.  
**Important!** If you are creating an account template for trusted users, delete the rule string %XD% from the Start date field, and delete the rule string %UL% from the Last name field. If you do not delete the rule strings, the account template creation for the global user will fail.
6. On the Identity source tab, specify the identity source that accounts based on the template are assigned.
7. On the RADIUS Profile tab, specify the RADIUS profile that accounts based on this template are assigned.  
On the Administrative Roles tab, specify the administrative roles that accounts based on the template are assigned.
8. On the Member of (Trusted Groups) tab, specify the trusted groups that accounts based on the template are members of.
9. On the Member of tab, specify the groups that accounts based on the template are members of.
10. Click OK.

The account template for the RSA endpoint is created.

## Edit an Account Template

You can modify the account templates that specify a set of attributes and privileges for all users assigned the account template.

### To edit an account template

1. Click the Roles task button and select and select the RSA SecurID 7 [DYN Account Template] type in the Object Type drop-down list.
2. Click Search.  
The account templates for the system domain you selected appear in the list view.
3. Right-click an account template in the list view and then click Properties.  
The RSA SecurID 7 Account Template dialog appears.
4. Complete the fields on the General 1 tab to specify the users details and account credentials for accounts provisioned with this template.
5. Complete the General 2 tab to specify authentication settings for users that are provisioned with this account template.
6. Complete the fields on the Identity source tab to specify the identity source that accounts based on the template are assigned.
7. Complete the fields on the RADIUS Profile tab to specify the RADIUS profile that accounts based on this template are assigned.
8. Complete the Administrative Roles tab to specify the administrative roles that accounts based on the template are assigned.
9. Complete the Member of (Trusted Groups) tab to specify the trusted groups that accounts based on the template are members of.
10. Complete the Member of tab to specify the groups that accounts based on the template are members of.
11. Click OK.

The account template for the RSA endpoint is updated.

## Delete an Account Template

You can delete account templates for the RSA 7.1 SecurID endpoint.

### To delete account templates

1. Click the Roles task button and select the RSA SecurID 7 [DYN Account Template] type in the Object Type drop-down list.

2. Click Search.

The account templates for the system domain you selected appear in the list view.

3. Right-click an account template you want to delete and then click Delete.

4. When prompted, confirm that you want to delete the account template.

The account template is deleted.

## Create a Trusted User

To create a user that can authenticate through realms other than their own you can create a trusted user. When you create a user account, you append the name of the trusted realm you want the user to authenticate through to the users login id, which identifies the user as a trusted user.

### To create a trusted user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to create a trusted user and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select User Account in the Object Type list and click New.  
The User Account dialog appears General 1 tab appears.
6. On the General 1 tab, define a login id for the user, then select the trusted realm you want the trusted user to authenticate through from the drop-down list next to the Login Id field.
7. Complete the Notes field if required.
8. If required complete the Default Shell field in the General 2 tab on the User Account dialog, then click OK.
9. Complete the required fields on the other tabs on the User Account dialog, then click OK.
10. On the RADIUS profile tab, assign a RADIUS profile to the user.
11. On the Member of (Trusted Group) tab, add the user to a trusted group.

The trusted user is created, and is assigned a login id in the following format:

*Remote\_username < delimiter > Realm\_name*

For example, *UserName01 % CA*.

### More information:

[Local and Remote User Support](#) (see page 288)

## Move a Local or Trusted User into a Different Security Domain

If you want to manage a local or trusted user under a different security domain, you can move the user or local user to another security domains within the realm.

### To move a local user or trusted user into a different security domain

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list .
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to move a local or trusted user, and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type box and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Move.  
The Move in Hierarchy dialog appears.
7. Select the Security Domain you want to move the account into.
8. Click OK.  
The account is moved into the security domain you selected.

## Update a Trusted User

If the account details of a user change, you can update the details of a trusted user.

### To update a trusted user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to update a trusted user, and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Properties.
7. Modify the properties on the User Account dialog and then click Apply.  
The details of the user are modified.

## Rename a Trusted User

If the login id or the trusted realm the user belongs to change, you can change the details of users login id.

### To rename a trusted user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search to search for the endpoint on which you want to update the account.
3. Right-click the endpoint on which you want to rename a trusted user and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.

The accounts for the system domain you selected appear in the list view.

6. Right-click a trusted account in the list view and then click Rename.

The Rename dialog appears.

7. Type the new name of the trusted user in the New name field in the following format:

*Remote\_username <delimiter> Realm\_name*

For example, *UserName01 % CA*.

### More information:

[Local and Remote User Support](#) (see page 288)

## Delete a Trusted User

To remove a trusted user from an endpoint you can delete the trusted user account.

### To delete trusted users

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to delete a trusted user and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click a trusted user in the list view and then click Delete.
7. When prompted, confirm that you want to delete the trusted user.  
The trusted user is deleted.

## How you Add Trusted Users to Trusted Groups

To add trusted users to trusted groups you can do either of the following:

- [Edit an individual trusted user and specify which trusted groups the user is a member of](#) (see page 306)
- [Edit a trusted group and specify the trusted members of the group](#) (see page 307)

## Add Trusted Users to Trusted Groups

To manage trusted users as group, you can specify which trusted groups a user is member of.

### To specify which trusted groups the user is a member of

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to specify which trusted groups a user is a member of, and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select User in the Object Type list and click Search.  
The list of users appears in the list view.
6. Right click the user you want to add to a trusted group, then click Properties.  
The User dialog General 1 tab appears.
7. Click the Member of (Trusted Groups) tab.
8. [Search for the trusted groups you want to add the user to.](#) (see page 293)  
The trusted groups you can assign to the trusted user appear in the Available list.
9. In the Available list, select the trusted group or group you want to add the user to, and then move the trusted group or groups to the Assigned list, then click OK.  
The trusted users you selected are added to the trusted group.

## Assign a Trusted User to a Trusted Group

To manage trusted users as a group, you can specify the trusted members of a trusted group.

### To specify the trusted members of a trusted group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to add trusted users to trusted groups and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Trusted Group in the Object Type list and click Search.  
The list of trusted groups appears in the list view.
6. Right click the trusted group you want to add users to, then click Properties.  
The Trusted Group dialog General 1 tab appears.
7. Click the Trusted User Members tab.
8. [Search for the trusted users you want to add to the trusted group.](#) (see page 293)  
The trusted users you can assign to the trusted group appear in the Available list.
9. In the available list, select the trusted user or users you want to add to the trusted group, then move the trusted user or users to the Assigned list, then click OK.

**Note:** Both local and trusted users appear in the Available list. Verify that you select the correct user type before you move it to the Assigned list. For more information, see [Local and Remote User Support](#) (see page 288).

## How you Remove Trusted Users from Trusted Groups

To remove trusted users from groups, you can do either of the following:

- [Edit an individual trusted user and remove the trusted group the trusted user is a member of](#) (see page 308)
- [Edit a trusted group and remove the trusted user from the trusted group](#) (see page 309)

## Remove the Trusted Groups the User is a Member of

If you no longer want to manage a user as part of a trusted group, you can remove the trusted group or trusted groups a trusted user is a member of.

### To remove the trusted group a trusted user is a member of

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove a trusted group a user is a member of and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click a trusted user account in the list view and then click Properties.  
The User Account dialog appears.
7. Click the Member of (Trusted Groups) tab.  
The trusted groups that the trusted user belongs to appear in the Assigned list.
8. In the Assigned list, select the trusted group or trusted groups you want to remove the trusted user from, then move the trusted group to the Available list, then click OK.  
The trusted groups the trusted user is a member of are removed.

## Remove the Trusted Members of a Trusted Group

If you no longer want to manage a trusted user as part of a trusted group, you can remove the trusted user from a trusted group.

### To remove the trusted members from a trusted group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint from which you want to remove trusted members of a group and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Trusted Group in the Object Type list and click Search.  
The list of trusted groups appears in the list view.
6. Right-click the trusted group you want to remove members from, then click Properties.  
The Trusted Group dialog General 1 tab appears.
7. Click the Trusted User Members tab.  
The trusted users that are members of the group appear in the Assigned list.
8. In the Assigned list, select the trusted user or trusted users you want to remove from the trusted group, then move them to the Available list, then click OK.  
The trusted users you specified are removed from the trusted group.

## Administrative Roles

Administrative roles are read-only. You can only view the security domain scope in which the administrator has permission to manage objects and the identity source an administrator has permission to manage users from.

However, you can assign and unassign a user account to an administrative role.

### More information:

[How to Remove an Administrative Role](#) (see page 312)

[How to Assign an Administrative Role](#) (see page 310)

## View Administrative Roles

You can view the administrative roles in your organization.

### To view administrative roles

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to view administrative roles, and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Administrative Roles container in the Container tree, then click Search.  
The Administrative Roles for the endpoint you specified appear in the list view.
5. Right-click the Administrative role you want to view details for.  
The Administrative Roles dialog appears and displays the identity sources an administrator has permissions to manage users from, and the security domain the administrator has permissions to manage users from.

## How to Assign an Administrative Role

To assign an administrative role use either of the following methods:

- [Edit an individual user and specify the administrative roles you want the user to have](#) (see page 311)
- [Edit an administrative role and specify the users that have the administrative role](#) (see page 312)

## Specify the Administrative Roles You Want the User to Have

To let a user perform specified actions in a specific security domain, you can assign an administrative role to a user. You can assign multiple administrative roles to a user.

### To specify the administrative roles you want a user to have

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to assign an administrative role to a user account and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right click the user account you want to assign and administrative role, then click Properties.  
The User Account dialog appears.
7. Click the Administrative Roles tab.  
The administrative roles that the user is assigned appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
8. [Search for the administrative roles you want to assign to the user.](#) (see page 293)  
The administrative roles you can assign to the user account appear in the Available list.
9. In the Available list, select the Administrative role or administrative roles you want to assign to the user, then move it to the Assigned list, then click OK.  
The administrative role you selected is assigned to the user.

## Specify the Users That Have the Administrative Role

To let a user perform specified actions in a specific security domain, you can assign a user to an administrator role. You can assign multiple users to an administrative role at the same time.

### To specify the users that have the administrative role

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to specify the users that have the administrative role and then select Content.  
The Endpoint Content dialog appears.
4. Select Administrative Roles in the Object Type list and click then click Search.  
The administrative roles appear in the list view.
5. Right click the administrative role you want to add users to, then click Properties.  
The Administrative Roles dialog appears.
6. Click the Administrator roles tab.  
The users that are assigned the administrative roles appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
7. [Search for the administrative roles you want to assign to the user.](#) (see page 293)  
The administrative roles assigned to the user account appear in the Available list.
8. In the Available list, select the user or users you want to assign to the administrative role then move it to the Assigned list, then click OK.  
Both local and trusted users appear in the Available list. Verify that you select the correct user type before you move it to the Assigned list. For more information, see [Local and Remote User Support](#) (see page 288).  
The user you specified is added to the administrative role.

## How to Remove an Administrative Role

To remove an administrative role use either of the following methods:

- [Edit an individual user and remove the administrative roles you do not want the user to have](#) (see page 313)
- [Edit an administrative role and remove the users you do not want to have the administrative role](#) (see page 314)

## Unassign an Administrative Role from a User Account

If you no longer want to manage the actions a user can perform in a specific security domain using an administrative role you can remove an administrative role from a user. You can remove multiple administrative roles from a user at the same time.

### To remove the administrative roles you do not want users to have

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you do not want administrative roles a user to have and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right click the user account you want to assign and administrative role, then click Properties.  
The User Account dialog appears.
7. Click the Administrative Roles tab.  
The administrative roles that the user is assigned appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
8. [Search for the administrative roles you want to unassign from a user.](#) (see page 293)  
The administrative roles assigned to the user account appear in the Assigned list.
9. In the Assigned list, select the administrative role or administrative roles you want to remove from the user, then move it to the Available list, then click OK.  
The administrative role is removed from the user.

## Unassign a User Account Assigned to an Administrative Role

If you no longer want to manage the actions a user can perform in a specific security domain using an administrative role you can remove a user from an administrator role. You can remove multiple users from an administrative role at the same time.

### To remove users from an administrative role

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove users from an administrative role and then select Content.  
The Endpoint Content dialog appears.
4. Select Administrative Roles in the Object Type list and click then click Search.  
The administrative roles appear in the list view.
5. Right click the administrative role you want to remove users from, then click Properties.  
The Administrative Roles dialog appears.
6. Click the Administrator roles tab.  
The users that are assigned the administrative role appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
7. [Search for the administrative roles you want to unassign from the user.](#) (see page 293)  
The administrative roles assigned to the user account appear in the Assigned list.
8. In the Assigned list, select the user or users you want to unassign from the administrative role then move it to the Available list, then click OK.  
The user is removed from the administrative role.

## Manage Groups

The RSA 7.1 SecurID connector supports the following user group management operations:

- Creating groups
- Editing groups
- Adding and removing users to or from groups
- Make groups members of other groups
- Creating trusted groups
- Associating groups with authentication agents
- Removing group members from groups
- Associating trusted groups with authentication agents

**More Information:**

[Create a User Group](#) (see page 316)

[Edit a Group](#) (see page 317)

[Create a Trusted Group](#) (see page 326)

[Associate a Trusted Group with Authentication Agent](#) (see page 329)

[Edit a Trusted Group](#) (see page 327)

[How to Add Users to Groups](#) (see page 318)

[How you Remove Users from Groups](#) (see page 320)

## Create a User Group

You can organize users into groups based on your specific business needs, for example, locations, business departments or job title. You can also create user groups that contain other user groups, for example, a user group named Melbourne that contains a group named Technical Writers. The members of groups that contain other groups are named group members.

### To create a user group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint you want to create a trusted user on and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Group in the Object Type list and click New.  
The Group dialog General 1 tab appears.
6. On the General 1 tab, specify the basic details of the group you want to create.
7. On the Access Times (UTC/GMT) tab, specify the times when the members of a user group can authenticate.
8. On the Identity Source tab, specify the identity source you want to add the user group to.
9. On the Group Members tab, add a user group to the group.
10. On the Authentication tab, specify the user groups access to specific authentication agents.
11. On the User Members tab, search for the user you want to add to the group, then add it to the group.
12. Click Ok.  
The user group you specified is created.

## Edit a Group

To modify the details of a group, such as the times when members of a user group can authenticate, the groups the group belongs to, the groups access to specific authentication agents, and the members of a group, edit the group.

**Note:** The identity source where the group is assigned is read-only. You can only specify an identity source for a group when you create the group.

### To edit a group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to edit a group, and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Group in the Object Type list and click Search.  
The list of groups appears in the list view.
6. Right click the group you want to change, then click Properties.  
The Group dialog General 1 tab appears.
7. On the General 1 tab, modify the basic details of the group you want to create.
8. On the Access Times (UTC/GMT) tab, specify the times when the members of a group can authenticate.
9. On the Group Members tab, modify the group the group belongs to.
10. On the Authentication tab, modify the groups access to specific authentication agents.
11. On the User Members tab, search for the user you want to add to the group, then add it to the group.
12. Click Ok.  
The details of the user are modified.

## Move a Trusted Group into a Different Security Domain

If you want to manage a trusted group under a different security domain, you can move the trusted group to another security domains within the realm.

### To move a trusted group into a different security domain

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list .
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to move a trusted group and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Trusted Group in the Object Type box and click then click Search.  
The trusted groups for the system domain you selected appear in the list view.
6. Right-click a trusted group in the list view and then click Move.  
The Move in Hierarchy dialog appears.
7. Select the Security Domain you want to move the trusted group into.
8. Click OK.  
The trusted group is moved into the security domain you selected.

## How to Add Users to Groups

To add users to groups you can do either of the following:

- [Edit an individual user and specify which groups the user is a member of](#) (see page 319)
- [Edit a group and specify the members of the group](#) (see page 320)

## Specify the Groups a User is a Member of

To manage users as group, you can add users to groups.

### To specify the groups a user is a member of

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to add user groups and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Group in the Object Type list and click Search.  
The list of groups appears in the list view.
6. Right click the group you want to change, then click Properties.  
The Group dialog General 1 tab appears.
7. Click the User Members tab.
8. [Search for the users you want to add to the group.](#) (see page 293)  
The users you can assign to the group appear in the Available list.
9. In the Available list, select the user or users you want to add to the group, then move the user or users to the Assigned list, then click OK.

**Note:** Both local and trusted users appear in the Available list. Verify that you select the correct user type before you move it to the Assigned list. For more information, see [Local and Remote User Support](#) (see page 288).

The users you selected are added to the group.

## Specify the Members of a Group

To manage users as group, you can assign a user to a group.

### To assign a user to a group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint where you want to add users to a group and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Properties.  
The User Account dialog appears.
7. Click the Member of tab.
8. [Search for the groups you want to add the user to.](#) (see page 293)  
The groups you can assign the user account to appear in the Available list.
9. In the Available list, select the group or groups you want the user to belong to, then move the group to the Assigned list, then click OK.  
The user is made a member of the groups you selected.

## How you Remove Users from Groups

To remove users from groups, you can do either of the following:

- [Edit an individual user and remove the group the user is a member of](#) (see page 322)
- [Edit a group and remove the user from the group](#) (see page 321)

## Remove the Group the User is a Member of

If you no longer want to manage a user as part of a group, you can remove the group or groups a user is a member of.

### To remove the group a user is a member of

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove a group a user is a member of, and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Properties.  
The User Account dialog appears.
7. Click the Member of tab.  
The groups that the user belongs to appear in the Assigned list.
8. In the Assigned list, select the group or groups you want to remove the user from, then move the group to the Available list, then click OK.  
The groups the user is a member of are removed.

## Remove the User from a Group

If you no longer want to manage a user as part of a group, you can remove the user from a group they are a member of.

### To remove a user from a group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove users from a group, and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Group in the Object Type list and click Search.  
The list of groups appears in the list view.
6. Right click the group you want to remove members from, then click Properties.  
The Group dialog General 1 tab appears.
7. Click the User Members tab.  
The users that are members of the group appear in the Assigned list.
8. In the Assigned list, select the user or users you want to remove from the group, then move the user or users it to the Available list, then click OK.  
The user you selected is removed from the group.

## Make Groups Members of Other Groups

To manage collections of groups, you can make groups members of other groups. For example, you can make the groups Melbourne and Sydney Technical Writers part of the Technical Writers Australia group.

### To make groups members of other groups

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to make groups members of other groups and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the security domain where the group you want to add to another group is located.
5. In the Object Type list, select Group, then click Search.  
The Group dialog appears.
6. Select Group in the Object Type list and click Search.  
The list of groups appears in the list view.
7. Right click the group you want to changes, then click Properties.  
The Group dialog General 1 tab appears.
8. Click the Group Members tab.
9. [Search for the group you want to add to the group.](#) (see page 293)  
The groups you can add to the group appear in the Available list.
10. Select the group or groups you want to add to the group, then move the group or groups to the Assigned list, then click OK.  
The groups you selected are added to the group.

## Remove Group Members from Groups

If you no longer want to manage a group that is part of another group, you can remove group members from groups. For example, you could remove the Melbourne Sales group from the Australian Sales group.

### To remove groups members from groups

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove groups members from groups and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the security domain where the group you want to add to another group is located.
5. In the Object Type list, select Group, then click Search.  
The Group dialog appears.
6. Select Group in the Object Type list and click Search.  
The list of groups appears in the list view.
7. Right click the group you want to changes, then click Properties.  
The Group dialog General 1 tab appears.
8. Click the Group Members tab.  
The groups that the group is a member of appear in the Assigned list.
9. In the Assigned list, select the group or groups you want to remove from the group, then move the group or groups to the Available list, then click OK.  
The groups you selected are removed from the group.

## Associate a Group with Authentication Agent

You can specify the authentication agents you want to give the group permission to access.

### To associate a group with an authentication agent

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to associate a group with an authentication agent and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the security domain where the group you want to add to another group is located.
5. In the Object Type list, select Group, then click Search.  
The Group dialog appears.
6. Select Group in the Object Type list and click Search.  
The list of groups appears in the list view.
7. Right click the group you want to change, then click Properties.  
The Group dialog General 1 tab appears.
8. Click the Authentication Agent tab.
9. [Search for the authentication agent you want to give the group permission to access.](#) (see page 293)  
The authentication agents you can assign to the group appear in the Available list.
10. In the Available list, select the authentication agent or agents you want to assign to the group, then move the agent or agents to the Assigned list, then click OK.  
You have associated the authentication agent with the group.

## Create a Trusted Group

To manage trusted users as a trusted group, you can create a trusted group and specify its members.

### To create a trusted group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to create a trusted group and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Trusted Group in the Object Type list and click New.  
The Trusted Group dialog General 1 tab appears.
6. On the General 1 tab, specify the basic details of the trusted group you want to create.
7. On the Access Times (UTC/GMT) tab, specify the times when the members of a trusted user group can authenticate.
8. On the Authentication tab, search for the authentication agents you want the trusted group to authenticate with.
9. On the Trusted User Members tab, search for the user you want to add to the trusted group, then add it to the trusted group.
10. Click Ok.  
The trusted group is created.

## Edit a Trusted Group

If the details of trusted group change, for example, the authentication agents the group can use to authenticate, the times when members of a trusted user group can authenticate, the members of the trusted group, you can edit the details of the trusted group.

### To edit a trusted group

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to edit a trusted group and then select Content.  
The Endpoint Content dialog appears.
4. Select the System Domain container in the Container tree.
5. Select Trusted Group in the Object Type list and click Search.  
The list of trusted groups appears in the list view.
6. Right click the trusted group you want to change, then click Properties.  
The Trusted Group dialog General 1 tab appears.
7. On the General 1 tab, modify the basic details of the trusted group you want to create.
8. On the Access Times (UTC/GMT) tab, modify the times when the members of a trusted user group can authenticate.
9. On the Authentication tab, modify the authentication agents you want the trusted group to authenticate with.
10. On the Trusted User Members tab, modify the users you want to add to the trusted group, then add it to the trusted group.
11. Click Ok.  
The details of the trusted group are modified.

## Move a Group into a Different Security Domain

If you want to manage a group under a different security domain, you can move the group to another security domains within the realm.

### To move a group into a different security domain

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list .
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to move a group and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Group in the Object Type box and click then click Search.  
The groups for the system domain you selected appear in the list view.
6. Right-click a group in the list view and then click Move.  
The Move in Hierarchy dialog appears.
7. Select the Security Domain you want to move the group into.
8. Click OK.  
The group is moved into the security domain you selected.

## Associate a Trusted Group with Authentication Agent

To specify the authentication agents you want to give a trusted group permission to access, you can associate a trusted group with an authentication agent.

### To associate a trusted group with an authentication agent

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to associate a trusted group with an authentication agent, and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the security domain where the trusted group you want to associate with an authentication agent is located.
5. In the Object Type list, select Trusted Group, then click Search.  
The Trusted Group dialog appears.
6. Select Trusted Group in the Object Type list and click Search.  
The list of trusted groups appears in the list view.
7. Right click the trusted group you want to change, then click Properties.  
The Trusted Group dialog General 1 tab appears.
8. Click the Authentication Agents tab.
9. [Search for the authentication agent you want to give the trusted group permission to access.](#) (see page 293)  
The authentication agents you can assign to the trusted group appear in the Available list.
10. In the Available list, select the authentication agent or agents you want to assign to the trusted group, then move the agent or agents to the Assigned list, then click OK.  
The authentication agent is associated with the trusted group.

## RADIUS Profiles Management

The RSA 7.1 SecurID connector supports the following RADIUS Profile management operations:

- Creating, editing, modifying and deleting a RADIUS profile
- Assigning and unassigning RADIUS Profiles to users
- Assigning and unassigning RADIUS Profiles to trusted users

**More information:**

[How to Assign a User to a RADIUS Profile](#) (see page 330)

[Associate a RADIUS Profile with an Authentication Agent](#) (see page 339)

[How to Unassign RADIUS Profiles from Users](#) (see page 332)

[How to Assign a Trusted User to a RADIUS Profile](#) (see page 334)

[How to Unassign a Trusted User from a RADIUS Profile](#) (see page 336)

[Remove Trusted Users from an Existing RADIUS Profile](#) (see page 338)

[Create a RADIUS Profile](#) (see page 340)

[Edit a RADIUS Profile](#) (see page 341)

[Delete a RADIUS Profile](#) (see page 342)

## How to Assign a User to a RADIUS Profile

You can assign a RADIUS profile to a user in either of the following ways:

- [Assign a RADIUS profile to a user](#) (see page 331)
- [Add users to an existing RADIUS profile](#) (see page 332)

## Assign a RADIUS Profile to a User

To specify the session requirements for a user that requests remote network access, you can assign a RADIUS profile to the user.

### To assign a RADIUS profile to a user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to assign a RADIUS profile to a user and then select Content.  
The Endpoint Content dialog appears.
4. Select RADIUS profiles in the Container tree and then click Search.  
The RADIUS profiles for the system domain you selected appear in the list view.
5. Right-click a RADIUS Profile in the list view and then click Properties.  
The RADIUS Profile dialog appears.
6. Click the Users tab.  
[Search for the users you want to assign a RADIUS profile to.](#) (see page 293)  
The users you can assign to the RADIUS profile appear in the Available list, and the users assigned to the profile appear in the Assigned list.
7. In the Available list, select the user or users you want to assign to the RADIUS Profile, then move them to the Assigned list, then click OK.  
The RADIUS profile is assigned to the user.

## Add Users to an Existing RADIUS Profile

To specify the session requirements for a user that requests remote network access, you can add users to an existing RADIUS profile.

### To add users to an existing RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to add users to an existing RADIUS profile and then select Content.  
The Endpoint Content dialog appears.
4. Select a security domain in the Container tree and then in the Object Type list, select User Account.
5. Click Search.  
The users in the system domain you selected appear in the list view.
6. Right-click a user in the list view and then click Properties.  
The User Account dialog appears.
7. Click the RADIUS Profiles tab.
8. [Search for the RADIUS profiles you want add the user too.](#) (see page 293)
9. The RADIUS profiles you can assign to the user appear in the Available list, and the RADIUS profiles assigned to the user appear in the Assigned list.
10. In the Available list, select the RADIUS profile or profiles you want to assign to the user, then move them to the Assigned list, then click OK.  
The user is added to the RADIUS profile.

## How to Unassign RADIUS Profiles from Users

You can unassign a RADIUS profile from a user in either of the following ways:

- [Unassign a RADIUS profile from a user](#) (see page 333)
- [Remove users from an existing RADIUS profile](#) (see page 334)

## Unassign a User from a RADIUS Profile

If you no longer want to manage the session requirements for a user that requests remote network access using a RADIUS profile, you can unassign a user from a RADIUS profile.

### To unassign a RADIUS profile from a user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to unassign a RADIUS profile from a user and then select Content.  
The Endpoint Content dialog appears.
4. Select a security domain in the Container tree and then in the Object Type list, select User Account.
5. Click Search.  
The users in the system domain you selected appear in the list view.
6. Right-click a user in the list view and then click Properties.  
The User Account dialog appears.
7. Click the RADIUS Profiles tab.  
The users assigned to the RADIUS profiles appear in the Assigned list.
8. In the Assigned list, select the user or users you want to unassign from the RADIUS profile, then move them to the Available list, then click OK.  
The RADIUS profile is unassigned from the user.

## Remove Users from an Existing RADIUS Profile

If you no longer want to manage the session requirements for a user that requests remote network access using a RADIUS profile, you can remove users from an existing RADIUS profile.

### To remove users from an existing RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove users from an existing RADIUS profile and then select Content.  
The Endpoint Content dialog appears.
4. Select RADIUS profiles in the Container tree and then click Search.  
The RADIUS profiles for the system domain you selected appear in the list view.
5. Right-click a RADIUS Profile in the list view and then click Properties.  
The RADIUS Profile dialog appears.
6. Click the Users tab.  
The users assigned to the RADIUS profile appear in the Assigned list.
7. In the Assigned list, select the user or users you want to unassign from the RADIUS Profile, then move them to the Available list, then click OK.  
The RADIUS profile is removed from the user.

## How to Assign a Trusted User to a RADIUS Profile

You can assign a RADIUS profile to a trusted user in either of the following ways:

- [Assign a RADIUS profile to a trusted user](#) (see page 335)
- [Assign trusted users to an existing RADIUS profile](#) (see page 336)

## Assign a RADIUS Profile to a Trusted User

To specify the session requirements for a trusted user that requests remote network access, you can assign a RADIUS profile to the trusted user.

### To assign a RADIUS profile to a trusted user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to remove users from an existing RADIUS profile and then select Content.

The Endpoint Content dialog appears.

4. Select RADIUS profiles in the Container tree and then click Search.

The RADIUS profiles for the system domain you selected appear in the list view.

5. Right-click a RADIUS Profile in the list view and then click Properties.

The RADIUS Profile dialog appears.

6. Click the Trusted Users tab.

7. [Search for the trusted users you want to assign the RADIUS profile to.](#) (see page 293)

The trusted users you can assign to the RADIUS profile appear in the Available list, and the trusted users assigned to the profile appear in the Assigned list.

8. In the Available list, select the trusted user or trusted users you want to assign to the RADIUS Profile, then move them to the Assigned list, then click OK.

The RADIUS profile is assigned to the trusted user.

## Assign Trusted Users to an Existing RADIUS Profile

To specify the session requirements for a trusted user that requests remote network access, you can add trusted users to an existing RADIUS profile.

### To add trusted users to an existing RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to add trusted users to an existing RADIUS profile and then select Content.  
The Endpoint Content dialog appears.
4. Select a security domain in the Container tree and then in the Object Type list, select User Account.
5. Click Search.  
The users in the system domain you selected appear in the list view.
6. Right-click a trusted user in the list view and then click Properties.  
The Trusted User Account dialog appears.
7. Click the RADIUS Profiles tab.
8. [Search for the RADIUS profiles you want add the trusted user too.](#) (see page 293)  
The RADIUS profiles you can assign to the trusted user appear in the Available list, and the RADIUS profiles assigned to the trusted user appear in the Assigned list.
9. In the Available list, select the RADIUS profile or profiles you want to assign to the trusted user, then move them to the Assigned list, then click OK.  
The trusted users are added to the RADIUS profile.

## How to Unassign a Trusted User from a RADIUS Profile

You can unassign a RADIUS profile from a trusted user in either of the following ways:

- [Unassign a RADIUS profile from a trusted user](#) (see page 337)
- [Remove a trusted user from an existing RADIUS profile](#) (see page 338)

## Unassign a Trusted User from a RADIUS Profile

If you no longer want to manage the session requirements for a trusted user that requests remote network access using a RADIUS profile, you can unassign a RADIUS profile from a trusted user.

### To unassign a RADIUS profile from a trusted user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to unassign a RADIUS profile from a trusted user in the list view and then select Content.  
The Endpoint Content dialog appears.
4. Select a security domain in the Container tree and then in the Object Type list, select Trusted User Account.
5. Click Search.  
The trusted users in the system domain you selected appear in the list view.
6. Right-click a trusted user in the list view and then click Properties.  
The trusted User Account dialog appears.
7. Click the RADIUS Profiles tab.  
The trusted users assigned to the RADIUS profiles appear in the Assigned list.
8. In the Assigned list, select the trusted user or trusted users you want to unassign from the trusted user, then move them to the Available list, then click OK.  
You have unassigned the RADIUS profile from the trusted user.

## Remove Trusted Users from an Existing RADIUS Profile

If you no longer want to manage the session requirements for a trusted user that requests remote network access using a RADIUS profile, you can remove a trusted user from an existing RADIUS profile.

### To remove trusted users from an existing RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to remove trusted users from an existing RADIUS profile and then select Content.  
The Endpoint Content dialog appears.
4. Select RADIUS profiles in the Container tree and then click Search.  
The RADIUS profiles for the system domain you selected appear in the list view.
5. Right-click a RADIUS Profile in the list view and then click Properties.  
The RADIUS Profile dialog appears.
6. Click the Trusted Users tab.  
The users assigned to the RADIUS profile appear in the Assigned list.
7. Select the trusted user or trusted users you want to unassign from the RADIUS Profile, then move them to the Available list, then click OK.  
The RADIUS profile is removed from the trusted user.

## Associate a RADIUS Profile with an Authentication Agent

To specify the session requirements for a users requesting remote network access using a specific authentication agent, you can associate a RADIUS profile with an Authentication Agent. The RADIUS profile is applied to all users that request remote network access using the specific authentication agent.

### To associate a RADIUS profile with an authentication agent

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to associate a RADIUS profile with an authentication agent and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select RADIUS Profiles, then click Search.  
The list of RADIUS Profiles appears in the list view.
5. Right click the RADIUS profile group you want to associate with an authentication agent, then click Properties.  
The RADIUS Profile dialog appears.
6. Click the Authentication Agents tab.
7. [Search for the authentication agent you want to associate with a RADIUS profile.](#) (see page 293)  
The authentication agents you can assign to the RADIUS Profile appear in the Available list.
8. In the Available list, select the authentication agent or agents you want to associate with the RADIUS profile, then move the agent or agents to the Assigned list, then click OK.  
The authentication agent is associated with the RADIUS profile.

## Create a RADIUS Profile

To specify the session requirements for users that request remote network access, you can create a RADIUS profile.

### To create a RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to assign a RADIUS profile to a user and then select Content.  
The Endpoint Content dialog appears.
4. Select the RADIUS Profiles container in the Container tree, then click New.  
The RSA SecureID 7 RADIUS Profile dialog appears General 1 tab appears.
5. Complete the fields on the General 1 tab.  
You have defined the details of a RADIUS profile.
6. Click the Users tab.
7. [Search for the users you want to assign the RADIUS profile to.](#) (see page 293)  
The users you can assign to the RADIUS profile appear in the Available list.
8. In the Available list, select the user or users you want assign to the RADIUS profile, and then move the users to the Assigned list, then click OK.  
You have assigned the select users to RADIUS profiles.
9. Click the Authentication Agents tab.
10. [Search for the authentication agents users you want to assign to the RADIUS profile to.](#) (see page 293)  
The authentication agents you can assign to the RADIUS profile appear in the Available list.
11. In the Available list, select the authentication agent or agents you want assign to the RADIUS profile, and then move the authentication agents to the Assigned list.  
You have assigned the select authentication agents to RADIUS profiles.
12. Click OK.  
You have created the RADIUS profile.

## Edit a RADIUS Profile

To modify the session requirements for users that request remote network access, you can modify a RADIUS profile.

### To edit a RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to assign a RADIUS profile to a user and then select Content.  
The Endpoint Content dialog appears.
4. Select the RADIUS Profiles container in the Container tree, then click Search.  
The RADIUS Profiles for the system domain you selected appear in the list view.
5. Right-click an RADIUS profile in the list view and then click Properties.  
The RSA SecureID 7 RADIUS Profile dialog General 1 tab appears.
6. Edit the fields on the General 1 tab.  
You have defined the details of a RADIUS profile.
7. Click the Users tab.  
The users that are assigned to the RADIUS profile appear in the Assigned list.
8. In the Assigned list, select the user or users you want to unassign from the RADIUS Profile, then move them to the Available list, then click OK.  
You have assigned the select users to RADIUS profiles.
9. Click the Authentication Agents tab.  
The Authentication Agents tab appears.  
The authentication agents that are assigned to the RADIUS profile appear in the Assigned list.
10. In the Assigned list, select the agent or agents you want to unassign from the RADIUS Profile, then move them to the Available list,  
You have edited the select authentication agents assigned to the RADIUS profile.
11. Click OK.  
You have edited the RADIUS profile.

## Delete a RADIUS Profile

If you no longer want to manage the session requirements of users by using a RADIUS profile, you can delete the RADIUS profile.

### To delete a RADIUS profile

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to assign a RADIUS profile to a user and then select Content.  
The Endpoint Content dialog appears.
4. Select the RADIUS Profiles container in the Container tree, then click Search.  
The RADIUS Profiles for the system domain you selected appear in the list view.
5. Right-click a RADIUS profile in the list view then click Delete.
6. When prompted, confirm that you want to delete the RADIUS profile.  
You have deleted the RADIUS profile.

## Security Domain Management

The RSA 7.1 SecurID connector supports creating, modifying, or deleting security domains.

### More information:

[Create a Security Domain](#) (see page 343)

[Update a Security Domain](#) (see page 344)

[Delete a Security Domain](#) (see page 345)

## Create a Security Domain

To represent your companies business structure in a hierarchical tree, you can create security domains in a specified realm.

### To create a security domain

1. Click the Endpoints task button and select the RSA SecurID 7 [DYN Endpoint] in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to create a security domain and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, click the realm where you want to create the security domain.
5. Select Security Domain in the Object Type list and click New.  
The Security Domain dialog General 1 tab appears.
6. On the General 1 tab, specify the name of the security domain you want to create.
7. On the Password Policy tab, assign a password policy to the security domain.
8. On the Self service troubleshooting policy tab, assign a Self service troubleshooting policy to the security domain.
9. On the Default authentication grade policy tab, assign an authentication grade policy to the security domain.
10. On the SecurID Token Policy tab, assign a SecurID token policy to the security domain.
11. On the Off-line authentication policy tab, assign an off-line authentication policy to the security domain.
12. Click Ok.

The security domain is created in the realm you specified.

## Update a Security Domain

To update the details of your companies business structure and policies, you can update the details of a security domain.

### To update a security domain

1. Click the Endpoints task button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to enable or disable PINS and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, click the realm where you want to create the security domain.

5. Select Security Domain in the Object Type list and click Search.

The Security Domains for the endpoint you specified appear in the list view.

In the list view, right-click the security domain you want to update, then click Properties.

The Security Domain dialog appears.

6. Update the fields on the tabs on the Security Domain dialog as required, then click OK.

You have updated the details of the selected security domain.

## Delete a Security Domain

If your company's business structure or policies change, you can delete the appropriate security domain. A security domain must be empty of all objects before it can be deleted, for example, users, groups, and administrative roles.

### To delete a security domain

1. Click the Endpoints task button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to delete a security domain and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, click the realm where you want to delete the security domain.
5. Select Security Domain in the Object Type list and click Search.  
The Security Domains for the endpoint you specified appear in the list view.
6. In the list view, right-click the security domain you want to delete, then click Delete.
7. When prompted, confirm that you want to delete the security domain.  
The security domain is deleted.

## Token Management

The RSA 7.1 SecurID connector supports the following Token management operations:

- Assigning and unassigning tokens
- Update and deleting tokens
- Enabling and disabling tokens
- Replacing tokens
- Enabling and clearing PINS
- Requesting PIN changes

**More Information:**

[Unassign Tokens](#) (see page 348)

[Assign a Token to a User](#) (see page 347)

[Delete Tokens](#) (see page 350)

[Update Tokens](#) (see page 349)

[Enable Tokens](#) (see page 351)

[Disable Tokens](#) (see page 352)

[Enable or Disable PINs](#) (see page 356)

[Clear PINs](#) (see page 357)

[Request PIN Change](#) (see page 358)

[Replace Tokens](#) (see page 353)

[How to Replace Tokens](#) (see page 352)

[Replace a Users Token with a Token you Specify](#) (see page 354)

[Replace a Selected Token with a Token you Specify](#) (see page 355)

## Assign a Token to a User

If you want a user to authenticate using a token, assign a token to the user.

### To assign a token to a user

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to a token to a user and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Properties.  
The User Account dialog appears.
7. Click the SecurID Tokens tab.  
The tokens that the user is assigned appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
8. [Search for the tokens you want to assign to the user.](#) (see page 293)  
The tokens you can assign to the user account appear in the Available list.
9. In the Available list, select the token you want to assign to the user, then move it to the Assigned list, then click OK.  
The selected token is assigned to the user.

## Unassign Tokens

If you no longer want a user to authenticate using a token, you can unassign the token from the user.

### To unassign tokens

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to unassign tokens and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select User Account in the Object Type list and click then click Search.  
The accounts for the system domain you selected appear in the list view.
6. Right-click an account in the list view and then click Properties.  
The User Account dialog appears.
7. Click The SecurID Tokens tab.  
The tokens roles that the user is assigned appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
8. [Search for the tokens you want to unassign from the user.](#) (see page 293)  
The tokens assigned to the user account appear in the Assigned list.
9. In the Assigned list, select the token you want to unassign from the user, then move it to the Available list, then click OK.  
The selected token is unassigned from the user.

## Update Tokens

You can update information about token codes, such as whether the token requires the user to enter their SecurID PIN, or whether the user is required to change the SecurID PIN the next time they authenticate with the token. You can also do the following:

- Enable or disable the token
- Clear the SecurID PIN
- Specify the token you want to replace this token with
- Replace a selected token with the current token
- Create, edit, or delete one-time token codes

### To update tokens

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to update tokens and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Update the information you require, then click OK.  
The selected token is updated.

## Delete Tokens

To delete a token, you can remove it from the internal database.

### To delete a token

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to delete a token and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, select the Security Domain you want to search.

5. Select Token in the Object Type list and click then click Search.

The tokens for the system domain you selected appear in the list view.

6. Right-click a token in the list view and then click Delete.

7. When prompted, confirm that you want to delete the token code.

The token is removed from the system and can no longer be assigned. If the token is assigned to user, the user cannot use the token to authenticate.

## Enable Tokens

To let a user authenticate with a token they are assigned, enable the token.

### To enable tokens

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to enable a token and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the General 1 tab.
8. Select the Enabled Status check box, then click Apply.  
The user that is assigned the token can now use the token to authenticate.

## Disable Tokens

If you no longer want a user to authenticate using the token they are assigned, disable the token.

### To disable tokens

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to disable tokens and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the General 1 tab.
8. Clear the Enabled Status check box, then click Apply.  
The user that is assigned the token can no longer use the token to authenticate.

## How to Replace Tokens

You can put a token in one of the following replacement modes:

- Has a replacement token
- Is a replacement token

You can put a token in replacement mode in either of the following ways:

- [Replace a users token with a token assigned by the RSA Server](#) (see page 353)
- [Replace a users token with a token you specify](#) (see page 354)
- [Replace a selected token with a token you specify](#) (see page 355)

**Note:** You can put a token in only one token replacement mode at a time.

## Replace Tokens

To replace a users token that has been lost or has expired, you can replace the users token with a token assigned by the RSA Server.

### To replace tokens

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to replace tokens and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the General 1 tab.
8. Select the Replace with next available token check box, then click OK.  
The RSA Server assigns the next available token to the user. The token is put in *Has a replacement token mode*. The Replacement mode field on the General 1 tab displays Has a replacement token.

## Replace a Users Token with a Token you Specify

To replace a users token that has been lost or has expired, you can replace a users token with a with a token you specify.

### To replace a users token with a token you specify

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to replace a users token with a token you specify and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the Replacement by Token tab.  
The tokens that the user is assigned appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
8. [Search for the tokens you want to replace with a specific token.](#) (see page 293)  
The tokens you can assign to the user account appear in the Available list.
9. In the Available list, select the token you want to replace, then move it to the Assigned list, then click OK.  
The users token is replaced. The token is put in *Has a replacement token mode*. The Replacement mode field on the General 1 tab displays Has a replacement token.

## Replace a Selected Token with a Token you Specify

You can replace a selected token with a token you specify. Users that were assigned the token you selected are assigned the new token you specified.

### To replace a selected token with a token you specify

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to replace a selected token with a token you specify and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the Will Replace Token tab.  
The tokens that the user is assigned appear in the Assigned list, and the containers in the namespace you can search appear in the Available List Search tree.
8. [Search for the tokens you want to replace](#) (see page 293).  
The tokens that you can replace with the current token appear in the Available list.
9. in the Available list, select the token you want to replace the current token with, then move it to the Assigned list, then click OK.  
The current token is replaced with the token you selected.  
The token is put in *Is a replacement token mode*. The connector updates the Replacement mode field on the General 1 tab and displays Is a replacement token.

## Enable or Disable PINs

To specify whether a user must enter a PIN and their token code when they authenticate, you can enable or disable PINs.

### To enable or disable PINs

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to enable or disable a PIN and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the General 2 tab.
8. Select or clear the PIN is set check box.  
Users that are assigned the token code you modified may have to enter a PIN and their token code when they authenticate, depending on whether you enabled or disabled the PIN.

## Clear PINs

To specify that a user has to enter a tokencode and has to create a PIN when they next authenticate, you can clear the users current PIN.

### To clear a PIN

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.
3. The RSA 7.1 endpoints appear in the list view.  
Right-click the endpoint on which you want to clear a PIN view and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the General 2 tab.
8. Select the Clear PIN check box.  
The SecurID PIN assigned to a users logon is cleared. The user is required to enter a tokencode and is prompted to create a PIN when they next authenticate.

## Request PIN Change

To specify that the user must change their PIN at the next logon, you can request a PIN change.

### To request a PIN change

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to request a PIN change and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Security Domain you want to search.
5. Select Token in the Object Type list and click then click Search.  
The tokens for the system domain you selected appear in the list view.
6. Right-click a token in the list view and then click Properties.  
The Token dialog appears.
7. Click the General 2 tab.
8. Select the PIN change at next logon check box, then click OK.  
The PIN assigned to a users logon is cleared. The user is required to enter a tokencode and is prompted to create a PIN when they next authenticate.

## RSA Read-only Objects

The following endpoint objects are read-only on the RSA 7.1 SecurID endpoint:

- [Authentication agents](#) (see page 359)
- [Authentication grade policies](#) (see page 360)
- [Identity sources](#) (see page 360)
- [Lockout policies](#) (see page 361)
- [Off-line authentication policies](#) (see page 361)
- [Password policies](#) (see page 361)
- [Self-service troubleshooting policies](#) (see page 363)
- [Token policies](#) (see page 362)
- [Trusted realms](#) (see page 364)

## View Authentication Agents

You can view the details of a selected authentication agent.

### To view authentication agents

1. Click the Endpoints task button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to view authentication agents and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, select the SystemDomain container.

5. Expand the System Domain container then select the system domain where you want to view authentication agents.

6. Click Search.

The authentication agents for the endpoint you specified appear in the list view.

7. Right-click the authentication agents you want to view details for, then click Properties.

The Authentication Agent dialog General 1 tab appears and displays the details of the selected authentication agent.

## View Authentication Grade Policies

You can view the authentication grade policies in a specified security domain.

### To view authentication grade policies

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to view authentication grade policies and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, select the RSA Policies container in the Container tree.

5. In the Object list, select Authentication Grade, then click Search.

The authentication grade policies for the endpoint you specified appear in the list view.

6. Right-click the authentication grade policy you want to view details for, then click Properties.

The Authentication Grade dialog General 1 tab appears and displays the details of the selected authentication grade policy.

## View Identity Sources

You can view the details of a selected identity source.

### To view identity sources

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to view identity sources and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, select the Identity Source container in the Container tree.

5. Click Search.

The identity sources for the endpoint you specified appear in the list view.

6. Right-click the identity source you want to view details for, then click Properties.

The Identity Source dialog General 1 tab appears and displays the details of the selected identity source.

## View Lockout Policies

You can view the lockout policies in a specified security domain.

### To view lockout policies

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to view lockout policies and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the RSA Policies container in the Container tree.
5. In the Object list select Lockout Policy, then click Search.  
The lockout policies for the endpoint you specified appear in the list view.
6. Right-click the lockout policy you want to view details for, then click Properties.  
The Lockout Policy dialog General 1 tab appears and displays the details of the selected lockout policy.

## View Off-Line Authentication Policies

You can view the off-line authentication policies in a specified security domain.

### To view off-line authentication policies

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search  
The RSA 7.1 endpoints appear in the list view
3. Right-click the endpoint on which you want to view off-line authentication policies and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the RSA Policies container in the Container tree.
5. In the Object list, select Off-line Authentication Policy, then click Search.  
The SecurID token policies for the endpoint you specified appear in the list view.
6. Right-click the off-line authentication policy you want to view details for, then click Properties.  
The Off-line authentication Policy dialog General 1 tab appears and displays the details of the selected off-line authentication policy.

## View Password Policies

You can view the password policies in a specified security domain.

### To view password policies

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to view password policies and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the RSA Policies container in the Container tree.
5. In the Object list select Password Policy, then click Search.  
The Password Policies for the endpoint you specified appear in the list view.
6. Right-click the password policy you want to view details for, then click Properties.  
The Password Policies dialog General 1 tab appears and displays the details of the selected password policy.

## View SecurID Token Policies

You can view the SecurID token policies in a specified security domain.

### To view SecurID token policies

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to view SecurID policies and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the RSA Policies container in the Container tree.
5. In the Object list, select SecurID Token Policy, then click Search.  
The SecurID token policies for the endpoint you specified appear in the list view.
6. Right-click the SecurID token policies policy you want to view details for, then click Properties.  
The SecurID Token Policies dialog General 1 tab appears and displays the details of the selected SecurID token policy.

## View Self-service Troubleshooting Password Policies

You can view the self-service troubleshooting password policies in a specified security domain.

### To view self-service troubleshooting password policies

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.

2. Click Search.

The RSA 7.1 endpoints appear in the list view.

3. Right-click the endpoint on which you want to view self-service troubleshooting password policies and then select Content.

The Endpoint Content dialog appears.

4. In the Container tree, select the RSA Policies container in the Container tree.

5. In the Object list, select Self-service Password policies, then click Search.

The self-service troubleshooting policies for the endpoint you specified appear in the list view.

6. Right-click the self-service password policy you want to view details for, then click Properties.

The Self-service Troubleshooting Policy dialog General 1 tab appears and displays the details of the selected self-service troubleshooting policy.

## View RSA Trusted Realms

You can view the details of the trusted realms your realm is permitted to receive authentication requests from.

### To view trusted realms

1. In the Provisioning Manager, click the Endpoints button and select the RSA SecurID 7 [DYN Endpoint] type in the Object Type drop-down list.
2. Click Search.  
The RSA 7.1 endpoints appear in the list view.
3. Right-click the endpoint on which you want to view trusted realms and then select Content.  
The Endpoint Content dialog appears.
4. In the Container tree, select the Trusted Realms container in the Container tree.
5. Click Search.  
The trusted realms for the endpoint you specified appear in the list view.
6. Right-click the trusted realm you want to view details for, then click Properties.  
The Trusted Realms dialog General 1 tab appears and displays the details of the selected trusted realm.

## Known Issues

This section contains the following known issues for the RSA SecurID 7 Connector.

- [Non-English Character Support for RADIUS Profiles](#) (see page 365)
- [Attempting to Create a Security Domain Above the Top Level Security Domain Fails](#) (see page 366)
- [Attempting to Create a Security Domain Above the Top Level Security Domain Fails](#) (see page 366)

### More information:

[Non-English Character Support for RADIUS Profiles](#) (see page 365)

[Properties of RADIUS Profile Created with Japanese Characters](#) (see page 365)

[RADIUS Profiles with French Characters](#) (see page 365)

[Trusted Groups with More than 25 French or Japanese Characters](#) (see page 365)

[Attempting to Create a Security Domain Above the Top Level Security Domain Fails](#) (see page 366)

[RADIUS Profiles with Japanese Characters](#) (see page 365)

[Connector Data Migration Fails in Interactive Mode](#) (see page 366)

## Non-English Character Support for RADIUS Profiles

The RSA 7 connector does not support non-English characters for RADIUS Profiles. The following are known issues with non-English character support:

- [Deleting RADIUS profiles with Japanese characters](#) (see page 365)
- [Displaying properties of RADIUS profiles created with Japanese characters](#) (see page 365)
- [Creating RADIUS profiles with French characters](#) (see page 365)
- [Creating a Trusted Group with more than 25 French or Japanese characters](#) (see page 365)

### RADIUS Profiles with Japanese Characters

If you try to delete a RADIUS profile on an RSA7 server using CA Identity Manager Provisioning Manager in a Japanese environment, the delete operation appears to remove the profile in the Provisioning Server. However, when you look at the RSA Server, the RSA Profile is not deleted from the endpoint.

### Properties of RADIUS Profile Created with Japanese Characters

When you create a RADIUS profile in CA Identity Manager Provisioning Manager using Japanese characters, the profile creation is successful. However you cannot display the property window of the profile after it has been created.

However, the profile is created correctly on the endpoint, and you can view and edit it using the RSA console.

### RADIUS Profiles with French Characters

If you create one RADIUS profile with French characters using CA Identity Manager Provisioning Manager on an endpoint that does not contain RADIUS profiles with French characters (such as 'àçèéù) two profiles are created on the Endpoint

One profile is correct, however the second profile created contains invalid characters.

In addition, you cannot display properties of RADIUS profiles created with French characters.

### Trusted Groups with More than 25 French or Japanese Characters

The character limit for trusted group name is 50. However, due to the byte limit, you can only enter 25 French or Japanese characters. You can enter a maximum of 16 Kanji characters for a trusted group using CA Identity Manager Provisioning Manager. The number of Japanese or French characters that you can enter in a particular field can be less than the number of English language characters that you can enter in the same field in the Provisioning Manager.

## Attempting to Create a Security Domain Above the Top Level Security Domain Fails

When you select the top-level of the endpoint in the container tree on the Endpoint Content dialog, the New button on the Endpoint Content dialog is displayed as available. However when you attempt to create a security domain, the creation fails because you cannot create a security domain above the top-level security domain. The New button on the Endpoint Content dialog is incorrectly displayed as available.

## Connector Data Migration Fails in Interactive Mode

If you run the RSA7Migrate utility in Mode 2 (create a template even if errors found, but do not associate it with a namespace) reconcile the templates and their missing objects before you use the templates. If you run the RSA7Migrate utility before you reconcile the templates and their missing objects, the migration utility fails.

## Assigning a Provisioning Role to a Global User to Create an RSA Trusted User Account Fails

### Valid on Windows and Solaris

#### Symptom:

When I assign a Provisioning Role to a global user to create an RSA trusted use in CA Identity Manager, the account creation fails.

#### Solution:

The account creation fails because the account template contains the default rule strings %P%, %UL% and %XD% that are not required for an RSA trusted user.

When you first create the template and delete the rule strings that are not required, the rule strings reappear when you assign the template.

When you create a template for an RSA trusted user, do the following.

1. Create the template using the default rule strings and click Submit.
2. Modify the account template, and delete the %P%, %XD% rule strings from the Password and Start Date fields on the Account tab.
3. Delete the rule string %UL% from the Start Date field on the User tab.
4. Submit the template.
5. Assign the provisioning role to the global user again.

## Salesforce.com Connector

The Salesforce.com connector provides a single point for all user administration and lets you administer the account objects on Salesforce.com endpoints:

Other Salesforce.com objects, such as public groups, roles, and profiles are read-only.

You can use the Salesforce.com connector to:

- Acquire Salesforce.com endpoints
- Explore Salesforce.com endpoints for existing users, public groups, roles and profiles
- Create, update, suspend, resume, or rename a Salesforce.com user

**Note:** You cannot use the Salesforce.com connector to delete a Salesforce.com user. By default CA Identity Manager is configured to suspend the account on the Salesforce.com endpoint and place the account in a delete pending state when any operation that attempts to delete a Salesforce.com account directly or indirectly occurs.

**Note:** For more information, about suspending and resuming a user, see the *CA Identity Manager User Console online help*.

- Associate or disassociate a Salesforce.com user with, or from, public groups  
**Note:** Salesforce.com users, rather than administrators, manage private groups. Therefore you cannot use the Salesforce.com connector to provision private groups.
- Associate or disassociate a Salesforce.com user with a Salesforce.com role
- Associate a Salesforce.com user with a Salesforce.com profile
- Suspend or resume the account of a Salesforce.com user

## Enable Communication between the Salesforce.com Connector and Salesforce.com

To enable communications between the Salesforce.com connector and Salesforce.com cloud, download and install the SSL client certificate from Salesforce.com. The certificate is required because communications between the Salesforce.com connector and Salesforce.com cloud are performed using an SSL connection. The SSL client certificate validates requests generated by Salesforce.com.

### Follow these steps:

1. Install or upgrade CA IAM CS.  
The installation registers CA IAM CS with the provisioning server, creates the Salesforce.com endpoint, and populates it with its associated metadata.
2. Generate the SSL client certificate, using the following steps:
  - a. Log in Salesforce.com as an administrator.
  - b. Select the Setup menu.
  - c. Select App Setup, Develop, API, Generate Client Certificate.
3. Copy the SSL client certificate to your computer.
4. Log in to CA IAM CS.
5. Click the Certificates tab, then click Add.
6. When prompted, enter the location of the SSL client certificate that you have copied to the target computer, and the CA IAM CS keystore password.

**Note:** The password for the keystore is the password that you set when you installed CA IAM CS. For more information, see the *Installation Guide*.

## Acquire a Salesforce Endpoint

To acquire a Salesforce endpoint, use a URL that contains the version number of the Salesforce API that you are using.

For a production environment, use the following URL:

`https://www.salesforce.com/services/Soap/u/17.0`

For a test environment, use the following URL:

`https://test.salesforce.com/services/Soap/u/17.0`

## Connector Features

This section details the management features of your connector, including account, account template, and group information for your connector.

### Managed Attributes

The Salesforce.com connector exposes attributes that:

- Are mandatory
- Represent membership of a Salesforce.com group
- Represent an association between a Salesforce.com user and a Salesforce.com role
- Represent an association between a Salesforce.com user and a Salesforce.com profile
- Can be mapped to CA Identity Manager global user attributes for any Salesforce.com user

### Endpoint Attributes

The Salesforce.com connector supports the following endpoint attributes:

#### Endpoint Name

(Mandatory) Defines the name of the Salesforce.com endpoint.

#### Description

Defines a business description of the Salesforce.com endpoint. Use this field to record any information that helps you identify the endpoint.

#### Username

(Mandatory) Defines the name of the account that the client application uses to connect to the Salesforce.com endpoint.

#### Password

(Mandatory, write only) Defines the administrator password that the client application uses to connect to the Salesforce.com endpoint.

**Encrypted:** Yes

#### Security Token

(Write only) Defines the security token the user must use when using an API or desktop client to log in to a Salesforce.com endpoint.

**Encrypted:** Yes

**Do not use HTTP proxy**

Specifies that the connector ignores HTTP settings when communicating with an endpoint that has already been acquired. This may be required, for instance, when CA IAM CS is temporarily moved to a different network without the HTTP proxy server.

**Note:** The HTTP proxy settings were set during the installation of CA IAM CS. If you need to change the HTTP proxy settings, run the CA IAM CS installation again.

**HTTP Proxy Server**

Defines the HTTP proxy server you want to use to connect to the Salesforce.com endpoint.

**HTTP Proxy Server Port**

Defines the proxy server port you want to use to connect to the Salesforce.com endpoint.

**Proxy User Domain**

Defines the domain name where the proxy user is defined.

**Proxy User Name**

Defines the user name you want to use to log in to the proxy server.

**Proxy User Password**

(Write only) Defines the password of the proxy server you use to connect to the Salesforce.com endpoint.

**Encrypted:** Yes

**URL**

Defines the API web service login URL.

Only a valid Salesforce server URL can be used to acquire a Salesforce endpoint. Valid URLs take the following forms:

- `https://*.salesforce.com/services/SOAP/u/`
- `https://*.salesforce.com/services/SOAP/c/`
- `https://*.visual.force.com/services/SOAP/u/`
- `https://*.visual.force.com/services/SOAP/c/`

## Account Attributes

The Salesforce.com connector supports the following account attributes:

### Alias

(Mandatory) Defines the alias used to identify the user, when the user name does not fit user on list pages, reports, and other pages.

**Limit:** 8 characters

### Allow Forecasting

(Mandatory) Specifies that the user is allowed to use customizable forecasting.

**Default value:** false

### City

Defines the city of the user.

**Limit:** 40 characters

### Community Nickname

(Mandatory) Defines the name of the user in a community.

### Company

Defines the name of the company where the user works.

**Data type:** String

**Limit:** 80 characters

### Country

Defines the country where the user works.

**Limit:** 40 characters

### Created Date

(Read only) Displays the date and time that the user account was created.

**CRM Content User**

Specifies that the user can use Salesforce.com CRM content.

**Default value:** false

**Customer (Account) name**

Specifies the name of an existing customer new portal account. When you click Browse, you can search through the existing customers, then select the one that needs a new portal account.

**Create new customer**

Identifies whether to create a new customer record.

If there is no customer record in Salesforce, select this box and enter the name in the New Customer Name field.

**New customer name**

Specifies the name of the new customer account.

**Create new contact**

Identifies whether you want CA Identity Manager to create a new contact object.

**Delegated Approver**

Specifies the delegated approver for approval requests.

**Department**

Defines the name of the department to which the user belongs.

**Limit:** 80 characters

**Division**

Defines the division to which the user belongs.

**Limit:** 80 characters

**Email Address**

(Mandatory) Defines the email address of the user.

**Limit:** 80 characters

**Note:** When you change an email address, Salesforce.com sends sends a confirmation message to the new address, asking the account owner to validate the change. This is Salesforce.com default behavior when modifying an email address. After the account owner confirms the change, CA Identity Manager will display the new email address. Until it is validated, the old address appears.

**Email Encoding**

(Mandatory) Specifies the character set and encoding for outbound email sent by users from Salesforce.com.

**Employee Number**

Defines the employee identification number of the user.

**Limit:** 20 characters

**Extension**

Defines the telephone extension of the user.

**Limit:** 40 characters

**Fax Number**

Defines the fax number of the user.

**Limit:** 40 characters

**First name**

Defines the first name of the user.

**Limit:** 40 characters

**Job Title**

Defines the job title of the user.

**Language**

(Mandatory) Specifies the language in which to display text and online help.

**Limit:** 40 characters

**Last Login Date**

(Read only) Defines the date and time the user last logged in.

**Last Name**

(Mandatory) Defines the last name of the user.

**Limit:** 80 characters

**Locale**

(Mandatory) Specifies the country or geographic region where the user is located.

**Limit:** 40 characters

**Login ID**

Defines the login ID of the user.

**Manager**

Specifies the manager of the user.

**Marketing User**

Specifies that the user can create, edit, and delete campaigns, and configure advanced campaign setup.

**Default value:** false

**Mobile Number**

Defines the cellular or mobile telephone number of the user.

**Limit:** 40 characters

**Mobile User**

Specifies that the user is granted a Salesforce.com mobile license.

**Default value:** false

**Offline User**

Specifies that the user is allowed to use Connect Offline.

**Default value:** false

**Password**

(Write only) Defines the password of the user.

**Encrypted:** Yes

**Access restrictions:** Write only

**Phone Number**

Defines the telephone number of the user.

**Limit:** 40 characters

**Postal Code**

Defines the postal code of the user.

**Limit:** 20 characters

**Profile**

Specifies the Salesforce.com profile of the user.

**Receive Salesforce Administrator Newsletter**

Specifies that the user receives the Salesforce.com administrator newsletter.

**Default value:** false

**Receive Salesforce Newsletter**

Specifies that the user receives the Salesforce.com newsletter.

**Default value:** false

**Role**

Specifies the role of the user in an organization.

**State or Locality**

Defines the state or locality of the user.

**Street Address**

Defines the street address of the user.

**Suspended**

Specifies that user account is suspended.

**Time Zone**

(Mandatory) Specifies the main time zone in which the user works.

**User Name**

Defines the username of the user.

## Account Template Attributes

The Salesforce.com connector supports the following account template attributes:

**Alias**

(Mandatory) Defines the alias used to identify the user, when the user name does not fit user on list pages, reports, and other pages.

**Limit:** 8 characters

**Allow Forecasting**

(Mandatory) Specifies that the user is allowed to use customizable forecasting.

**Default value:** false

**City**

Defines the city of the user.

**Limit:** 40 characters

**Default value:** %UC%

**Community Nickname**

(Mandatory) Defines the name of the user in a community.

**Company**

Defines the name of the company where the user works.

**Data type:** String

**Limit:** 80 characters

**Default value:** %UCOMP%

### **Country**

Defines the country where the user works.

**Limit:** 40 characters

**Default value:** %UCOUNTRY%

### **Created Date**

(Read only) Displays the date and time that the user account was created.

### **CRM Content User**

Specifies that the user can use Salesforce.com CRM content.

**Default value:** false

### **Customer (Account) name**

Specifies the name of an existing customer new portal account. When you click Browse, you can search through the existing customers, then select the one that needs a new portal account.

### **Create new customer**

Identifies whether to create a new customer record.

If there is no customer record in Salesforce, select this box and enter the name in the New Customer Name field.

### **New customer name**

Specifies the name of the new customer account.

### **Create new contact**

Identifies whether you want CA Identity Manager to create a new contact object.

### **Delegated Approver**

Specifies the delegated approver for approval requests.

### **Department**

Defines the name of the department to which the user belongs.

**Limit:** 80 characters

**Default value:** %UDEPT%

### **Division**

Defines the division to which the user belongs.

**Limit:** 80 characters

**Default value:** %UO%

**Email Address**

(Mandatory) Defines the email address of the user.

**Limit:** 80 characters

**Default value:** %UE%

**Email Encoding**

(Mandatory) Specifies the character set and encoding for outbound email sent by users from Salesforce.com.

**Employee Number**

Defines the employee identification number of the user.

**Limit:** 20 characters

**Extension**

Defines the telephone extension of the user.

**Limit:** 40 characters

**Fax Number**

Defines the fax number of the user.

**Limit:** 40 characters

**Default value:** %UFAX%

**First name**

Defines the first name of the user.

**Limit:** 40 characters

**Default value:** %UF%

**Job Title**

Defines the job title of the user.

**Default value:** %UT%

**Language**

(Mandatory) Specifies the language in which to display text and online help.

**Limit:** 40 characters

**Last Login Date**

(Read only) Defines the date and time the user last logged in.

**Last Name**

(Mandatory) Defines the last name of the user.

**Limit:** 80 characters

**Default value:** %UL%

**Locale**

(Mandatory) Specifies the country or geographic region where the user is located.

**Limit:** 40 characters

**Login ID**

Defines the login ID of the user.

**Default value:** %UE%

**Manager**

Specifies the manager of the user.

**Marketing User**

Specifies that the user can create, edit, and delete campaigns, and configure advanced campaign setup.

**Default value:** false

**Mobile Number**

Defines the cellular or mobile telephone number of the user.

**Limit:** 40 characters

**Default value:** %UMP%

**Mobile User**

Specifies that the user is granted a Salesforce.com mobile license.

**Default value:** false

**Offline User**

Specifies that the user is allowed to use Connect Offline.

**Default value:** false

**Password**

Defines the password of the user.

**Encrypted:** Yes

**Default value:** %P%

**Phone Number**

Defines the telephone number of the user.

**Limit:** 40 characters

**Default value:** %UP%

**Postal Code**

Defines the postal code of the user.

**Limit:** 20 characters

**Default value:** %UPC%

**Profile**

Specifies the Salesforce.com profile of the user.

**Receive Salesforce Administrator Newsletter**

Specifies that the user receives the Salesforce.com administrator newsletter.

**Default value:** false

**Receive Salesforce Newsletter**

Specifies that the user receives the Salesforce.com newsletter.

**Default value:** false

**Role**

Specifies the role of the user in an organization.

**State or Locality**

Defines the state or locality of the user.

**Default value:** %US%

**Street Address**

Defines the street address of the user.

**Default value:** %USA%

**Suspended**

Specifies that user account is suspended.

**Time Zone**

(Mandatory) Specifies the main time zone in which the user works.

**User Name**

Defines the username of the user.

## Custom Attributes

This section applies to CA CloudMinder and CA Identity Manager. It does not apply to CA Identity Governance.

The Salesforce connector supports the creation of custom attributes. You can customize the metadata of the Salesforce connector to create additional attributes for a Salesforce user object, including custom Salesforce fields.

You can only create custom attributes that have a string data type, for example, text fields, integer fields, date and time fields, and such.

## How to Display Salesforce.com Custom Attributes in the User Console

This section applies to CA CloudMinder and CA Identity Manager. It does not apply to CA Identity Governance.

The Salesforce.com connector supports the creation of custom attributes. You can customize the metadata of the Salesforce.com connector to create additional attributes for a Salesforce.com user object, including custom Salesforce.com fields.

You can create custom attributes only for attributes that have a *string* data type. Strings include text fields, integer fields, and date and time fields.

If you create custom attributes in your Salesforce.com organization, you can display the custom attributes in your client Identity Lifecycle Management application. To display the custom attributes, customize the metadata of the Salesforce.com connector using Connector Xpress.

To display the custom attributes in the User Console do the following:

1. Get the API name of the custom attribute in your Salesforce.com organization that you want to display in the User Console.

**Note:** For more information, see your Salesforce.com organization.

2. Add custom attributes to the Salesforce.com connector metadata using Connector Xpress.
3. Modify the properties of the attribute as required, for example, Maximum Length, Allowed Operations, and such.
4. Create the presentation metadata that defines how the attribute is displayed in the User Console.
5. Generate the Account Management screens for the Salesforce.com connector.

### Example: Display Salesforce.com Custom Attributes

The following example shows you how to display a custom attribute that you create in your Salesforce.com organization in your client ILM application. This example uses CA Identity Manager as the client application. This example shows you how to customize the metadata of the Salesforce.com connector by using Connector Xpress, and how to display the custom attribute in User Console Salesforce.com account management screens.

This example assumes that you have created a custom attribute named *MyCustomAttribute* in your Salesforce.com Organization, and defined it as a text field with a length of 25 characters.

The example shows you how to display a custom Salesforce.com text attribute named *MyCustomAttribute*, and then how to change the length of the field.

#### Follow these steps:

1. Get the API name of your custom Salesforce.com attribute *MyCustomAttributeName*.

This is the attribute that you want to display on the User tab of the Salesforce.com Account dialog in the User Console.

**Example:** *MyCustomAttribute\_\_c*.

2. Add and configure a Provisioning Server, in Connector Xpress.
3. Create a project based on the existing Salesforce.com connector metadata.
4. Click Attributes, in the Mapping tree, under User Class.

The Attributes Summary dialog appears.

5. Under Mapped Attributes, add the custom attribute *MyCustomAttribute*.

You have added the custom attribute *MyCustomAttribute* to the Salesforce user class.

6. In the Mapping tree, click *MyCustomAttribute*.

The Attributes Details dialog appears.

7. On the Attributes Details dialog, do the following:
  - a. Complete the Connector Map To field with the API name of your custom attribute *MyCustomAttribute*. For example, *MyCustomAttribute\_\_c*

#### Connector Map To

Specifies which name to map an object class (including the connector itself) or attribute to in connector-speak. For a dynamic connector, this attribute specifies the name of the native system item to map the attribute to.

- b. Select String from the Data Type list.

**Data Type**

Specifies the data type of the provisioning attribute that you have mapped to the native attribute.

- c. In the Maximum length field, change the length to 50.

**Maximum Length**

Specifies the maximum byte length of values for this attribute value. This value is used for input validation.

8. In the mapping tree, click Attributes.

The Attributes Summary dialog appears.

9. On the Attributes Summary dialog, do the following:

- a. Under Account Screens, click User.

The page sections on the User tab appear.

- b. On the Organization page section, select *MyCustomAttribute* from the drop-down list.

You have created the presentation metadata that defines how the custom attribute *MyCustomAttribute* is displayed in the CA Identity Manager User Console.

10. Deploy the Salesforce connector to the Provisioning Server.

11. Use the Role Definition Generator to generate the User Console Salesforce account management screens.

The custom attribute appears in the Organization section of the User tab of the Salesforce Account dialog in the User Console.

**Note:** For more information about how to add and configure a provisioning server, create a project, and generate CA Identity Manager User Console account screens, see the *Connector Xpress Guide*.

## Deleting Salesforce.com Accounts

This section applies to CA CloudMinder and CA Identity Manager. It does not apply to CA Identity Governance.

You cannot use the Salesforce.com connector to delete a Salesforce.com user, as Salesforce.com does not support account deletion.

The connector simulates account deletion when any operation that attempts to delete a Salesforce.com account directly or indirectly occurs, for example, removing the role that created that account.

When the option *Accounts will be deleted from the provisioning directory and suspended on the managed endpoint* is selected on the Endpoint Settings tab in the User Console, the account is deactivated and placed in a group called CA ILM SFDC Connector Suspended on the Salesforce.com endpoint.

During an add operation, the Salesforce.com connector verifies that the account exists on the Salesforce.com endpoint and checks to see if the account is in the CA ILM SFDC Connector Suspended group.

If the account is in the CA ILM SFDC Connector Suspended group, the connector removes the Suspended membership and modifies the account, instead of adding a new account.

During an explore and correlate, the connector ignores all accounts in the CA ILM SFDC Connector Suspended group.

The Salesforce.com connector creates the CA ILM SFDC Connector Suspended group as required.

## SAP R/3 Connector

This guide no longer contains information about the SAP R/3 connector.

Instead, download the new SAP endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## SAP UME Connector

This guide no longer contains information about the SAP UME connector.

Instead, download the new SAP endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

## Siebel Connector Introduction

The Siebel connector is not enabled by default. It is a Java connector, and it requires some prerequisites.

## What the Siebel Connector Lets You Do

The Siebel Connector lets you manage user accounts on Siebel machines and provides a single point for all user administration by letting you do the following:

- Retrieve the existing user accounts (users, employees) positions, and responsibilities, organizations, internal divisions and views from a Siebel server. Entities from lists of values (LOV) are also retrieved; this happens only when LOV values are used in custom user account mapping.
- Display properties of each of these components
- Create and modify user accounts (users, employees).
- Associate user accounts with responsibilities
- Associate user accounts with positions
- Associate user accounts with organizations
- Remove associations between user accounts and responsibilities
- Remove associations between user accounts and organizations
- Remove associations between user accounts and positions
- Delete a user account. Since deletion of a user in Siebel is not recommended, CA Identity Manager lets you choose from the following behaviors:
  - Do nothing. Deletion is ignored. A user account disappears from CA Identity Manager but remains intact in Siebel.
  - Simulate suspension. CA Identity Manager changes the Siebel user's password and removes all user responsibilities (if possible, with used custom mapping and Siebel configuration).
  - Delete. CA Identity Manager deletes a user in Siebel. This is not recommended. A user ID (login name) of a deleted account can no longer be used in Siebel.
- Simulate user account suspension/resumption by removing/restoring user's responsibilities.
- Create, modify, and delete positions.
- Create, modify, and delete responsibilities.
- Associate responsibilities with views
- Associate responsibilities with organizations
- Remove associations between responsibilities and views
- Remove associations between responsibilities and organizations
- Create, modify, and delete internal divisions.
- Map up to 20 fields of a Siebel user to CA Identity Manager capability attributes
- Map up to 10 fields of exposed Siebel objects other than users, to CA Identity Manager attributes

## Siebel Installation

This connector is managed using the Connector and C++ Server installation process.

**Note:** For more information and requirements, see *Connector and C++ Connector Server Installation*.

The following section contains additional requirements needed for the connector.

## Siebel Requirements

The following are required for the Siebel connector:

- The Siebel mobile web client or the Siebel dedicated web client has to be manually installed on a machine, before or after CA Identity Manager installation, where the C++ Connector Server is running. The Siebel web client version must be the same as a version of a managed Siebel server. See the Siebel documentation for more information.
- The Siebel Application Object Manager has to be running on a Siebel Server. See the Siebel documentation about Siebel Object Manager installation and configuration.

## Siebel Support for FIPS and IPv6

For this release of CA Identity Manager, the Siebel Connector does not support FIPS or IPv6.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

## Acquire a Siebel Server Using the User Console

You must acquire the Siebel server before you can administer it with CA Identity Manager.

### To acquire a Siebel server using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select Siebel from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create Siebel Endpoint page to register a Siebel server. During the registration process, CA Identity Manager identifies the Siebel server you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all Siebel accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click a Siebel endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.

- a. Click Schedule.

- b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

**To use an explore and correlate definition**

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire a Siebel Server Using the Provisioning Manager

You must acquire the Siebel server before you can administer it with CA Identity Manager. When acquiring a Siebel server, use this procedure.

### From the Endpoint type task view

1. Register the server as an endpoint in CA Identity Manager.

Use the Siebel Server Endpoint property sheet to register a Siebel Server. Necessary mapping information should be provided to associate Siebel fields and CA Identity Manager attributes. This includes information about Siebel business objects, Siebel business components, and necessary Siebel fields for user accounts and required multi-value groups (positions, responsibilities, organizations, and views).

During the registration process, CA Identity Manager identifies the Siebel Server you want to administer and gathers information about it.

2. Explore the objects that exist on the endpoint.

After registering the machine in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all Siebel Server objects. You can correlate the user accounts with global users at this time, or you can wait to correlate them.

3. Correlate the explored user accounts with global users.

When you correlate user accounts, CA Identity Manager creates or links the user accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the username with each existing global user name. If a match is found, CA Identity Manager associates the Siebel Server user with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. If the Create Global Users as Needed button is checked, CA Identity Manager creates a new global user and associates the Siebel user account with the global user. If the Create Global Users as Needed button is unchecked, then CA Identity Manager performs the next step.
- c. CA Identity Manager associates the Siebel user account with the [default user] object.

## Custom Attribute Handling in the User Console

The following are the limitations for custom attribute handling in the User Console:

- With the Siebel Connector you can have different mapping information for each acquired endpoint. For example, eTSBLUserCustomField1 can be mapped to different Siebel fields on different endpoints. In the User Console, only the same labels for all Siebel endpoints can be displayed. If you have different mapping information for each endpoint, the User Console displays custom attributes on four screens:

- eTSBLUserCustomField1...eTSBLUserCustomField10
- eTSBLUserCustomField11...eTSBLUserCustomField20
- eTSBLUserCustomCapabilityField1...eTSBLUserCustomCapabilityField10
- eTSBLUserCustomCapabilityField11...eTSBLUserCustomCapabilityField20

You can use the first ten attributes for endpoints with one mapping type and the second ten attributes for endpoints with another mapping type.

- You can change Siebel mappings in the User Console by editing the labels manually.

For more information, on editing screens. see the *User Console Design Guide*.

**Note:** The account template and account profile screens are read-only screens. Before following the procedure for editing profile screens, make a copy of the account template or account profile screens and save.

- In the Provisioning Manager, a combo box control is displayed for custom attributes that have been configured to use only pre-defined values. In the User Console the attributes can be displayed, but you must type in the values.

## Create Position Tab in the User Console

Use this tab to create a special position along with a user and associate that position with the new user, possibly as Primary. A position must be associated with a division so the corresponding division field should be filled in.

The fields in this tab are listed below:

**Name**

Specifies the name of the position.

**Make Position Primary**

When checked, specifies the the position is the primary position.

**Custom Field #1-10**

Specifies the custom fields for the Siebel position.

**Parent Position**

Specifies the position's parent name. Click the Browse button to select a new parent position.

**Division**

Specifies the position's associated division name. Click the Browse button to select a new division

## User Account Suspension Handling

Siebel systems do not support user account suspension directly. Oracle recommends removing all employee's responsibilities in order to simulate suspension. An employee without any responsibility assigned is able to log into Siebel, but is not able to see Siebel data or perform any action.

## User Account Suspension Simulation

The Siebel connector supports the suspension simulation approach.

Once an account has been suspended, you must re-assign the original set of responsibilities back to the account using the Provisioning Server to resume. A new field called Enable user suspension simulation has been added to the Siebel Server tab of the Siebel endpoint and when checked, user suspension simulation is enabled.

## Directly Using the eTSuspended Attributes

In addition to the suspension simulation approach, the Siebel connector lets you map the eTSuspended attribute to any Siebel user's field. After the mapping, Siebel (or some custom code incorporated into Siebel) takes care of suspension/resumption processing.

**Note:** Suspension simulation and direct use of the eTSuspended attribute may interfere with each other, so it is not recommended to enable both direct use and simulation at the same time.

## Create User Position Feature

A new Enable create user position feature has been added to the Siebel Server tab of the Siebel Endpoint property sheet that lets you create a position for accounts. This feature can also be set using account templates. When checked, the feature is enabled and positions are created for each account and account template. When unchecked, the feature is disabled. By default, the feature is disabled.

## Error Message when Removing All Positions from an Employee

### Symptom:

When I try to remove all positions from an employee record, I see an error message stating that an employee must have at least one position.

However, all positions are removed.

### Solution:

When you try to remove all positions, the product works correctly and no error message should appear. This problem is due to an error in the Siebel API.

## Well-Known Attribute %ENDPOINT\_DESCRIPTION%

This applies to the following connectors: Windows, Oracle RDBMS, Siebel, UNIX NIS, MS SQL Server, and OpenVMS.

These endpoint types do not define the endpoint description in the eTDescription attribute. This means that until recently, you could not search on the endpoint description. In addition, the search screen did not display the endpoint description.

You can now use the new well-known attribute %ENDPOINT\_DESCRIPTION% for the affected connectors.

The DefaultEndpointSearch role definition has been updated, to allow the Default Endpoint Search screen to use the new well-known attribute. If you are upgrading from an older version of CA Identity Manager, import this modified screen after upgrading. For more information, see the Environment Changes section in your Upgrade Guide.

## Siebel Endpoint Property Sheet

The Siebel Endpoint Property Sheet consists of ten property pages with seven being specific to the Siebel Connector. The following property pages are Siebel specific:

### Siebel Server

Use the Siebel Server Endpoint property page to register a Siebel Server.

**Note:** Siebel employee or user records that are used as proxy accounts in the SBL endpoint object just have a blank "New Responsibility" field.

### Mapping Table: User

Use the Mapping Table: User property page to configure custom mappings for user single-value fields. To edit the custom attributes in the custom attributes list box, click the Edit Button to bring up the Attribute Mapping Dialog. You can then add a new entry in a mapping table or edit an existing entry.

**Note:** When more than one item corresponding to the same CA Identity Manager attribute appears in a mapping table, it is not considered an error. The last item found in the mapping table will be taken. This can happen when a client other than Provisioning Manager is used.

**Note:** Only one user account type is supported per endpoint.

### Mapping Table: MVG

Use the Mapping Table: MVG property page to view and set mapping information for fields in user accounts and responsibilities associated with multi-value groups. This property page contains three similar groups of controls for the user's positions, responsibilities, and organizations, and two groups of controls for responsibility's views and organizations.

### Mapping Table: Position

Use the Mapping Table: Position property page to configure custom mappings for Position's single-value fields.

### Mapping Table: Organization

Use the Mapping Table: Organization property page to configure custom mappings for Organization's single-value fields.

### Mapping Table: Responsibility

Use the Mapping Table: Responsibility property page to configure custom mappings for Responsibility's single-value fields.

### Mapping Table: Division

Use the Mapping Table: Division property page to configure custom mappings for Internal Division's single-value fields.

### Mapping Table: View

Use the Mapping Table: View property page to configure custom mappings for View's single-value fields

**Mapping Table: LOV**

Use the Mapping Table: LOV property page to configure mappings for list of values' single-value fields.

## Siebel User Property Sheet

The Siebel User Property Sheet consists of six property pages with four being specific to the Siebel Connector. The following property pages are Siebel specific:

### Profile

Use the Profile property page when managing your users and configuring custom mappings for user single-value fields. To edit the custom attributes in the custom attributes list box, click the Edit Button to bring up the Edit custom attribute Dialog. Depending on the type of control specified in the mapping table for the attribute being edited, you will see either combo box to select a value of the user attribute or an edit box to type in the value you want for the user attribute.

### Positions

Use this property page to manage employee positions. You can view a list of all available and occupied positions. You can select a position in the All Positions list box and move it to the Occupied Positions list box to un-assign a position. You can also move a select position from the Occupied Positions list box into the All Positions list box to un-assign an employee position. To assign an employee's primary position, you can copy a selected position from the Occupied Positions list to the Primary Positions text box by clicking the v (Down) button.

**Note:** Only the user account of "employee" type can be associated with positions. Employee must hold at least one position.

### Responsibilities

Use this property page to manage user account's responsibilities. You can view a list of all available and assigned responsibilities. You can select a responsibility in the All Responsibilities list box and move it to the Assigned Responsibilities list box to un-assign a responsibility. You can also move a selected responsibility from the Assigned Responsibilities list box into the All Responsibilities list box to un-assign an employee responsibility. To assign an employee's primary responsibility, you can copy a selected responsibility from the Assigned Responsibilities list to the Primary Responsibility text box by clicking the v (Down) button.

### Member of (Organizations)

Use this property page to manage employee's organizations. You can view a list of all available and assigned organizations. You can select an organization in the All Organizations list box and move it to the Member of list box to assign an organization. You can also move a selected organization from the Member of list box into the All Organizations list box to un-assign an employee organization. To assign an employee's primary organization, you can copy a selected organization from the Member of list to the Primary Organization text box by clicking the v (Down) button.

**Note:** Associating a user account with an organization is not required as this is done implicitly by Siebel. Primary organization cannot be removed from a user.

## Siebel Responsibility Property Sheet

This Siebel Responsibility Property Sheet consists of four property pages with three being specific to Siebel.

### **Responsibility**

Use this property page to view the Siebel responsibility name and the custom attributes associated with the Siebel responsibility.

### **Member of (Organizations)**

Use this property page to manage a responsibility's organizations. You can view a list of all available and assigned organizations. You can select an organization in the All Organizations list box and move it to the Member of list box to assign an organization. You can also move a selected organization from the Member of list box into the All Organizations list box to un-assign a responsibility's organization. To assign a responsibility's primary organization, you can copy a selected organization from the Member of list to the Primary Organization text box by clicking the v (Down) button.

### **Views**

Use this property page to manage responsibility's views. You can view a list of all available and assigned views. You can select a view in the All Views list box and move it to the Assigned list box to assign an view. You can also move a selected view from the Assigned list box into the All Views list box to un-assign a responsibility's view.

There's no primary view attribute for a responsibility object.

## Siebel Position Property Sheet

The Siebel Position Property Sheet consists of four property pages with three being specific to Siebel.

### **Position**

Use this property page to view the Siebel position name and the custom attributes associated with the Siebel position.

### **Parent Position**

Use this property page to manage a position's parent position. You can view a list of all available positions. You can select a position in the All Positions list box and move it to the Parent Position list box to assign a parent position. You can also move a position from the Parent Position list box into the All Positions list box to un-assign a position's parent position.

### **Division**

Use this property page to manage a position's division. You can view a list of all available divisions. You can select a division in the All Divisions list box and move it to the Associated Division list box to assign a division

## Siebel Organization Property Sheet

The Siebel Organization Property Sheet consists of two property pages with one, the Organization property page, being specific to Siebel.

### **Organization**

Use this property page to view the Siebel organization name and the custom attributes associated with the Siebel organization.

## Siebel View Property Sheet

The Siebel View Property Sheet consists of two property pages with one, the View property page, being specific to Siebel.

### **View**

Use this property page to view the Siebel view name and the custom attributes associated with the Siebel view.

## Siebel Internal Division Property Sheet

The Siebel Internal Division Property Sheet consists of three property pages with two being specific to Siebel.

### **Internal Division**

Use this property page to view the Siebel division name and the custom attributes associated with the Siebel division.

### **Parent Division**

Use this property page to manage a division's parent division. You can view a list of all available divisions. You can select a division in the All Divisions list box and move it to the Parent Division list box to assign a parent division. You can also move a division from the Parent Division list box into the All Divisions list box to un-assign a division's parent division.

## Siebel LOV Property Sheet

The Siebel LOV Property Sheet consists of two property pages with one, the Properties property page, being specific to Siebel.

### **Properties**

Use this property page to view the LOV code, type of value, and the display value.

## UNIX ETC and NIS Connector

The UNIX Connector provides a single point for all user administration by letting you do the following:

- Register endpoints, explore them for objects to manage, and correlate their accounts with global users
- Create and manage UNIX accounts using UNIX-specific account templates
- Change account passwords and account activations in one place
- Synchronize global users with their roles or synchronize global users' accounts with their account templates
- Assign a UNIX policy to each of your UNIX endpoints
- Use the default Endpoint Type policy to create accounts with the minimum level of security needed to access a UNIX directory
- Create and manage UNIX groups
- Generate and print reports about UNIX accounts and groups

**Note:** This connector manages UNIX NIS master servers only. Do not use this connector to manage NIS slave servers or clients.

## Installing the UNIX Connector

The UNIX connector comes with C++ Connector Server (CCS). You do not need to install it separately.

After you install CCS, install and configure the UNIX agents and the CAM Service.

LSM handles the installation process for these supporting components, including reference counting.

**Note:** Each package can be installed using the script installation (.sh) method.

**Important!** For HP-UX, install the latest Gold Quality Pack.

The installation process for the UNIX agents and the CAM service have two modes:

- Interactive installation
- Silent installation

## Install the UNIX Remote Agent

To install the UNIX Remote Agent, run the installation script from the following location:

```
RemoteAgent/UNIX/[Platform]/IdentityManager.[Platform].sh
```

where

**[Platform]**

Specifies one of AIX, HP-UX, Solaris, SolarisIntel, Linux, LinuxS390, or Tru64.

## Set Up the Installation Files for the UNIX Remote Agent

The connectors for UNIX ETC and UNIX NIS use a remote agent to communicate with the connector server, and to perform operations on the endpoint. You install the remote agent on each endpoint.

### Follow these steps:

1. Choose an installation method:
  - **LSM**—Uses a .@pif file.
  - **Script**—Uses a .sh script. Use the script if LSM is not available, for example when no other CA products are installed on the system.
2. Locate the installation package for your platform. The packages are in the following location in the installation files:

```
RemoteAgent/UNIX/platform/IdentityManager.platform.sh
```

***platform***

Identifies one of the following platforms:

- AIX
  - HPUX
  - Solaris
  - SolarisIntel
  - Linux
  - LinuxS390
  - Tru64
3. If required, copy the installation files to the UNIX computer on which you intend to install. To do this, copy the entire contents of the directory for your platform.

You can now choose an installation method: interactive or silent.

## Installation Commands

The installation options are described in the following table:

Installation Option	Description
% sh IdentityManager.[Platform].sh -r [Response File] [-F]	Installs the product. A response file can be added to customize unattended installation. The switch '-F' performs a forced installation and prevents the backup of the previous version of the product.
lsm -e <i>product name</i> [-s]	Removes the installed product. Switch '-s' runs the uninstallation in unattended mode. Example: lsm -e test-product
lsm -l [-S]	Lists all installed products or shared components (-S).
lsm -A product name -d product file [-o]	Creates a backup from the installed product. Switch '-o' overwrites an existing product file.
lsm -c product name	Checks the installed products consistency.
lsm -q <i>product name</i> [-l]	Shows the content of the product file. Switch '-l' shows a long list including all product files.
lsm -Q <i>product file</i> [-l]	Shows the content of the product file. Switch '-l' shows a long list including all product files.
lsm -a product file -r response file	Runs the installation dialogs and creates a response file with the entered values. The product is not installed.
lsm -v	Prints the version of the Installer being used.

## Interactive Installation

Interactive installation includes the following steps:

1. Mounting the CD-ROM.
2. Selecting the required installation script.
3. Starting the setup wizard

## Start the Installation Wizard

Perform the following procedure to start the installation wizard.

### To start the installation wizard

1. Switch to the directory where the installation files are located.

Example for AIX:

```
# cd /cdrom/UNIX/AIX
```

2. Depending on the installation method that you want to use, enter either of the following commands to start the setup wizard:

```
sh IdentityManager. platform_name.sh
```

```
lsm -i IdentityManager. platform_name.@pif
```

Examples for AIX:

```
# sh IdentityManager.AIX.sh
```

```
# lsm -i IdentityManager.AIX.@pif
```

lsm provides a variety of installation options that can be viewed by typing `lsm -?` in the command line.

### More Information

[Installation Commands](#) (see page 400)

## Silent Installation

In some cases, for example, Unicenter Software Delivery, it is important to have a software product that installs automatically without any user interaction. The `sh` command can be executed with the option `-r response file`, and additional options, to install the UNIX Remote Agent without any questions being asked. You must provide the full path to a response file after the `-r` option..

The following example shows a typical response file:

```
PATHeTrustAdmin=/opt/CA/IdentityManager/ProvisioningUnixAgent
IM_INSTALL=1
OWNERroot=root
GROUPsys=sys
```

The following example shows how a response file is created using a shell script:

```
% sh IdentityManager.[Platform].sh -r [Response File]
```

The following example shows how to install a response file using a shell script:

```
% sh IdentityManager.[Platform].sh -f [Response File]
```

To uninstall, run the following shell script:

```
[Installation Path]/scripts/uninstall.sh
```

For example:

```
/opt/CA/IdentityManager/ProvisioingUnixAgent/scripts/uninstall.sh
```

### More Information

[Installation Commands](#) (see page 400)

## Silent Installation Notes

The following is a list of important notes:

- The current installation default path is `/opt/CA/IdentityManager` (the previous path was `/opt/CA/eta`).
- If the same CAM version and build level is already installed on the target machine, CAM will not be re-installed.
- If a previous CAM version and build level is already installed on the target machine, CAM will be upgraded using the installation path of the current installation, which is stored in the following file:

```
/etc/catngcampath
```

If a previous CA Identity Manager Remote Agent is already installed on the target machine, the Remote Agent will be upgraded using the installation path of the current installation, which is stored in the following file:

```
/etc/catngdmopath.tng
```

- If, on the target machine, the `DISPLAY` variable is set and a JAVA VM is installed, the installation will run in graphical mode.
- In VT100 mode, the terminal must provide a resolution of 80 (columns) x 24 (rows) or higher.
- On a UNIX machine with double-byte characters, CAM must be started with a shell having the “locale” set to C/Posix:

```
`cat /etc/catngcampath`/bin/camc lose
LANG=C
export LANG
`cat /etc/catngcampath`/scripts/rc
```

- If you install the UNIX agent using Telnet, make sure that the environmental variable `TERM` is set to `VT100`.

## Grant Access to the Provisioning Server Host

To grant access to the Provisioning Server host on this machine, run the following command:

```
`cat /etc/catngcampath`/bin/cafthost -a hostname
```

where *hostname* is the name or the IP address of the machine hosting the Provisioning Server.

Example for any platform:

```
# `cat /etc/catngcampath`/bin/cafthost -a etradmsrv01
```

## Install the UNIX Remote Agent

Perform the following procedure to install the UNIX remote agent.

### To install the UNIX remote agent

1. Locate the Provisioning Component installation media.
2. Run the Agent installer under \Remote Agent  
Follow the onscreen instructions to complete the installation.
3. The Welcome dialog that shows the UNIX Remote Agent version appears. View the dialogue.
4. Click Next. The Select Installation directory dialog appears. Enter a valid installation directory.

The product is installed under the specified installation directory.

```
/opt/CA/IdentityManager/ProvisioningUnixAgent
```

This is the name of the actual directory where you want to install the UNIX Remote Agent. All files are placed in this directory or its subdirectories. You can change the name of the installation directory or it will be created if it does not already exist.

**Note:** If you run this procedure on a computer on which an older version of the UNIX Remote Agent is installed, the old installation path is read from the `/etc/catngdmopath.tng` marker file and set as the Installation directory.

During an update installation, the product installation directory cannot be modified.

5. Click Next to continue.

The Summary dialog appears. Check the following installation parameters:

```
PATHCA Identity Manager=/opt/CA/IdentityManager/ProvisioningUnixAgent
IM_INSTALL=1
OWNERroot=root
GROUPsys=sys
```

6. Click Install product to run the installation.

## 7. View the installation log.

The following lines are logged by the installation:

Installing Dependency - CA Installer [1/2]...

Installing Dependency - CA Installer [2/2]...

Preparing next Installer phase

Executing post interview phase

Checking package dependencies

Checking disk space

Installation product "ca-dsm-sd-installer", version "4.3.x.x"

=====

++ Call script "scripts/preinstall\_installer.sh"

++ Script executed successfully

++ Installation component "preinstall"

++ Component "preinstall" installed successfully

++ Installation component "base"

++ Component "base" installed successfully

++ Installation component "base\_root"

++ Component "base\_root" installed successfully

++ Installation component "base\_shared"

++ Component "base\_shared" installed successfully

++ Installation component "conf"

++ Component "conf" installed successfully

++ Installation component "man, ENU"

++ Component "man, ENU" installed successfully

++ Call script "scripts/postinstall\_installer.sh"

++ Script executed successfully

Job executed successfully

Installing Dependency - CAM...

Installing Dependency - ETPKI...

Preparing next Installer phase

Executing post interview phase

Checking package dependencies

Checking disk space

Backup product "ca-cs-utils", version "11.0.x.x"

=====

- ++ Backup component "preinit\_csutils"
- ++ Component "preinit\_csutils" saved successfully
- ++ Backup component "csutils"
- ++ Component "csutils" saved successfully
- ++ Backup component "csutils\_platform\_files"
- ++ Component "csutils\_platform\_files" saved successfully
- ++ Backup component "csutils\_libv2"
- ++ Component "csutils\_libv2" saved successfully

Job executed successfully

Reinstallation product "ca-cs-utils", version "11.0.x.x"

=====

- ++ Call script "/bin/sh csutils/scripts/prein\_csutils.sh"
- ++ Script executed successfully
- ++ Reinstallation component "preinit\_csutils"
- ++ Component "preinit\_csutils" installed successfully
- ++ Reinstallation component "csutils"
- ++ Component "csutils" installed successfully
- ++ Reinstallation component "csutils\_platform\_files"
- ++ Component "csutils\_platform\_files" installed successfully
- ++ Reinstallation component "csutils\_libv2"
- ++ Component "csutils\_libv2" installed successfully

++ Call script "/bin/sh csutils/scripts/install.csutils"

++ Script executed successfully

Job executed successfully

Installation product "ca-cs-etpki", version "3.2.x.x"

=====

```

++ Call script "/bin/sh pifscripts/prein.etpki"
++ Script executed successfully
++ Installation component "preinit_etpki"
++ Component "preinit_etpki" installed successfully
++ Installation component "cs-etpki-base"
++ Component "cs-etpki-base" installed successfully
++ Installation component "cs-etpki-lib"
++ Component "cs-etpki-lib" installed successfully
++ Call script "/bin/sh pifscripts/postin.etpki"
++ Script executed successfully
Job executed successfully

```

Installing CA Identity Manager

Preparing next Installer phase

Executing post interview phase

Checking package dependencies

Checking disk space

Installation product "IdentityManager", version "12.0.x.x"

=====

```

++ Installation component "im"
++ Call script "scripts/imscript.sh preinstall"
++ Script executed successfully
+++ Call component script "scripts/imscript.sh postinstall"
+++ Script executed successfully
++ Component "im" installed successfully
++ Installation component "preinstall, ENU"
++ Component "preinstall, ENU" installed successfully
Job executed successfully

```

Note: All prerequisite components are installed after the UNIX Agent installer has been executed. This applies to both upgrade and new installations despite the "Cancel" option being selected during the installation process

## Install Unix Remote Agent on Red Hat Itanium 64-bit

The Unix Remote Agent is a 32-bit package. If you install it on Red Hat/Itanium 64-bit, then you must install the IA-32 Execution Layer and some compatibility libraries before you install the agent.

If you are using RPM v4.2.3 or later, then there is an additional step to perform to work around a known bug in RPM. RPM v4.2.3 or later has a backward-compatibility problem with older RPM packages. The problem causes RPM to resolve the following compatibility library folder incorrectly:

- `/emul/ia32-linux` as `/emul/ia32-Linux` (note the capital 'L')

You can work around this problem either of in the two ways listed in Step 3, depending on your environment.

**Note:** For more information, see the [Red Hat Knowledge Base](#) and the [Red Hat bug report](#).

### Follow these steps:

1. Install the IA-32 Execution Layer.
2. Install the following compatibility libraries from the 32-bit Compatibility Layer Disc that matches your Red Hat installation.
  - `glibc`
  - `bash`
  - `libtermcap`
3. Work around the bug in RPM in one of the following ways, depending on your environment:
  - Create a symlink. For example:

```
ln -s /emul/ia32-linux /emul/ia32-Linux
```
  - Add the following in `/etc/rpm/macros`:

```
%_autorelocate_path /emul/ia32-linux
```

## Manage the CAM Service

The CAM Service is a daemon process that you can view, stop, or start on your UNIX server. Typically, the superuser or the system's root user starts the CAM Service.

## View the CAM Service

You can perform the following procedure to find out who started the service.

### To view the CAM service

1. Log on to your UNIX machine as root by using the Telnet or SSH client.
2. Issue the following UNIX command:

```
ps -ef | grep cam
```

A display similar to the following one appears:

```
root 13822      1 11 11:30:12 ?    0:00 cam
root 13843 13753  3 11:56:31 pts/5  0:00 grep cam
```

**Note:** If the system's root user does not start the services, they will appear started, but you will be unable to use them. CA Identity Manager issues the following message: "Permission denied: user must be root".

## Stop the CAM Service

You can stop the CAM service by performing the following procedure.

### To stop the CAM Service

1. Log on to your UNIX machine as root by using the Telnet or SSH client.
  2. Change to the cam scripts directory:
- ```
cd `cat /etc/catngcpath`/scripts
```
3. Issue the following UNIX command:

```
./envset
```

**Note:** This command must have a space between the two dots.

4. Change to the cam bin directory:
- ```
cd ../bin
```
5. Issue the following UNIX command:

```
./camclose
```

**Note:** This command stops the CAM Service. After stopping this service, you must restart it so CA Identity Manager can communicate with your UNIX server.

## Restart the CAM Service

You can restart the CAM service by performing the following procedure.

### To restart the CAM Service

1. Log on to your UNIX machine as root by using the Telnet or SSH client.
2. Change to the cam scripts directory:

```
cd `cat /etc/catngcampath`/scripts
```

3. Issue the following UNIX command:

```
./envset
```

**Note:** This command must have a space between the two dots.

4. Issue the following command to restart the CAM Service:

```
./rc
```

## How to Restart Automatically the CAM Service

If you want to automatically start the CAM Service after rebooting a machine, you can use the init or rc utilities.

To start the CAM Service automatically after rebooting a UNIX server, verify the following:

- Unicenter runtime environment is known to the CAM Service
- Unicenter BIN directory appears in the PATH variable

For example, a typical Start shell script appears as follows:

```
#!/bin/sh
# @(#)install 3.24 10:15:49 98/05/29
# Date Created: Tue Jul 20 11:57:34 WET DST 2004
.
.
.
.
# Start CA Message Queuing Server
su $AGENT_OWNER -c /export/home/cam/cam/scripts/rc
If you add the commands above, the Start shell script appears as follows:
#!/bin/sh
# @(#)install 3.24 10:15:49 04/05/29
# Date Created: Tue Jul 20 11:57:34 WET DST 2004
.
.
.
.
PATH=$PATH:$CAIGLBL0000/bin
export PATH
# Start CA Message Queuing Server
su $AGENT_OWNER -c /export/home/cam/cam/scripts/rc
```

## Using the Init Utility

To start the CAM Service using the init utility, add the following line to the end of the `/etc/inittab` file:

```
cam::once:`cat /etc/catngcampath`/scripts/rc
```

By adding this line, the shell script created when you installed the CAM Service is executed. After it executes, verify that you can view the daemon process.

## Using the RC Utility

To start the CAM Service using the rc utility, perform the following steps:

1. Copy the start shell script to the `init.d` directory.
2. Create a shell script under the `rc2.d` sequencer directory by following the rc syntax.

### Notes:

- The rc utility is not applicable on IBM-AIX platforms.
- The location of the directories shown previously may be different on each UNIX platform; the directories are normally located under either the `/bin` or the `/etc` directory. For more information, see the documentation for your specific UNIX system.

## How to Restrict CAFT Commands

By default, CAFT allows any command to be executed from an authorized host. As the UNIX Connector only needs to run the `uxsautil` command, the CAFT `caftexec` script can be customized to filter commands and to allow only the `uxsautil` binary.

An example of such a script and its configuration file are provided in the

``cat /etc/catngdmopath.tng`/scripts` folder, and can be copied to the ``cat /etc/catngcampath`` folder:

```
# cd `cat /etc/catngcampath`  
  
# mv caftexec caftexec.back  
  
# cp -p `cat /etc/catngdmopath.tng`/scripts/caftexec* .
```

## Install the CAM and CAFT Encryption Key

Encryption is supported for Win32, AIX, HP-UX, Solaris, and Linux x86 applications. The default and only available encryption algorithm is Triple-DES (168 bits key) with CBC mode.

### To install the encryption key

1. Enter the following command at the command prompt to generate your key file:

```
#PATH=`cat /etc/catngcampath`/bin:$PATH
#export PATH
#caftkey -g keyfile password
```

#### ***keyfile***

Name that you assign to the key file.

#### ***password***

Password that you assign to the key file.

**Note:** The caftkey command and attributes are the same for Win32 platforms.

2. Install your Public Key on both CAFT Agent and CAFT Admin boxes using the previously-generated key file by entering the following command at the command prompt:

```
#PATH=`cat /etc/catngcampath`/bin:$PATH
#export PATH
#caftkey -policy_setting keyfile password
```

#### ***keyfile and password***

The values that you specified in Step 1.

#### ***-policy\_setting***

Governs the communication between this computer (the local computer) and other computers that have the CAM and CAFT service installed, but may or may not have the CAM and CAFT encryption certificates installed.

#### ***-i***

Specifies Policy -1. This policy lets computers running previous versions of the CAM and CAFT service execute commands on this computer and lets this computer execute commands on those computers.

Policy -1 encrypts messages if the other computer has these certificates installed. This policy does not encrypt messages if the other computer does not have these certificates installed.

#### ***-m***

Specifies Policy 1. This policy prohibits other computers from executing commands on this computer if they are running previous versions of the CAM and CAFT service without the encryption certificates. This policy also prohibits this computer from executing commands on those computers.

If both computers have the CAM and CAFT encryption certificates installed, but have different Public Key Files installed when Policy 1 is set, the command requests between the two computers fails.

***blank***

Specifies Policy 0. This policy is set if no Public Key File is installed, the CAM and CAFT encryption certificates were not installed properly, or if you do not specify a policy setting when you enter the caftkey command. Policy 0 specifies no encryption.

**Note:** The CAM and CAFT service must already be installed on the computer in your network.

3. Restart the CAM Service on each computer on which you installed the new key, using the following commands:

```
camclose
```

```
cam start
```

## policy\_setting Options

Policy\_setting governs the communication between this computer (the local computer) and other computers that have the CAM and CAFT service installed, but may or may not have the CAM and CAFT encryption certificates installed.

The options are as follows:

### **caftkey -i keyfile password**

The -i option specifies Policy -1. This policy lets computers running previous versions of the CAM and CAFT service execute commands on this computer and lets this computer execute commands on those computers.

Policy -1 encrypts messages if the other computer has these certificates installed. This policy does not encrypt messages if the other computer does not have these certificates installed.

### **caftkey -m keyfile password**

The -m option specifies Policy 1. This policy prohibits other computers from executing commands on this computer if they are running previous versions of the CAM and CAFT service without the encryption certificates. This policy also prohibits this computer from executing commands on those computers.

If both computers have the CAM and CAFT encryption certificates installed, but have different Public Key Files installed when Policy 1 is set, the command requests between the two computers fails.

### **caftkey keyfile password**

The blank option specifies Policy 0. This policy is set if no Public Key File is installed, the CAM and CAFT encryption certificates were not installed properly, or if you do not specify a policy setting when you enter the caftkey command. Policy 0 specifies no encryption.

**Note:** The CAM and CAFT service must already be installed on the computer in your network.

## Check the Policy Setting

To see the operational mode of the machine, check the following file:

```
%CAI_MSQ%/ftLogs/dg000
```

## UNIX Support for FIPS and IPv6

For this release of CA Identity Manager, the UNIX Connector supports IPv6. FIPS is supported only on Solaris Sparc, Linux x86, HP-UX, and AIX.

UNIX PAM supports IPv6 only.

## Connector Specific Features

This section details your connector's specific management features, such as how to acquire and explore your endpoint. Also included are account, provisioning roles, account template, and group information specifically for your connector.

### Acquire a UNIX-ETC Server Using the User Console

You must acquire the UNIX-ETC Server before you can administer it with CA Identity Manager.

#### To acquire a UNIX-ETC server using the User Console

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select UNIX-etc from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create UNIX-etc plus Domains Endpoint page to register a UNIX-etc system. During the registration process, CA Identity Manager identifies the UNIX-etc system you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all UNIX-etc accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.
6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click a UNIX-etc endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.
  - a. Click Schedule.
  - b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### **To use an explore and correlate definition**

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## **Acquire a UNIX-NIS Server Using the User Console**

You must acquire the UNIX-NIS Server before you can administer it with CA Identity Manager.

#### **To acquire a UNIX-NIS server using the User Console**

1. Select Endpoints, Manage Endpoints, Create Endpoint
2. Select UNIX-NIS-NIS plus Domains from the drop-down list box on Create a new endpoint of Endpoint Type, and click Ok

Use the Create UNIX-NIS\_NIS plus Domains Endpoint page to register a UNIX-NIS system. During the registration process, CA Identity Manager identifies the UNIX-NIS system you want to administer and gathers information about it.

3. After entering the required information, click Submit.

You are now ready to explore and Correlate the endpoint.

4. Click Endpoints, Explore and Correlate Definitions, Create Explore and Correlate Definition to explore the objects that exist on the endpoint.

The Exploration process finds all UNIX-NIS accounts and groups. You can correlate the accounts with global users at this time or you can correlate them later.

5. Click OK to start a new definition.

6. Complete the Explore and Correlate Tab as follows:

- a. Fill in Explore and Correlate name with any meaningful name.

Click Select Container/Endpoint/Explore Method to click a UNIX-NIS endpoint to explore.

- b. Click the Explore/Correlate Actions to perform:

- **Explore directory for managed objects**—Finds objects that are stored on the endpoint and not in the provisioning directory.
- **Correlate accounts to users**—Correlates the objects that were found in the explore function with users in the provisioning directory. If the user is found, the object is correlated with the user. However, you can instead select that you want to assign the account to the existing user (the default user) or create the user.
- **Update user fields**—If a mapping exists between the object fields and the user fields, the user fields are updated with data from the objects fields.

7. Complete the Recurrence tab if you want to schedule when the task to executes.

- a. Click Schedule.

- b. Complete the fields to determine when this task should execute.

You may prefer to schedule the task to execute overnight to interfere less with routine access of the system.

**Note:** This operation requires the client browser to be in the same time zone as the server. For example, if the client time is 10:00 PM on Tuesday when the server time is 7:00 AM, the Explore and Correlate definition will not work.

8. Click Submit.

#### To use an explore and correlate definition

1. In a CA Identity Manager environment, click Endpoints, Execute Explore and Correlate.
2. Click an explore and correlate definition to execute.
3. Click Submit.

The user accounts that exist on the endpoint are created or updated in CA Identity Manager based on the explore and correlate definition you created.

## Acquire a UNIX Server Using the Provisioning Manager

You must acquire the UNIX server before you can administer it with CA Identity Manager. In order to acquire a UNIX server, perform the following steps from the Endpoint Type task view:

1. Register the machine as a stand-alone server or as an NIS or NIS+ server.
  - To register a UNIX endpoint as a stand-alone server, select UNIX ETC Endpoint.
  - To register a UNIX endpoint as an NIS or NIS+ server, select NISEndpoint from the Object Type, and then click New.

Use the UNIX Endpoint property sheet to register a UNIX machine. During the registration process, CA Identity Manager identifies the UNIX machine you want to administer and gathers information about it.

2. Explore the objects that exist on the endpoint.

After registering the server in CA Identity Manager, you can explore its contents. Use the Explore and Correlate Endpoint dialog. The Exploration process finds all UNIX accounts and groups. You can correlate the accounts with global users at this time or later.

3. Correlate the explored accounts with global users.

When you correlate accounts, CA Identity Manager creates or links the accounts on an endpoint with global users, as follows:

- a. CA Identity Manager attempts to match the UNIX account name with each existing global user name. If a match is found, CA Identity Manager associates the UNIX account with the global user. If a match is not found, CA Identity Manager performs the next step.
- b. CA Identity Manager attempts to match the UNIX account description field with each existing global user's full name. If a match is found, CA Identity Manager associates the UNIX account with the global user. If a match is not found, CA Identity Manager performs the next step.
- c. CA Identity Manager associates the UNIX account with the *default user* global user object.

## Explore and Correlate on Linux Suse

If you receive an error when trying to explore and correlate on a Linux 390 ETC endpoint, you must manually add the account to `/etc/shadow`. On Linux Suse, an account exists in `/etc/password` only.

## Disable Passwd and Shadow Synchronization

If shadow passwords are enabled on the UNIX system, sometimes `etc/passwd` and `/etc/shadow` files contain a different number of users. This problem causes failures when the connector attempts to create a user account in UNIX. The connector checks the synchronization between `etc/passwd` and `/etc/shadow` files during endpoint acquisition and during exploration. If the UNIX system contains more than 5,000 users, this check can be time-consuming.

To omit the synchronization check, select the following option on endpoint object during acquisition: "Disable `etc/passwd` and `etc/shadow` files synchronization check." This option requires that the remote UNIX endpoint is running CA Identity Manager r12.5 SP9 (or higher) UNIX Remote Agent.

## Default Primary Group on Endpoint Property Sheet

A field called Default Primary Group is available to let you select a default Primary Group at the Endpoint level.

## Default Primary Group on Accounts and Account Templates in the User Console

The default primary group of an NIS/ETC endpoint is populated to an account being created.

If an account is created from an account template, there are two scenarios in the Provisioning Manager.

1. Endpoint has a default primary group, the account is created successfully no matter whether the "primary group" field is blank or [default] in the account template.
2. Endpoint has no default primary group, the account creation fails if "primary group" attribute is [default] unless the attribute is configured with another group name in the account template.

In the User Console, the primary group in an account template is either blank or a real group name. This is the same as the above with the same behaviors on Provisioning Server.

## Selecting the Character Set on the Endpoint Property Sheet

When checked, UTF-8 Character Set encoding will be used for values passed on between the Provisioning Server and the UNIX Remote Agent instead of the one used by the Provisioning Server. A combo list box is enabled in the so that you can select the character set used on the end-point system.

## Long Multi-Byte Character Strings Return Error Message

Using very long multi-byte character strings in the Full Name field can return a deceptive error message.

To avoid getting this error message, do not use extremely long multi-byte character strings in this field.

## Well-Known Attribute %ENDPOINT\_DESCRIPTION%

This applies to the following connectors: Windows, Oracle RDBMS, Siebel, UNIX NIS, MS SQL Server, and OpenVMS.

These endpoint types do not define the endpoint description in the eTDescription attribute. This means that until recently, you could not search on the endpoint description. In addition, the search screen did not display the endpoint description.

You can now use the new well-known attribute %ENDPOINT\_DESCRIPTION% for the affected connectors.

The DefaultEndpointSearch role definition has been updated, to allow the Default Endpoint Search screen to use the new well-known attribute. If you are upgrading from an older version of CA Identity Manager, import this modified screen after upgrading. For more information, see the Environment Changes section in your Upgrade Guide.

## UNIX Groups

The Provisioning Manager lets you create and maintain UNIX groups using the Endpoint Type task view. Use the ETC or NIS Group property sheet to manage your groups.

## NIS Netgroups

Netgroups are logical groups of hosts, accounts or both. Use the UNIX NIS Netgroup property sheet when managing netgroups and user netgroup activity.

For more information, see the Working with Endpoints, Connector Procedures in the *Provisioning* help

## Mandatory Properties for etautil Add Command

If you use the etautil add command to register UNIX endpoints, you must specify one of the following properties:

- For stand-alone UNIX servers, specify the eTETCHost eTETCUnicenterSec, and eTETCUnicenterUser properties. For example:

```
etautil ... add
'eTNamespaceName=UNIX - etc' eTETCDirectory eTETCDirectoryName=exdevsrv
eTETCHost=exdevsrv eTETCUnicenterSec=0 eTETCUnicenterUser=0
```

- For UNIX servers running NIS or NIS+, specify the eTNISHost, eTNISDomainName, eTNISUnicenterSec, and eTNISUnicenterUser properties. For example:

```
etautil ... -u etaadmin -p etaadmin add
'eTNamespaceName=UNIX - NIS-NIS plus Domains'
eTNISDirectory eTNISDirectoryname='nisdomain.com[exdevsrv]'
eTNISHost=exdevsrv
eTNISDomainName=nisdomain.com eTNISUnicenterSec=0 eTNISUnicenterUser=0
```

## UNIX Etautil Conventions

Use the following UNIX conventions in your etautil commands:

- The Endpoint Type name (eTNamespaceName) is UNIX - etc for stand-alone servers and UNIX - NIS-NIS plus Domains for NIS and NIS+ servers
- The Endpoint Type prefix is ETC. Therefore, the UNIX class names are:
  - eTETCDirectory for an endpoint on a stand-alone server
  - eTETCPolicyContainer for an account template container on a stand-alone server
  - eTETCPolicy for an account template on a stand-alone server
  - eTNISDirectory for an endpoint on an NIS or NIS+ server
  - eTNISPolicyContainer for an account template container on an NIS or NIS+ server
  - eTNISPolicy for an account template object class on an NIS or NIS+ server

For more information about the etautil command, see the *Reference* help.

### More Information

[Distinguished Names](#) (see page 431)

## Exit Commands

CA Identity Manager supports the following exit types:

- **Pre Exit** means that the agent executes a user command before it performs its own operation.
- **Post Exit** means that the agent executes a user command after it performs its own operation.

## Configuration File

CA Identity Manager implements the pre-exits and post-exits on the UNIX agents. To trigger user add-on commands, you must define them in the ExitSetup.ini file that is installed by CA Identity Manager. By default, this file does not activate any specific command.

The ExitSetup.ini file is located in the following directory:

```
/opt/CA/IdentityManager/ProvisioningUnixAgent/etc/
```

**Note:** The exact location is specified in the /etc/catngdmopath.tng file.

The following table describes the typical contents of the configuration file:

Headers and Variables	Value	Description
[Pre-exit]		Pre-exit section header
Command=	Provided by the user	User command specified with the absolute path
Stop on error=	Yes/No	Yes-specifies that the CA Identity Manager agent command is not launched if the pre-exit fails No-specifies that the CA Identity Manager agent command is launched even if the pre-exit fails. This is the default value.
[Post-exit]		Post-exit section header
Command=	Provided by the user	User command specified with the absolute path

## Conditions for the execution of the EXIT Commands

The conditions for the execution of the exit commands are as follows:

- For CA Identity Manager, the execution of a command is successful if its return code (RC) is equal to 0; any other code indicates that the execution failed. This is important because the values that are caught by CA Identity Manager are processed according to the value of the return code.
- The argument values, which are sent to CA Identity Manager agents, are also sent to the user program.
- The pre-exit and post-exit user commands are logged in the CA Identity Manager log files. You can also write messages in the log files, using the PrintMessage function, which is defined in the source template and delivered with the product.
- The pre-exit and post-exit commands are executed each time the CA Identity Manager agent is executed.

## Managing Passwords

CA Identity Manager can intercept an account password change on a UNIX or Linux system, and propagate it to all other accounts associated with its Global User. CA Identity Manager Pluggable Authentication Module (PAM) lets CA Identity Manager authenticate passwords against external security systems so that global users can use their existing system passwords to log on to CA Identity Manager.

For more information, see the *Administration Guide*.

## UNIX v2 Connector

This guide does not contain information about the UNIX v2 connector.

Instead, download the endpoint guide from the [Download page for Endpoint Guides and Attribute Lists](#).

# Appendix A: Support for FIPS and IPv6

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The following table lists the connectors that support FIPS and IPv6:

Connector	FIPs Support	IPv6 Support
CA Access Control	No	No
CA ACF2 and Password Synchronization Agent for ACF2	No	Yes
CA Arcot RiskFort	No	No
CA Arcot WebFort	No	No
CA Data Loss Prevention (CA DLP)	Yes	No
CA Single Sign-On	No	No
CA Top Secret and Password Synchronization Agent for Top Secret	No	Yes
Google Apps	No	No
IBM DB2 UDB	No	Yes
IBM DB2 z/OS	No	No
IBM i5/OS (OS/400)	No	No
IBM i5/OS (OS/400) Password Synchronization Agent	No	No
IBM Lotus Notes Domino Server	No	No
IBM RACF - Security	No	Yes
Kerberos	No	No
Microsoft Active Directory	No	No
Microsoft Exchange	No	No
Microsoft SQL Server	No	Yes
Microsoft Windows (XP, Vista, 7)	Yes	Yes
Oracle Server	No	No
Oracle E-Business Suite	No	No
PeopleSoft HRMS	No	No
RSA SecurID	No	No

Connector	FIPs Support	IPv6 Support
SalesForce	No	No
SAP R/3	No	No
SAP UME	No	No
Siebel CRM	No	No
UNIX	Yes <b>Note:</b> Supported on Solaris Sparc, Linux x86, HPUX AIX only	Yes

# Appendix B: Endpoint Schema and Structure

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This section contains the following topics:

[Endpoint Schema](#) (see page 427)

[Endpoint Structure](#) (see page 431)

This appendix provides an overview of the endpoint schema and structure of the Standard Connectors. The endpoint schema and structure is required when you:

- Use a general purpose LDAP utility to construct batch processes interfacing with the Provisioning Server
- Build, interpret, or modify LDAP Interface File Format (LDIF) files to work with CA Identity Manager data and combine it with data from other LDAP-enabled applications.

For more information about endpoint schemas and structures, see the Administrator Guide and the Programming Guide for Provisioning.

## Endpoint Schema

An endpoint *schema* consists of the object classes, attributes in object classes, and attribute types. All of this information is necessary when constructing syntactically correct LDAP operations, such as LIST, SEARCH, ADD, MODIFY, and DELETE.

The endpoint schema for your directories is described in the following sections. The schema files discussed in these sections are located under the *PS\_HOME*\Data\Endpoint TypeDefinition directory.

For more information about schemas, see the *Programming Guide for Provisioning*.

## SchemaAbridged.txt File

The xxxSchemaAbridged.txt file provides a list of each object class and attribute in the schema. For each attribute, only the most commonly used keywords are supplied. Use this file if you are constructing LDAP-compatible files for any of the batch processes.

**xxx**

Specifies the three or four letter acronym for a connector. [Click here to see the connector names and acronym's.](#)

## SchemaUnabridged.txt File

The xxxSchemaUnabridged.txt file provides a complete list of each object class and attribute in the schema and includes all the information provided in the xxxSchemaAbridged.txt file, as well as additional information required when parsing, formatting, and presenting the data received from the your Connector. Use this file if you need more detailed information for the object classes and attributes in the your Connector.

**xxx**

Specifies the three or four letter acronym for a connector. [Click here to see the connector names and acronym's.](#)

## Connector Acronyms

The following list contains the acronyms for the CA Identity Manager connectors used in this appendix:

Acronym	Connector
ACC	CA Access Control
ACF	CA ACF2
ADS	Active Directory Services
AS4	OS/400
DBZ	DB2 UDB for z/OS
DB2	DB2 UDB
ETC	UNIX ETC
E2K	Windows Exchange Server
FND	Oracle Applications
KRB	Kerberos
LND	Lotus Notes/Domino

Acronym	Connector
NIS	UNIX NIS
N16	Windows NT
ORA	Oracle
PLS	SSO for Advanced Policy Server
PPS	PeopleSoft
RAC	RACF
RSA	RSA ACE (SecurID)
SAP	SAP
SBL	Siebel
SQL	MS SQL
TSS	CA Top Secret

## File Formats

The format of these files is defined using two distinct definitions: object class definitions and attribute definition

### Object Class Definitions

The lines that define the object classes are in the following form:

```
CLASS user_friendly_name
  LDAP ObjectClass Name : ldap_name
  ExternalName: external_name
  NamingAttributes: naming_attribute
```

#### ***user\_friendly\_name***

Specifies the user-friendly object class name.

#### ***ldap\_name***

Specifies the LDAP name used for defining the schema.

#### ***external\_name***

Specifies the relative distinguished name (RDN) value for containers.

#### ***naming\_attribute***

Specifies the RDN attribute.

## Attribute Definitions

Directly beneath the object class definition are several attribute lines. These lines define the attribute types in the object class. Depending on which file you are viewing, the list can vary.

```
ATTRIBUTE (LDAP Name) ldap_object_class_name::ldap_attribute_name
    User-friendly Name : user_friendly_name
    Description: Global description
    ProhibitedCharacters: prohibchars
    MinLength: minlength
    MaxLength: maxlength
    EditType: edittype
    IsSpaceAllowedIn: spaces
    IsAsciiOnly: ascii
    IsMultiValued: multi-valued
    Case: case
```

### ***ldap\_object\_class\_name***

Specifies the LDAP name used for the object class.

### ***ldap\_attribute\_name***

Specifies the LDAP name of the attribute.

### ***user\_friendly\_name***

Specifies the user-friendly name.

### ***description***

Specifies the description of the attribute.

### ***prohibchars***

Specifies a list of characters prohibited in the attribute.

### ***minlength***

Specifies the minimum length of the attribute value.

### ***maxlength***

Specifies the maximum length of the attribute value.

### ***edittype***

Determines the type of data in LDAP and its characteristics.

### ***spaces***

Defines a Boolean value that identifies whether spaces are allowed.

### ***ascii***

Defines a Boolean value that determines whether the attribute supports ASCII values.

***multi-valued***

Defines a Boolean value that determines whether the attribute is multi-valued.

***case***

Specifies a string that identifies whether the attribute can contain uppercase or lowercase characters. This string can be insensitive, insensitive-upper, insensitive-lower, sensitive, sensitive-upper, or sensitive-lower.

## Endpoint Structure

Equally important to the endpoint schema is the hierarchical relationship that exists between the objects in the endpoint. This relationship is expressed through an endpoint structure called the Data Information Tree (DIT). Knowing the hierarchy is essential to constructing syntactically correct endpoint operations.

## Distinguished Names

Distinguished names (DNs) identify the objects in a Endpoint Type. They contain a sequence of individual entries that specifies the location of an object in the DIT. That is, the DN is similar to a file system path name.

In CA Identity Manager, the format of the DN consists of two parts: a base DN and a domain name suffix. The base DN specifies the DN of an object without any domain information. You must specify only the base DN when writing batch processes.

For example, a base DN of an Active Directory Services object is:

```
eTADSAccountName=my_account,eTADSContainerName=Active Dir. Folder,  
eTADSDirectoryName=directory_name,  
eTNamespaceName=ActiveDirectory,domain_name_suffix
```

The domain name suffix specifies the suffix value of the domain. This parameter is the combination of the domain name RDN, its parent domain RDNs, and the CA Identity Manager suffix (dc=eta). You must specify the domain name suffix and the base DN when writing LDIF files. For example, if your domain name is *chicago*, its parent domain name is *illinois*, and the root domain name is *usa*, then the domain name suffix for your domain is:

```
dc=chicago,dc=illinois,dc=usa,dc=eta
```

Then, when accessing a logon ID using an Active Directory Services account, the DN would look like this:

```
eTADSAccountName=my_account,eTADSContainerName=Active Dir. Folder,  
eTADSDirectoryName=directory_name,  
eTNamespaceName=ActiveDirectory,dc=chicago,dc=illinois,dc=usa,dc=eta
```

## Connector Objects and DNs

The following sections list the Connector objects and their DNs in hierarchical order:

### DBZ Server Objects

The following table lists the DBZ Server objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=DB2 ZOS Server, domain_name_suffix
eTDBZDirectory	eTDBZDirectoryName=directory_name, eTNamespaceName=DB2 ZOS Server, domain_name_suffix

LDAP Object Name	DN of Object Instance
eTDBZNamespace	eTNamespaceName=DB2 ZOS endpoint type name, eTDBZDirectoryName=directory_name, eTNamespaceName=DB2 ZOS Server, domain_name_suffix
eTDBZAccountContainer	eTDBZAccountContainerName=Accounts, eTDBZDirectoryName=directory_name, eTNamespaceName=DB2 ZOS Server, domain_name_suffix
eTDBZAccount	eTDBZAccountName=DB2 ZOS Account, eTDBZAccountContainerName=Accounts, eTDBZDirectoryName=directory_name, eTNamespaceName=DB2 ZOS Server, domain_name_suffix

## DB2 UDB Objects

The following table lists the DB2 UDB objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=DB2 Server, domain_name_suffix
eTDB2Directory	eTDB2DirectoryName=directory_name, eTNamespaceName=DB2 Server, domain_name_suffix
eTDB2AccountContainer	eTDB2AccountContainerName=Accounts, eTDB2DirectoryName=directory_name, eTNamespaceName=DB2 Server, domain_name_suffix
eTDB2Account	eTDB2AccountName=DB2 User, eTDB2AccountContainerName=Accounts, eTDB2DirectoryName=directory_name, eTNamespaceName=DB2 Server, domain_name_suffix

LDAP Object Name	DN of Object Instance
eTDB2GroupContainer	eTDB2GroupContainerName=Groups, eTDB2DirectoryName= <i>directory_name</i> , eTNamespaceName=DB2 Server, <i>domain_name_suffix</i>
eTDB2Group	eTDB2GroupName=DB2Group, eTDB2GroupContainerName=Groups, eTDB2DirectoryName= <i>directory_name</i> , eTNamespaceName=DB2 Server, <i>domain_name_suffix</i>

### MS SQL Server Objects

The following table lists the MS SQL Server objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTSQLDirectory	eTSQLDirectoryName= <i>directory_name</i> , eTNamespaceName=MS SQL Server, <i>domain_name_suffix</i> datalocation= BOTH (*) edittype=string minlen=1 maxlen=100 description=Directory Name
eTSQLLoginContainer	eTSQLLoginContainerName = MS SQL Logins, eTSQLDirectoryName= <i>directory_name</i> , eTNamespaceName=MS SQL Server, <i>domain_name_suffix</i> datalocation= BOTH (*) edittype=string maxlen=255 description= MS SQL Server Login Container Name
eTSQLLogin	eTSQLLoginName= <i>MS SQL Login Name</i> eTSQLLoginContainerName=MS SQL Logins, eTSQLDirectoryName= <i>directory_name</i> , eTNamespaceName=MS SQL Server, <i>domain_name_suffix</i> datalocation= BOTH (*) edittype=string maxlen=128 description= MS SQL Server Login Name
eTSQLDatabase	eTSQLDatabaseName = <i>database_name</i> , eTSQLDirectoryName= <i>directory_name</i> , eTNamespaceName=MS SQL Server, <i>domain_name_suffix</i> datalocation= BOTH (*) edittype=string maxlen=123 description= MS SQL Server Database Name

LDAP Object Name	DN of Object Instance
eTSQLUser	eTSQLUserName = <i>MS_SQL_User_Name</i> , eTSQLDatabaseName= <i>database_name</i> , eTSQLDirectoryName= <i>directory_name</i> , eTNamespaceName=MS SQL Server, <i>domain_name_suffix</i> datalocation= BOTH (*) edittype=string maxlen=128 description= MS SQL Server User Name
eTSQLRole	eTSQLRoleName = <i>MS_SQL_Role_Name</i> , eTSQLDatabaseName= <i>database_name</i> , eTSQLDirectoryName= <i>directory_name</i> , eTNamespaceName=MS SQL Server, <i>domain_name_suffix</i> datalocation= BOTH (*) edittype=string maxlen=128 description= MS SQL Server Role Name

(\*) datalocation= BOTH means that the object is stored in the Namespace server and in the Provisioning Directory.

## Oracle Objects

The following table lists the Oracle objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORADirectory	eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAAccountContainer	eTORAAccountContainerName=Accounts, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAAccount	eTORAAccountName= <i>account_name</i> , eTORAAccountContainerName=Oracle Accounts, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTORARoleContainer	eTORARoleContainerName=Roles, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORARole	eTORARole= <i>role_name</i> , eTORARoleContainerName=Roles, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAProfileContainer	eTORAProfileContainerName=Profiles, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAProfile	eTORAProfile= <i>profile_name</i> , eTORAProfileContainerName=Profiles, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAProcContainer	eTORAProcContainerName=Procedures, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAProc	eTORAProc= <i>procedure_name</i> , eTORAProcContainerName=Procedures, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAPkgContainer	eTORAPkgContainerName=Packages, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>
eTORAPkg	eTORAPkg= <i>package_name</i> , eTORAPkgContainerName=Packages, eTORADirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Server, <i>domain_name_suffix</i>

## Oracle Applications Objects

The following table lists the Oracle Applications objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=Oracle Applications, <i>domain_name_suffix</i>
eTFNDDirectory	eTFNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Applications, <i>domain_name_suffix</i>
eTFNDAccountContainer	eTFNDAccountContainerName=Users, eTFNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Applications, <i>domain_name_suffix</i>
eTFNDAccount	eTFNDUserName= <i>user_name</i> , eTFNDAccountContainerName=Users, eTFNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Oracle Applications, <i>domain_name_suffix</i>

## Windows NT Objects

The following table lists the Windows NT objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16Directory	eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16AccountContainer	eTN16AccountContainerName=Accounts, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16Account	eTN16AccountName=Windows NT Account, eTN16AccountContainerName=Accounts, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16GroupContainer	eTN16GroupContainerName=N16GroupContainer, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTN16Groups	eTN16GroupName=N16Group, eTN16GroupContainerName=N16GroupContainer, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16SharedFolder Container	eTN16SharedFolderContainerName=Shared Folders, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16SharedFolder	eTN16SharedFolderName=N16SharedFolder, eTN16SharedFolderContainerName=Shared Folders, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTn16FolderManager	eTN16FolderManagerName=SF_MNGT_name, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>
eTN16GroupManager	eTN16GroupManagerName=GRP_MNGT_Name, eTN16DirectoryName= <i>directory_name</i> , eTNamespaceName=Windows NT, <i>domain_name_suffix</i>

### CA-ACF2 Objects

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>
eTACFDirectory	eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>
eTACFLidContainer	eTACFLidContainerName=Accounts, eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>
eTACFLid	eTACFLidName= <i>your_lid</i> ,eTACFLidContainerName=Accounts, eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>
eTACFRuleContainer	eTACFRuleContainerName=Rules, eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>
eTACFACF2RuleType	ETACFACF2RuleTypeName=ACF2_rule_types, eTACFRuleContainerName=Rules, eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTACFACF2RuleKey	eTACFACF2RuleKeyName= <i>\$_key_value</i> , eTACFACF2RuleTypeName= <i>ACF2_rule_types</i> , eTACFRuleContainerName=Rules, eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>
eTACFACF2RuleLine	eTACFACF2RuleLineName= <i>highlevel_qualifier_mask</i> , eTACFACF2AssetTypeName= <i>assets_under_\$_key</i> , eTACFACF2RuleKeyName= <i>\$_key_value</i> , eTACFRuleTypeName= <i>ACF2_rule_types</i> , eTACFRuleContainerName=Rules, eTACFDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-ACF2, <i>domain_name_suffix</i>

## CA-Top Secret Objects

The following table lists the CA-Top Secret objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSDirectory	eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAcid	eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSFacilityContainer	eTTSSFacilityContainerName =Facilities, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSPermissionContainer	eTTSSPermissionContainerName =Permissions, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSOwnershipContainer	eTTSSOwnershipContainerName =Ownerships, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTTSSProfListContainer	eTTSSProfListContainerName = ProfList, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAdminFacContainer	eTTSSAdminFacContainerName = AdminFacility, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAdminResContainer	eTTSSAdminResContainerName = AdminResource, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAdminScpContainer	eTTSSAdminScpContainerName = AdminScope, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAdminFacility	eTTSSAdminFacilityName = <i>admin_facility_name</i> , eTTSSAdminFacContainerName = AdminFacility, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAdminResource	eTTSSAdminResourceName = <i>admin_resource_name</i> , eTTSSAdminResContainerName = AdminResource, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAdminScope	eTTSSAdminScopeName = <i>admin_scope_name</i> , eTTSSAdminScpContainerName = AdminScope, <i>eTTSSAcidName=acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAcidContainer	eTTSSAcidContainerName=Accounts, eTTSSendpointName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTTSSDeptContainer	eTTSSDeptContainerName= Departments, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSDept	eTTSSDeptName = <i>dept_name</i> , eTTSSDeptContainerName= Departments, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSDivContainer	eTTSSDivContainerName= Divisions, eTTSSDirectoryName= <i>endpoint_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSDiv	eTTSSDivName= <i>div_name</i> , eTTSSDivContainerName= Divisions, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSZoneContainer	eTTSSZoneContainerName= Zones, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSAcidZone	eTTSSZoneName= <i>zone_name</i> , eTTSSZoneContainerName= Zones, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSGroupContainer	eTTSSGroupContainerName= Groups, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSGroup	eTTSSGroupName = <i>group_name</i> , eTTSSGroupContainerName= Groups, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSFacility	eTTSSFacilityName= <i>facility_name</i> , eTTSSFacilityContainerName=Facilities, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSOwnedName	eTTSSOwnedNameName= <i>detail_name</i> , eTTSSOwnershipName= <i>owned_name</i> , eTTSSOwnershipContainerName=Ownerships, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTTSSOwned	eTTSSOwnershipName= <i>owned_name</i> , eTTSSOwnershipContainerName=Ownerships, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSResName	eTTSSResNameName= <i>permission_detail_name</i> , eTTSSResClassName= <i>permission_name</i> , eTTSSPermissionContainerName=Permissions, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSResClass	eTTSSResClassName= <i>permission_name</i> , eTTSSPermissionContainerName=Permissions, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSProfList	eTTSSProfListName= <i>profile_name</i> , eTTSSProfListContainerName =ProfList, eTTSSAcidName= <i>acid_name</i> , eTTSSAcidContainerName=Accounts, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSProfile	eTTSSProfileName= <i>profile_name</i> , eTTSSProfileContainerName=Profiles, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>
eTTSSProfileContainer	eTTSSProfileContainerName=Profiles, eTTSSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA-Top Secret, <i>domain_name_suffix</i>

## RACF Objects

The following table lists the RACF objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTRACDirectory	eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACAccount	eTRACAccount= <i>user_id</i> ,eTRACAccountContainerName=Accounts, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACAccountContainer	eTRACAccountContainerName=Accounts, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACUserResProfile	eTRACPermissionEntry= <i>entry_name</i> , eTRACPermissionClass= <i>class_name</i> , eTRACUserPermissionContainerName=Permissions, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACUserPermissionResClass	eTRACPermissionClass= <i>class_name</i> , eTRACUserPermissionContainerName=Permissions, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACUserPermissionContainer	eTRACUserPermissionContainerName=Permissions, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACGroupUser	eTRACGroupUserid= <i>user_id</i> , eTRACgroupid= <i>group_id</i> , eTRACGroupContainer=Groups, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACGroup	eTRACgroupid= <i>group_id</i> , eTRACGroupContainer=Groups, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACGroupContainer	eTRACGroupContainer=Groups, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTRACResUser	eTRACPermissionUser= <i>user_id</i> , eTRACPermissionEntry=RACF Permission Entry, eTRACPermissionClass= <i>class_name</i> , eTRACPermissionContainerName=Permissions, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACResProfile	eTRACPermissionEntry=RACF Permission Entry, eTRACPermissionClass= <i>class_name</i> , eTRACPermissionContainerName=Permissions,
eTRACPermissionResClass	eTRACPermissionClass= <i>class_name</i> , eTRACPermissionContainerName=Permissions, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>
eTRACPermissionContainer	eTRACPermissionContainerName=Permissions, eTRACDirectoryName= <i>directory_name</i> , eTNamespaceName=RAC Namespace, <i>domain_name_suffix</i>

## OS/400 Objects

The following table lists the OS/400 objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=OS400 Namespace, <i>domain_name_suffix</i>
eTAS4Directory	eTAS4DirectoryName= <i>directory_name</i> , eTNamespaceName=OS400 Namespace, <i>domain_name_suffix</i>
eTAS4AccountContainer	eTAS4AccountContainerName=Accounts, eTAS4DirectoryName= <i>directory_name</i> , eTNamespaceName=OS400 Namespace, <i>domain_name_suffix</i>
eTAS4Account	eTAS4UserProfileName= <i>OS/400_account</i> , eTAS4AccountContainerName=Accounts, eTAS4DirectoryName= <i>directory_name</i> , eTNamespaceName=OS400 Namespace, <i>domain_name_suffix</i>
eTAS4GroupContainer	eTAS4GroupContainerName=Groups, eTAS4DirectoryName= <i>directory_name</i> , eTNamespaceName=OS400 Namespace, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTAS4Group	eTAS4GroupName= <i>OS/400_group</i> , eTAS4GroupContainerName= <i>Groups</i> , eTAS4DirectoryName= <i>directory_name</i> , eTNamespaceName= <i>OS400 Namespace, domain_name_suffix</i>

## UNIX ETC Objects

The following table lists the UNIX ETC objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName= <i>UNIX - etc, domain_name_suffix</i>
eTETCDirectory	eTETCDirectoryName= <i>directory_name</i> , eTNamespaceName= <i>UNIX - etc, domain_name_suffix</i>
eTETCAccountContainer	eTETCAccountContainerName= <i>container_name</i> , eTETCDirectoryName= <i>directory_name</i> , eTNamespaceName= <i>UNIX - etc, domain_name_suffix</i>
eTETCAccount	eTETCAccountName= <i>account_name</i> , eTETCAccountContainerName= <i>container_name</i> , eTETCDirectoryName= <i>directory_name</i> , eTNamespaceName= <i>UNIX - etc, domain_name_suffix</i>
eTETCGroupContainer	eTETCGroupContainerName= <i>group_container_name</i> , eTETCDirectoryName= <i>directory_name</i> , eTNamespaceName= <i>UNIX - etc, domain_name_suffix</i>
eTETCGroup	eTETCGroupName= <i>group_name</i> , eTETCGroupContainerName= <i>group_container_name</i> , eTETCDirectoryName= <i>directory_name</i> , eTNamespaceName= <i>UNIX - etc, domain_name_suffix</i>

## UNIX NIS Objects

The following table lists the UNIX NIS objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName= <i>UNIX - NIS-NIS plus Domains, domain_name_suffix</i>
eTNISDirectory	eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName= <i>UNIX - NIS-NIS plus Domains, domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTNISAccountContainer	eTNISAccountContainerName= <i>container_name</i> , eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName=UNIX - NIS-NIS plus <i>Domains, domain_name_suffix</i>
eTNISAccount	eTNISAccountName= <i>account_name</i> , eTNISAccountContainerName= <i>container_name</i> , eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName=UNIX - NIS-NIS plus <i>Domains, domain_name_suffix</i>
eTNISGroupContainer	eTNISGroupContainerName= <i>group_container_name</i> , eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName=UNIX - NIS-NIS plus <i>Domains, domain_name_suffix</i>
eTNISGroup	eTNISGroupName= <i>group_name</i> , eTNISGroupContainerName= <i>group_container_name</i> , eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName=UNIX - NIS-NIS plus <i>Domains domain_name_suffix</i>
eTNISNetGroupContainer	eTNISNetGroupContainerName= <i>netgroup_container_name</i> eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName=UNIX - NIS-NIS plus <i>Domains, domain_name_suffix</i>
eTNISNetGroup	eTNISNetGroupName= <i>netgroup_name</i> , eTNISNetGroupContainerName= <i>netgroup_container_name</i> , eTNISDirectoryName= <i>directory_name</i> , eTNamespaceName=UNIX - NIS-NIS plus <i>Domains, domain_name_suffix</i>

### Active Directory Services Objects

The following table lists the Active Directory Services objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=ActiveDirectory, <i>domain_name_suffix</i>
eTADSDirectory	eTADSDirectoryName= <i>directory_name</i> , eTNamespaceName=ActiveDirectory, <i>domain_name_suffix</i>
eTADSContainer	eTADSContainerName=Active Dir. Folder, eTADSDirectoryName= <i>directory_name</i> , eTNamespaceName=ActiveDirectory, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTADSAccount	eTADSAccountName= <i>account_name</i> , eTADSContainerName=Active Dir. Folder, eTADSDirectoryName= <i>directory_name</i> , eTNamespaceName=ActiveDirectory, <i>domain_name_suffix</i>
eTADSOrgUnit	eTADSOrgUnitName=Active Dir. Org. Unit, eTADSDirectoryName= <i>directory_name</i> , eTNamespaceName=ActiveDirectory, <i>domain_name_suffix</i>
eTADSGroup	eTADSGroupName=Active Dir. Group, eTADSOrgUnitName=Active Dir. Org. Unit, eTADSDirectoryName= <i>directory_name</i> , eTNamespaceName=ActiveDirectory, <i>domain_name_suffix</i>

## Lotus Notes\Domino Objects

The following table lists the Lotus Notes\Domino objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDDirectory	eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDCountry	eTLNDCountryName=Lotus Domino Country, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDFlatCertifier	eTLNDFlatCertifier=Lotus Domino Flat Certifier, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDAccount	eTLNDAccountName= <i>account_name</i> , eTLNDOrganizationalUnit=Lotus Domino Organizational Unit, eTLNDOrganization=Lotus Domino Organization, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTLNDOrganizationalUnit	eTLNDOrganizationalUnit=Lotus Domino Organizational Unit, eTLNDOrganization=Lotus Domino Organization, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDOrganization	eTLNDOrganization=Lotus Domino Organization, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDGroupContainer	eTLNDGroupContainerName=LND Groups, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>
eTLNDGroup	eTLNDGroupName= <i>group_name</i> , eTLNDGroupContainerName=LND Groups, eTLNDDirectoryName= <i>directory_name</i> , eTNamespaceName=Lotus Domino <i>Server, domain_name_suffix</i>

### CA Access Control Objects

The following table lists the CA Access Control objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespaceName=Access Control, <i>domain_name_suffix</i>
eTACCDirectory	eTACCDirectoryName= <i>directory_name</i> , eTNamespaceName=Access Control, <i>domain_name_suffix</i>
eTACCAccountContainer	eTACCAccountContainerName=Accounts, eTACCDirectoryName= <i>directory_name</i> , eTNamespaceName=Access Control, <i>domain_name_suffix</i>
eTACCAccount	eTACCAccountName= <i>account_name</i> , eTACCAccountContainerName=Accounts, eTACCDirectoryName= <i>directory_name</i> , eTNamespaceName=Access Control, <i>domain_name_suffix</i>
eTACCGroupContainer	eTACCGroupContainerName=Groups, eTACCDirectoryName= <i>directory_name</i> , eTNamespaceName=Access Control, <i>domain_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTACCGroup	eTACCGroupName= <i>group_name</i> , eTACCGroupContainerName=Groups, eTACCDirectoryName= <i>directory_name</i> , eTNamespaceName=Access Control, <i>domain_name_suffix</i>

## PLS Objects

The following table lists the PLS objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace Type	eTNamespaceName=CA SSO WAC, <i>domain_name_suffix</i>
eTPLSDirectory	eTPLSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA SSO WAC, <i>domain_name_suffix</i>
eTPLSUserStore	eTPLSUserStoreName= <i>user store name</i> , eTPLSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA SSO WAC, <i>domain_name_suffix</i>
eTPLSAccount	eTPLSAccountName= <i>account_name</i> , [eTPLSContainerName= <i>container_name</i> , ...](zero or more containers) eTPLSUserStoreName= <i>user store name</i> , eTPLSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA SSO WAC, <i>domain_name_suffix</i>
eTPLSGroup	eTPLSGroupName= <i>group_name</i> , [eTPLSContainerName= <i>container_name</i> , ...](zero or more containers) eTPLSUserStoreName= <i>user store name</i> , eTPLSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA SSO WAC, <i>domain_name_suffix</i>
eTPLSContainer	[eTPLSContainerName= <i>container_name</i> , ...](zero or more containers) eTPLSUserStoreName= <i>user store name</i> , eTPLSDirectoryName= <i>directory_name</i> , eTNamespaceName=CA SSO WAC, <i>domain_name_suffix</i>

<b>LDAP Object Name</b>	<b>DN of Object Instance</b>
eTPLSApplicationContainer	eTPLSApplicationContainerName=Applications, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSApplication	eTPLSApplicationName=Application_name, eTPLSApplicationContainerName=Applications, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSApplicationGroupContainer	eTPLSApplicationGroupContainerName=Application Groups, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSApplicationGroup	eTPLSApplicationGroupName=application_group_name, eTPLSApplicationGroupContainerName=Application Groups, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSTerminalContainer	eTPLSTerminalContainerName=Terminals eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSTerminal	eTPLSTerminalName=Terminal_name eTPLSTerminalContainerName=Terminals, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSAuthhostContainer	eTPLSAuthhostContainerName=Authentication Hosts, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix
eTPLSAuthhost	eTPLSAuthhostName=Authhost_name, eTPLSAuthhostContainerName=Authentication Hosts, eTPLSDirectoryName=directory_name, eTNamespaceName=CA SSO WAC, domain_name_suffix

## KRB Objects

The following table lists the KRB objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespace=KRB Namespace, <i>domain_name_suffix</i>
eTKRBDirectory	eTKRBDirectoryName= <i>directory_name</i> , eTNamespace=KRB Namespace, <i>domain_name_suffix</i>
eTKRBAccountContainer	eTKRBAccountContainerName=Accounts, eTKRBDirectoryName= <i>directory_name</i> , eTNamespace=KRB Namespace, <i>domain_name_suffix</i>
eTKRBAccount	eTKRBAccountName= <i>account_name</i> , eTKRBAccountContainerName=Accounts, eTKRBDirectoryName= <i>directory_name</i> , eTNamespace=KRB Namespace, <i>domain_name_suffix</i>
eTKRBAccount	eTKRBAccountName=KRBUser, eTKRBAccountContainerName=KRB Accounts, eTKRBDirectoryName= <i>directory_name</i> , eTNamespaceName= KRB Namespace, <i>domain_name_suffix</i>
eTKRBPASSWORDPolicyContainer	eTKRBPASSWORDPolicyContainerName=KRB Password Policies, eTKRBDirectoryName= <i>directory_name</i> , eTNamespaceName=KRB Namespace, <i>domain_name_suffix</i>
eTKRBPASSWORDPolicy	eTKRBPASSWORDPolicyName=KRBPolicy,eTKRBPASS wordPolicyContainerName=KRB Password Policies, eTKRBDirectoryName= <i>directory_name</i> , eTNamespaceName=KRB Namespace, <i>domain_name_suffix</i>

## SAP Objects

The following table lists the SAP objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPDirectory	eTSAPDirectoryName= <i>directory_name</i> , eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPAccountContainer	eTSAPAccountContainerName=Accounts, eTSAPDirectoryName= <i>directory_name</i> , eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPAccount	eTSAPAccountName= <i>account_name</i> , eTSAPAccountContainerName=Accounts, eTSAPDirectoryName= <i>directory_name</i> , eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPProfileContainer	eTSAPProfileContainer=Profiles, eTSAPDirectoryName= <i>directory_name</i> , eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPProfile	eTSAPProfile= <i>profile_name</i> , eTSAPProfileContainer=Profiles, eTSAPDirectoryName= <i>directory_name</i> , eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPRoleContainer	eTSAPRoleContainer=SAP Roles eTSAPDirectoryName= <i>directory_name</i> eTNamespace=SAP <i>Namespace, domain_name_suffix</i>
eTSAPRole	eTSAPRole= <i>role_name</i> eTSAPRoleContainer=SAP Roles eTSAPDirectoryName= <i>directory_name</i> , eTNamespace=SAP <i>Namespace, domain_name_suffix</i>

## Siebel Objects

The following table lists the Siebel objects and their DNs in hierarchical order:

<b>LDAP Object Name</b>	<b>DN of Object Instance</b>
eTNamespace	eTNamespaceName=Siebel, <i>domain_name_suffix</i>
eTSBLDirectory	eTSBLDirectoryName=Siebel_ <i>directory_name</i> , eTNamespaceName=Siebel, <i>domain_name_suffix</i>
eTSBLUserContainer	eTSBLUserContainerName=Users, eTSBLDirectoryName=Siebel_ <i>directory_name</i> , eTNamespaceName=Siebel, <i>domain_name_suffix</i>
eTSBLUser	eTSBLUserID=Siebel_ <i>user_ID</i> , eTSBLUserContainerName=Users, eTSBLDirectoryName=Siebel_ <i>directory_name</i> , eTNamespaceName=Siebel, <i>domain_name_suffix</i>
eTSBLPositionContainer	eTSBLPositionContainerName=Positions, eTSBLDirectoryName=Siebel_ <i>directory_name</i> , eTNamespaceName=Siebel, <i>domain_name_suffix</i>
eTSBLPosition	eTSBLPositionName=Siebel_ <i>position_name</i> , eTSBLPositionContainerName=Positions, eTSBLDirectoryName=Siebel_ <i>directory_name</i> , eTNamespaceName=Siebel, <i>domain_name_suffix</i>
eTSBLDivision Container	eTSBLDivisionContainerName= Divisions, eTSBLDirectoryName=Siebel_ <i>d</i> <i>irectory_name</i> , eTNamespaceName=Siebel, <i>do</i> <i>main_name_suffix</i>
eTSBLDivision	eTSBLResponsibilityName=Sie bel_ <i>division_name</i> , eTSBLDivisionContainerName= Divisions, eTSBLDirectoryName=Siebel_ <i>d</i> <i>irectory_name</i> , eTNamespaceName=Siebel, <i>do</i> <i>main_name_suffix</i>

LDAP Object Name	DN of Object Instance
eTSBLView Container	eTSBLResponsibilityContainerName=Views, eTSBLDirectoryName=Siebel_directory_name, eTNamespaceName=Siebel, domain_name_suffix
eTSBLView	eTSBLResponsibilityName=Siebel_View_name, eTSBLViewContainerName=Views, eTSBLDirectoryName=Siebel_directory_name, eTNamespaceName=Siebel, domain_name_suffix
eTSBLResponsibility Container	eTSBLResponsibilityContainerName=Responsibilities, eTSBLDirectoryName=Siebel_directory_name, eTNamespaceName=Siebel, domain_name_suffix
eTSBLResponsibility	eTSBLResponsibilityName=Siebel_responsibility_name, eTSBLResponsibilityContainerName=Responsibilities, eTSBLDirectoryName=Siebel_directory_name, eTNamespaceName=Siebel, domain_name_suffix
eTSBLLOVContainer	eTSBLLOVContainerName=LOV, eTSBLDirectoryName=Siebel_directory_name, eTNamespaceName=Siebel, domain_name_suffix
eTSBLLOVValue	eTSBLLOVValueName=Siebel_ListOfValues_name, eTSBLUserListContainerName=LOV, eTSBLDirectoryName=Siebel_directory_name, eTNamespaceName=Siebel, domain_name_suffix

## RSA Objects

The following table lists the RSA objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNamespace	eTNamespace=RSA Server, domain_name_suffix
eTRSADirectory	eTRSADirectoryName=directory_name, eTNamespace=RSA Server, domain_name_suffix

LDAP Object Name	DN of Object Instance
eTRSAAccountContainer	eTRSAAccountContainerName=RSA Accounts, eTRSADirectoryName= <i>directory_name</i> , eTNamespace=RSA Server, <i>domain_name_suffix</i>
eTRSAAccount	eTRSAAccountName= <i>account_name</i> , eTRSAAccountContainerName=RSA Accounts, eTRSADirectoryName= <i>directory_name</i> , eTNamespace=RSA Server, <i>domain_name_suffix</i>
eTRSAGrpContainer	eTRSAGrpContainerName=RSA Groups, eTRSADirectoryName= <i>directory_name</i> , eTNamespaceName=RSA Server, <i>domain_name_suffix</i>
eTRSAGrp	eTRSAGrpName=Group_Name, eTRSAGrpContainerName=Groups, eTRSADirectoryName= <i>directory_name</i> , eTNamespace=RSA Server, <i>domain_name_suffix</i>
eTRSATokenContainer	eTRSATokenContainerName=RSA Tokens, eTRSADirectoryName= <i>directory_name</i> , eTNamespace=RSA Server, <i>domain_name_suffix</i>
eTRSAToken	eTRSATokenSerialNumber= <i>token_serial_number</i> ,e TRSATokenContainerName=RSA Tokens, eTRSADirectoryName= <i>directory_name</i> eTNamespace=RSA Server, <i>domain_name_suffix</i>
eTRSAAgentHostContainer	eTRSAAgentHostContainerName=RSA Agent Hosts, eTRSADirectoryName= <i>directory_name</i> , eTNamespace=RSA Server, <i>domain_name_suffix</i>
eTRSAAgentHost	eTRSAAgentHostName= <i>AgentHost_name</i> , eTRSAAgentHostContainerName=RSA Agent Hosts, eTRSADirectoryName= <i>directory_name</i> , eTNamespaceName=RSA SERVER, <i>domain_name_suffix</i>
eTRSASiteContainer	eTRSASiteContainerName=RSA Sites, eTRSADirectoryName= <i>directory_name</i> , eTNamespaceName=RSA SERVER, <i>domain_name_suffix</i>
eTRSASite	eTRSASiteName= <i>Site_name</i> , eTRSASiteContainerName=RSA Sites, eTRSADirectoryName= <i>directory_name</i> , eTNamespaceName=RSA SERVER, <i>domain_name_suffix</i>

## Common Objects Tree

The Connector account templates belong to the common objects tree. The following sections lists the connector account template objects and their DNs in hierarchical order:

### DBZ Server Common Object Tree

DBZ Server account templates belong to the common objects tree. The following table lists the DBZ Server account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTDBZPolicyContainer	eTDBZPolicyContainerName=DB2 ZOS Account Templates, eTNamespaceName=DB2 ZOS Server, domain_name_suffix
eTDBZPolicy	eTDBZPolicyName=DB2 ZOS Account Template, eTDBZPolicyContainerName=DB2 ZOS Account Templates, eTNamespaceName=DB2 ZOS Server, domain_name_suffix

### DB2 UDB Common Objects Tree

DB2 UDB account templates belong to the common objects tree. The following table lists the DB2 UDB account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTDB2Policy	eTDB2PolicyName=policy_name, eTDB2PolicyContainerName=DB2 Policies, eTNamespaceName=CommonObjects, domain_name_suffix
eTDB2PolicyContainer	eTDB2PolicyContainerName=DB2 Policies, eTNamespaceName=CommonObjects, domain_name_suffix

## MS SQL Server Common Object Tree

MS SQL Server account templates belong to the common objects tree. The following table lists the MS SQL Server account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTSQLPolicyContainer	eTSQLPolicyContainerName= MS SQL Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i> datalocation=DB (*)  edittype=string maxlen=255 description= MS SQL Server Policy Container Name
eTSQLPolicy	eTSQLPolicyName= <i>MS SQL Policy name</i> , eTSQLPolicyContainerName=MS SQL Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i> datalocation=DB (*)  edittype=string maxlen=50 description= MS SQL Server Policy Name

(\*) datalocation =DB means that the object is stored in the Provisioning Directory.

## Oracle Common Objects Tree

Oracle account templates belong to the common objects tree. The following table lists the Oracle account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTORAPolicy	eTORAPolicyName= <i>policy_name</i> , eTORAPolicyContainerName=Oracle Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTORAPolicyContainer	eTORAPolicyContainerName=Oracle Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Oracle Applications Common Objects Tree

Oracle Applications account templates belong to the common objects tree. The following table lists the Oracle Applications account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
ETFNDPolicy	eTFNDPolicyName= <i>policy_name</i> , eTVMSPolicyContainerName=Oracle Applications Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTFNDPolicyContainer	eTFNDPolicyContainerName=Oracle Applications Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Windows NT Common Objects Tree

Windows NT account templates belong to the common objects tree. The following table lists the Windows NT account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTN16Policy	eTN16PolicyName= <i>policy_name</i> , eTN16PolicyContainerName=Windows NT Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTN16PolicyContainer	eTN16PolicyContainerName=Windows NT Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## ACF2 Common Objects Tree

CA-ACF2 account templates belong to the common objects tree. The following table lists the CA-ACF2 account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
ETACFPolicy	eTACFPolicyName= <i>policy_name</i> , eTACFPolicyContainerName=CA-ACF2 Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTACFPolicyContainer	eTACFPolicyContainerName=CA-ACF2 Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Top Secret Common Objects Tree

CA-Top Secret account templates belong to the common objects tree. The following table lists the CA-Top Secret account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
ETTSSPolicy	eTTSSPolicyName= <i>policy_name</i> , eTTSSPolicyContainerName=CA-Top Secret Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTTSSPolicyContainer	eTTSSPolicyContainerName=CA-Top Secret Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## RACF Common Objects Tree

RACF account templates belong to the common objects tree. The following table lists the RACF account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
ETRACPolicy	eTRACPolicyName= <i>policy_name</i> , eTRACPolicyContainerName=RACF Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTRACPolicyContainer	eTRACPolicyContainerName=RACF Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## OS/400 Common Objects Tree

OS/400 account templates belong to the common objects tree. The following table lists the OS/400 account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
ETAS4Policy	eTAS4PolicyName= <i>policy_name</i> , eTAS4PolicyContainerName=OS/400 Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTAS4PolicyContainer	eTAS4PolicyContainerName=OS/400 Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## UNIX ETC Common Objects Tree

UNIX ETC account templates belong to the common objects tree. The following table lists the UNIX ETC account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTETCPolicy	eTETCPolicyName= <i>policy_name</i> , eTETCPolicyContainerName=UNIX - etc Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTETCPolicyContainer	eTETCPolicyContainerName=UNIX - etc Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## UNIX NIS Common Objects Tree

UNIX NIS account templates belong to the common objects tree. The following table lists the UNIX account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTNISPolicy	eTNISPolicyName= <i>policy_name</i> , eTNISPolicyContainerName=UNIX - NIS-NIS plus Domains Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTNISPolicyContainer	eTNISPolicyContainerName=UNIX - NIS-NIS plus Domains Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## ADS Common Objects Tree

Active Directory Services account templates belong to the common objects tree. The following table lists the Active Directory Services account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
ETADSPolicy	eTADSPolicyName= <i>policy_name</i> , eTADSPolicyContainerName=Active Directory Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffi</i> <i>x</i>
ETADSPolicyContainer	eTADSPolicyContainerName=Active Directory Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffi</i> <i>x</i>

## LND Common Objects Tree

Lotus Notes/Domino account templates belong to the common objects tree. The following table lists the Lotus Notes/Domino account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTLNDPolicy	eTLNDPolicyName= <i>policy_name</i> , eTLNDPolicyContainerName=LND Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTLNDPolicyContainer	eTLNDPolicyContainerName=LND Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Access Control Common Objects Tree

CA Access Control account templates belong to the common objects tree. The following table lists the CA Access Control account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTACCPolicy	eTACCPolicyName= <i>policy_name</i> , eTACCPolicyContainerName=Access Control Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTACCPolicyContainer	eTACCPolicyContainerName=Access Control Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## SSO for Advanced Policy Server Common Objects Tree

PLS account templates belong to the common objects tree. The following table lists the PLS account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
eTPLSPolicy	eTPLSPolicyName= <i>policy_name</i> , eTPLSPolicyContainerName=CA SSO WAC Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTPLSPolicyContainer	eTPLSPolicyContainerName=CA SSO WAC Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Kerberos Common Objects Tree

KRB account templates belong to the common objects tree. The following table lists the KRB account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTKRBPoicy	eTKRBPoicyName= <i>policy_name</i> , eKRBPolicyContainerName=KRB policies eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTKRBPoicyContain er	eTKRBPoicyContainerName=KRB Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## SAP Common Objects Tree

SAP account templates belong to the common objects tree. The following table lists the SAP account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTSAPPoicy	eTSAPPoicyName= <i>policy_name</i> , eTSAPPoicyContainerName=SAP Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTSAPPoicyContainer	eTSAPPoicyContainerName=SAP Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Siebel Common Objects Tree

Siebel account templates belong to the common objects tree. The following table lists the Siebel account template objects and their DNs in hierarchical order:

LDAP Object Name	DN of Object Instance
eTSBLPoicy	eTSBLPoicyName= <i>policy_name</i> , eTSBLPoicyContainerName=Siebel Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTSBLPoicyContainer	eTSBLPoicyContainerName=Siebel Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## RSA Common Objects Tree

RSA account templates belong to the common objects tree. The following table lists the RSA account template objects and their DN's in hierarchical order:

LDAP Object Name	DN of Object Instance
ETRSAPolicy	eTRSPolicyName= <i>policy_name</i> , eTRSPolicyContainerName=RSA Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>
eTRSPolicyContainer	eTRSPolicyContainerName=RSA Policies, eTNamespaceName=CommonObjects, <i>domain_name_suffix</i>

## Object User-Friendly Names

The following sections list the LDAP object names for the connectors and their user-friendly names:

### DBZ Object User Friendly Names

The following table lists the DBZ object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTDBZAccount	DB2 ZOS Account	DB2 ZOS User
eTDBZAccountContainer	DB2 ZOS Account Container	DB2 ZOS User container
eTDBZDirectory	DB2 ZOS Directory	Directory name
eTDBZPolicy	DB2 ZOS Policy	Policy
eTDBZPolicyContainer	DB2 ZOS PolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

### DB2 UDB Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names alphabetically:

LDAP Object Name	User-Friendly Name	Description
eTDB2Account	DB2Account	DB2 UDB User

LDAP Object Name	User-Friendly Name	Description
eTDB2AccountContainer	DB2AccountContainer	DB2 UDB User container
eTDB2Directory	DB2Directory	Directory name
eTDB2Group	DB2Group	DB2 UDB Group
eTDB2GroupContainer	DB2GroupContainer	DB2 UDB Group container
eTDB2Policy	DB2Policy	Policy
eTDB2PolicyContainer	DB2PolicyContainer	Policy container
eTNamespace	Namespace	Policy

### MS SQL Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTSQLDirectory	SQLDirectory	Directory
eTSQLLogin	SQLLogin	MS SQL Login
eTSQLLoginContainer	SQLLoginContainer	MS SQL Login Container
eTSQLUser	SQLUser	MS SQL User
eTSQLRole	SQLRole	MS SQL Role
eTSQLDatabase	SQLDatabase	MS SQL Database
eTSQLPolicy	SQLPolicy	MS SQL Policy
eTSQLPolicyContainer	SQLPolicyContainer	MS SQL Policy Container

### Oracle Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTORAAccount	ORAAccount	Account
eTORAAccountContainer	ORAAccountContainer	Account container
eTORADirectory	ORADirectory	Directory name
eTORAPkgContainer	ORAPkgContainer	Package container
eTORAPkg	ORAPkg	Package

LDAP Object Name	User-Friendly Name	Description
eTORAProcContainer	ORAProcContainer	Procedure container
eTORAProc	ORAProc	Procedure
eTORAProfile	ORAProfile	Oracle profile
eTORAProfileContainer	ORAProfileContainer	Profile container
eTORARole	ORARole	Oracle role
eTORARoleContainer	ORARoleContainer	Role container
eTORAPolicy	ORAPolicy	Policy
eTORAPolicyContainer	ORAPolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

### Oracle Applications Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTFNDAccount	FNDAccount	Account
eTFNDAccountContainer	FNDAccountContainer	Account container
eTFNDDirectory	FNDDirectory	Directory name
eTFNDPolicy	FNDPolicy	Policy
eTFNDPolicyContainer	FNDPolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

### Windows NT Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTN16Account	N16Account	Account
eTN16AccountContainer	N16AccountContainer	Account container
eTN16Directory	N16Directory	Directory name

LDAP Object Name	User-Friendly Name	Description
eTN16FolderManager	N16FolderManager	Windows NT directory storage browser
eTN16Group	N16Group	Group
eTN16GroupContainer	N16GroupContainer	Group container
eTN16GroupManager	N16GroupManager	Retrieves user list included in a group
eTN16Policy	N16Policy	Policy
eTN16PolicyContainer	N16PolicyContainer	Policy container
eTN16SharedFolder	N16SharedFolder	Shared folder
eTN16SharedFolderContainer	N16SharedFolderContainer	Shared folder container
eTNamespace	Namespace	Namespace name

### ACF2 Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTACFACF2RuleKey	ACFRuleKey	Rule key
eTACFACF2RuleLine	ACFRuleLine	Rule line
eTACFACF2RuleType	ACFRuleType	Rule type
ETACFDirectory	ACFDirectory	Directory name
ETACFLid	ACFAccount	Logon ID
ETACFLidContainer	ACFLidContainer	Accounts container
ETACFRuleContainer	ACFRuleContainer	Rules container
ETNamespace	Namespace	Namespace name

## Top Secret Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTNamespace	Namespace	Namespace name
eTTSSAcid	TSSAcid	Acid
eTTSSAcidContainer	TSSAcidContainer	Acid container
eTTSSFacilityContainer	TSSFacilityContainer	Facility Container
eTTSSPermissionContainer	TSSPermissionContainer	Permission Container
eTTSSOwnershipContainer	TSSOwnershipContainer	Ownership Container
eTTSSProfListContainer	TSSProfListContainer	Profile List Container
eTTSSAdminFacContainer	TSSAdminFacContainer	Admin Facility Container
eTTSSAdminResContainer	TSSAdminResContainer	Admin Resource Container
eTTSSAdminScpContainer	TSSAdminScpContainer	Admin Scope Container
eTTSSAdminFacility	TSSAdminFacility	Admin Facility
eTTSSAdminResource	TSSAdminResource	Admin Resource
eTTSSAdminScope	TSSAdminScope	Admin Scope
eTTSSDeptContainer	DeptContainer	Department Container
eTTSSDept	TSSDept	Department
eTTSSDivContainer	DivContainer	Division Container
eTTSSDiv	TSSDiv	Division
eTTSSZoneContainer	ZoneContainer	Zone Container
eTTSSAcidZone	TSSZone	Zone
eTTSSGroupContainer	GroupContainer	Group Container
eTTSSGroup	TSSGroup	Group
eTTSSFacility	TSSFacility	Facility
eTTSSDirectory	TSSDirectory	Directory
eTTSSOwned	TSSOwned	Owned object
eTTSSPolicy	TSSPolicy	Policy
eTTSSPolicyContainer	TSSPolicyContainer	Policy container

LDAP Object Name	User-Friendly Name	Description
eTTSSProfile	TSSProfile	Profile
eTTSSProfList	TSSProfList	Profile List
eTTSSProfileContainer	TSSProfileContainer	Profile container
eTTSSResClass	TSSResClass	Resource class
eTTSSResName	TSSResName	Resource name

## RACF Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTNamespace	Namespace	Namespace name
eTRACAccount	RACAccount	Account
eTRACAccountContainer	RACAccountContainer	Account container
eTRACDirectory	RACDirectory	Directory
eTRACGroup	RACGroup	Group
eTRACGroupContainer	eTRACGroupContainer	Group container
eTRACGroupUser	RACGroupUser	Groupuser
eTRACPermissionContainer	RACPermissionContainer	Permission container
eTRACPermissionResClass	RACPermissionResClass	Permission resource class
eTRACResProfile	RACResProfile	Resource profile
eTRACResUser	RACResUser	Resource user
eTRACUserPermissionContainer	RACUserPermissionContainer	User permission container
eTRACUserPermissionResClass	RACUserPermissionResClasses	User permission resource class
eTRACUserResProfile	RACUserResProfile	User Resource profile
eTRACPolicy	RACPolicy	Policy
eTRACPolicyContainer	RACPolicyContainer	Policy container

## OS/400 Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTAS4Account	AS4Account	Account
eTAS4AccountContainer	AS4AccountContainer	Account container
eTAS4Directory	AS4Directory	Directory name
eTAS4Group	AS4Group	Group
eTAS4GroupContainer	AS4GroupContainer	Group container
eTAS4Policy	AS4Policy	Policy
eTAS4PolicyContainer	AS4PolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

## UNIX ETC Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTETCAccount	ETCAccount	Account
eTETCAccountContainer	ETCAccountContainer	Account container
eTETCGroup	ETCGroup	Group
eTETCGroupContainer	ETCGroupContainer	Group container
eTETCPolicy	ETCPolicy	Policy
eTETCPolicyContainer	ETCPolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

## UNIX NIS Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names alphabetically:

LDAP Object Name	User-Friendly Name	Description
eTNISAccount	NISAccount	Account
eTNISAccountContainer	NISAccountContainer	Account container

LDAP Object Name	User-Friendly Name	Description
eTNISGroup	NISGroup	Group
eTNISGroupContainer	NISGroupContainer	Group container
eTNISNetGroup	NISNetGroup	NetGroup
eTNISNetGroupContainer	NISNetGroupContainer	NetGroup Container
eTNISPolicy	NISPolicy	Policy
eTNISPolicyContainer	NISPolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

### ADS Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
ETADSAccount	ADSAccount	Account
ETADSContainer	ADSContainer	Account container
ETADSDirectory	ADSDirectory	Directory name
ETADSGroup	ADSGroup	Group
ETADSOrgUnit	ADSOrgUnit	Organizational unit, a container for groups
ETADSPolicy	ADSPolicy	Policy
ETADSPolicyContainer	ADSPolicyContainer	Policy container
ETNamespace	Namespace	Namespace name

### Lotus Notes/Domino Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTLNDAccount	LNDAccount	Account
eTLNDCountry	LNDCountry	Country name
eTLNDDirectory	LNDDirectory	Directory name
eTLNDFlatCertifier	LNDFlatCertifier	Flat certifier

LDAP Object Name	User-Friendly Name	Description
eTLNDGroup	LNDGroup	Group
eTLNDGroupContainer	LNDGroupContainer	Group container
eTLNDOrganizationalUnit	LNDOrganizationalUnit	Organizational unit name
eTLNDOrganization	LNDOrganization	Organization
eTLNDPolicy	LNDPolicy	Policy
eTLNDPolicyContainer	LNDPolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

### Access Control Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTACCAccount	ACCAccount	Account
eTACCAccountContainer	ACCAccountContainer	Account container
eTACCDirectory	ACCDirectory	Directory name
eTACCGroup	ACCGroup	Group
eTACCGroupContainer	ACCGroupContainer	Group container
eTACCPolicy	ACCPolicy	Policy
eTACCPolicyContainer	ACCPolicyContainer	Policy container
eTNamespace	Namespace	Namespace name

### PLS Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTPLSAccount	PLSAccount	Account
eTPLSContainer	PLSContainer	Container
eTPLSUserStore	PLSUserStore	User store name
eTPLSDirectory	PLSDirectory	Directory name

LDAP Object Name	User-Friendly Name	Description
eTPLSGroup	PLSGroup	Group
eTPLSPolicy	PLSPolicy	Policy
eTPLSPolicyContainer	PLSPolicyContainer	Policy container
eTPLSApplicationContainer	PLSApplicationContainer	Application container
eTPLSApplication	PLSApplication	Application
eTPLSApplicationGroupContainer	PLSApplicationGroupContainer	Application group container
eTPLSApplicationGroup	PLSApplicationGroup	Application group
eTPLSTerminalContainer	PLSTerminalContainer	Terminal Container
eTPLSTerminal	PLSTerminal	Terminal
eTPLSAuthhostContainer	PLSAuthhostContainer	Authhost Container
eTPLSAuthhost	PLSAuthhost	Authhost
eTNamespace	Namespace	Namespace name

**Note:** Information about the CA Single Sign-On for Advanced Policy Server policy and policy container can be found in the common objects schema. For details, see the *Programming Guide for Provisioning*.

### KRB Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTKRBAccount	KRBAccount	KRB User
eTKRBAccountContainer	KRBAccountContainer	KRB User container
eTKRBPasswordPolicyContainer	KRBPasswordPolicyContainer	KRB Password Policy Container
eTKRBPasswordPolicy	KRBPasswordPolicy	KRB Password Policy
eTKRBDirectory	KRBDirectory	Directory Name
eTKRBPolicy	KRBPolicy	Policy
eTKRBPolicyContainer	KRBPolicyContainer	Policy Container
eNamespace	Namespace	Namespace name

## SAP Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTSAPAccountContainer	SAPAccountContainer	Account container
eTSAPAccount	SAPAccount	SAP account
eTSAPProfileContainer	SAPProfileContainer	SAP profile container
eTSAPProfile	SAPProfile	SAP profile
eTSAPRoleContainer	SAPRoleContainer	SAP role container
eTSAPRole	SAPRole	SAP role
eTSAPPolicyContainer	SAPPolicyContainer	SAP policy container
eTSAPPolicy	SAPPolicy	SAP policy

## Siebel Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

LDAP Object Name	User-Friendly Name	Description
eTNamespace	Namespace	Namespace name
eTSBLDirectory	SBLDirectory	Siebel directory
eTSBLUserContainer	SBLUserContainer	User account container
eTSBLUser	SBLUser	User account
eTSBLPositionContainer	SBLPositionContainer	Position container
eTSBLPosition	SBLPosition	Position
eTSBLDivisionContainer	SBLDivisionContainer	Division container
eTSBLDivision	SBLDivision	Division
eTSBLViewContainer	SBLViewContainer	View container
eTSBLView	SBLView	View
eTSBLResponsibilityContainer	SBLResponsibilityContainer	Responsibility container
eTSBLResponsibility	SBLResponsibility	Responsibility

<b>LDAP Object Name</b>	<b>User-Friendly Name</b>	<b>Description</b>
eTSBLLOVContainer	SBLLOVContainer	List of Values container
eTSBLPolicyContainer	SBLPolicyContainer	Policy

## RSA Object User-Friendly Names

The following table lists the LDAP object names and their user-friendly names:

<b>LDAP Object Name</b>	<b>User-Friendly Name</b>	<b>Description</b>
eTNamespace	Namespace	Namespace name
eTRSAAccount	RSAAccount	Account
eTRSAAccountContainer	RSAAccountContainer	Account container
eTRSAAgentHost	RSAAgentHost	Agent Host
eTRSAAgentHostContainer	RSAAgentHostContainer	Agent Host container
eTRSAGrp	RSAGrp	Group
eTRSAGrpContainer	RSAGrpContainer	Group container
eTRSAPolicy	RSAPolicy	Policy
eTRSAPolicyContainer	RSAPolicyContainer	Policy container
eTRSASite	RSASite	Site
eTRSASiteContainer	RSASiteContainer	Site container
eTRSAToken	RSAToken	Token
eTRSATokenContainer	RSATokenContainer	Token container

# Appendix C: Bulk Load Client

---

This section contains the following topics:

[Introduction](#) (see page 475)

[Install the Bulk Load Client](#) (see page 475)

[Before Using the Bulk Load Client](#) (see page 478)

[Bulk Load Client Localization](#) (see page 479)

[Authenticating to the CA Identity Manager Server](#) (see page 481)

[Configuring the Bulk Load Client](#) (see page 482)

[How to Use Kettle Pentaho with the Bulk Load Client](#) (see page 484)

[Use Case for PeopleSoft](#) (see page 486)

[Bulk Load Client Error and Response Handling](#) (see page 489)

[Changing Bulk Load Client Password](#) (see page 491)

## Introduction

The Bulk Load Client is a command line utility that you use to remotely access the CA Identity Manager Bulk Loader task through TEWS. The command is used for any operation that the Bulk Loader task is capable of performing. For more details, see Bulk Loader in the *Administration Guide*.

## Install the Bulk Load Client

To install the Bulk Load Client utility, run the setup.exe program found in the im-pc package in the following location:

Clients\BulkLoader

During installation you may be prompted to enter the CA Identity Manager URL and the credentials of a user with permissions to execute the Bulk Loader task.

## Command Line Options

The following options are used to run the Bulk Load Client:

**-b, --batchSize <number>**

Specifies the maximum number of user data records to be sent to the server in each request. This option is used to avoid overloading the server. We recommend you to use a batchSize of 100.

**-c, --configFile <file>**

Specifies a properties file that contains the configuration options for invoking the Bulk Loader task. The default is "imbulkloadclient.properties".

**-d, --outputDirectory <value>**

This Kettle-only option specifies the directory that contains files output from the transformation process.

**-e, --endpointInfoFile**

Specifies a properties file that contains the key or value pairs for "user", "password", and "serverUrl". This option is used together with the (-s, --storeEndpointInfo) option.

**-f, --format (CSV | XML | Kettle)**

Specifies the format of the input file (-i, --inputFile) that contains the data records to be sent to the server. The default is XML.

If the input file format is CSV, the file is submitted to the Bulk Loader task directly, without transformation.

When the input file format is XML, use the -t, --transformFile <file> option to specify the XSLT template for carrying out the transformation.

When the input file format is Kettle, use -f **Kettle** to specify that a Kettle Job is going to be run.

**-h, --help**

Displays the command syntax.

**-i, --inputFile <file>**

Determines the user data records to be sent to the server. The format can be in XML or CSV format.

**-o, --outputFile <file>**

Writes the result to this file when the input file is transformed. You can use this option with Kettle as an alternative to -O outputFileList option if there is only one file produced by the transformation.

**-O, --outputFileList <value>**

This Kettle-only option specifies a comma-delimited list of files located in the output directory. For example, **-d C:/MyOutputDir -O MyOutput1.csv,MyOutput2.csv**

**-p, --password <pass>**

Specifies the password used for server authentication.

**-s, --serverUrl <url>**

Specifies the URL of the TEWS interface.

**-S, --storeEndpointInfo**

Stores the specified server URL and the Admin user name and password in the configuration file (**-c, --configFile**). The password is obfuscated before it is stored. The information that is going to be stored can be provided through the `endpointInfoFile` option.

**-T, --transformOnly**

Specifies to carry out the XSLT transformation of the input XML file into CSV format without submitting to the server. If a valid file name is also specified by **-o, --outputFile <file>**, the CSV result will be written to that file.

**-t, --transformFile <file>**

Specifies the file that contains the XSLT template for XSLT transformation of the input file, if the file format is in XML. This option is also used to show the Kettle job file.

**-u, --user <username>**

Specifies the user name for CA Identity Manager authentication.

**Note:** The user must be authorized to use the CA Identity Manager Bulk Loader task.

**-v, --verbose**

Specifies the output as much of the message as available.

**-V, --version**

Displays the version information of the program.

**-x / --transformTimeout <value>**

This optional, Kettle-only option specifies the timeout for the Kettle transformation, in seconds. For example, **-x 60**.

## Before Using the Bulk Load Client

To allow TEWS access to the environment being called by the Bulk Load Client, enable the following environment Advanced Settings:

- Web Services
- WSDL Generation
- admin\_id (enable impersonation)

These settings can be set through the Management Console under Home, Environments, *your\_environment*, Advanced Settings, Web Services.

Restart the environment to pick up the changes.

The Bulk Loader task itself must also be Web Service enabled. This can be set through the CA Identity Manager by modifying the Bulk Loader task and enabling Web Services on the Profile tab.

## Bulk Load Client Localization

Bulk Load Client uses the default locale of the Java Virtual Machine when starting up, and the default locale corresponds to system locale of the host platform. All user messages are externalized to the Java ResourceBundles to allow localization. The default resource file (Java Properties file) that contains the English resource `imbulkloadclient_msg.properties` file is built into the `imbulkloadclient.jar` file and is used by default.

To use a resource file that contains a different language resource, create the resource file by translating the default resource file and putting the new resource file under

```
$INSTALLATION_DIR\conf\com\ca\iam\imbulkloadclient
```

The file name of the new resource file should have the language and country code appended. For example, for Canadian French, the file name should be

```
imbulkloadclient_msg_fr_CA.properties
```

where

**fr**

Specifies the lowercase two-letter ISO-639 language code

**CA**

Specifies the uppercase two-letter ISO-3166 country code

**Note:** A Java resource file is a Java properties file. The encoding of a properties file is ISO-8859-1, also known as Latin-1. All non-Latin-1 characters must be entered by using Unicode escape characters. For example, `\uHHHH`, where HHHH is a hexadecimal index of the character in the Unicode character set. You can use the JDK tool `native2ascii.exe` to convert files which contain other character encodings into files containing Latin-1 and/or Unicode-encoded characters (using Unicode escape characters).

## Allow Bulk Loader to Load Tasks with Localized Names

If CA Identity Manager Server has been localized, the Bulk Load Client does not perform a load out-of-the-box. This is because the Bulk Loader task name is a localized bundle location map.

For example:

```
${bundle=resourceBundles.FDC-RoleDefinitions_Tokenized:key=property.CreateIdentityPolicySet.Profile.name}
```

By default, the Bulk Loader task uses actions mapped to task names. When the task names have been translated into a different language, the Bulk Load client cannot find the mapped task names to perform the load.

To avoid this problem, you can map the Create, Modify, and Delete actions to the task tag. If the task name search fails, the Feeder searches for the task tag.

Administrator can modify the property “actionToTaskMapping” to add a task for a non-existing object.

For example: If Administrator wants to create user in case the user does not exist for modify request, Administrator can add secondary task in modify. The property value would be:

```
create.Create User;modify.Modify User.Create User;delete.Delete User
```

### Follow these steps:

1. In a text editor, open the Bulk Load Client `imbulkloadclient.properties` file. This file is present in the following location:

```
Bulk Loader\conf\imbulkloadclient.properties
```

2. Find the **actionToTaskMapping** property.

The default setting for this property is:

```
actionToTaskMapping=create.CreateUser;modify.Modify User;delete.Delete User
```

3. Change the property to map to the new localized task tag.
4. Save the properties file.

The changes effect immediately.

## Authenticating to the CA Identity Manager Server

Bulk Load Client uses a user name and a password to authenticate to the CA Identity Manager Server.

When the CA Identity Manager Server is protected by CA SiteMinder™, CA SiteMinder™ basic authentication is supported by setting “isProtectedBySiteMinder = true” in `\BulkLoader\conf\imbulkloadclient.properties`.

## SSL Support

If you want to use SSL to protect the data submitted to CA Identity Manager, configure the CA Identity Manager Server to accept HTTPS requests, then setup the Bulk Load Client:

### Follow these steps:

1. Import the CA Identity Manager certificate file to the Bulk Load Client keystore from the host where the Bulk Load Client is installed. Use the Java keytool utility to create a keystore and import the server certificate as a trusted certificate.

```
keytool -import -alias imserver -file <your_server_cert_file> -keystore  
%HOMEDRIVE%&#x26;HOMEPATH%\imbulkloaderkeystore
```

2. Edit the `imbulkloadclient.bat` file or the `imbulkloadclient.sh` file to set `TRUSTSTORE_PASSWORD` to the value you entered in the previous step.

## Configuring the Bulk Load Client

The following properties of the Bulk Load Client can be configured in the `imbulkloadclient.properties` file:

- CA Identity Manager parser class to be used for the Bulk Loader task. At the moment, only "com.ca.identitymanager.feeder.parser.CSVParser" is supported.
- The unique identifier attribute name (column name) in the CSV file.
- The action attribute name (column name) in the CSV file.
- The primary object for the Bulk Loader task that is always *USER*.
- The action to admin task mapping, in the form of:
  - "create.Create User;modify.Modify User;delete.Delete User;"
  - "create.Create User;modify.Modify User.Create User;delete.Delete User", when the Administrator wants to create a user if the requested user does not exist for modification
- Whether or not the web service is protected by SiteMinder.

You can also specify the commands in the command line in the properties file also. Add a key and value pair to the properties file with the key being the command line options long form name.

**Note:** The options provided on the command line take precedence over the values specified in the properties file.

## Properties File Example

The following is an example of the Properties file used to configure the Bulk Loader Task and the Bulk Load Client:

```
#
# These are the connection details of the CA Identity Manager Server
#

# administrator id and password to be used to carry out the task
user=admin1
password=FPWg3MtYrUnididAMY06LZT/3LPuMtU607A+DRzX1JI\=

# server URL
serverUrl=http://imhostname:8080/iam/im/TEWS6/myime?wsdl

#
# these are the configuration items for the CA Identity Manager ObjectsFeeder task
#

# CA Identity Manager parser to be used for the ObjectsFeeder task
feederParserClass= com.ca.identitymanager.feeder.parser.CSVParser

# The unique identifier attribute name (column name in the CSV file)
uniqueIdentifierAttrName=uid

# The action attribute name (column name in the CSV file)
actionAttrName=action

# The primary object for the ObjectsFeeder task. (This will always be USER")
primaryObject=USER

# The action to admin task mapping
actionToTaskMapping = create.Create User;modify.Modify User;delete.Delete User
actionToTaskMapping = create.Create User;modify.Modify User.Create
User;delete.Delete User, used when the Administrator wants to create a user if the
requested user does not exist for modification

# Is the web service protected by SiteMinder
isProtectedBySiteMinder=false
```

## How to Use Kettle Pentaho with the Bulk Load Client

You can use the Bulk Load Client to also run a Kettle job before the bulk load process using the Bulk Load Client command line options. <Insert X-ref to “Bulk Load Client Command Line Options” topic>

The sample uses the following options:

```
imbulkloadclient.bat -f Kettle -t C:/MyKettleJob.kjb -o  
C:/MyOutput.csv -x 60
```

The following sections explain each option:

- Select the Kettle Job Option
- Specify the Kettle Job File
- Specify the Output File to Bulk Load
- Specify a Timeout for the Kettle Job
- Example of Executing a Bulk Load Client with Kettle

### Select the Kettle Job option

```
-f Kettle
```

This option specifies that a Kettle job is going to be run. The base option, `-f / --format <value>`, determines the format of the input file / transform.

### Specify the Kettle Job file

```
-t C:/MyKettleJob.kjb
```

This option specifies `C:/MyKettleJob.kjb` as the file (and its location) used as the template for the input file transformation.

**Note:** This command string does not use the existing `-i / --inputFile` option for a Kettle Job. Loading the input file should be part of your Kettle Job/Transform

### Specify the output File to Bulk Load

There are two ways to specify the output for the Kettle Job that will be bulk loaded.

When outputting the Kettle to a single file, you would use an option similar to the following:

```
-o C:/MyOutput.csv
```

The `-o / --outputFile <value>` option determines the file of transformation process.

When outputting the Kettle to several files, you would use options similar to the following:

```
-d C:/MyOutputDir -O MyOutput1.csv,MyOutput2.csv
```

This uses the following command line options:

- **-d / --outputDirectory <value>** : the directory that contains files output from the transformation process. Note that this is a Kettle-only option.
- **-O / --outputFileList <value>** : A comma-delimited list of files located in the outputDirectory. Note that this is a Kettle-only option

#### **Specify a Timeout for the Kettle Job**

```
-x 60
```

This is the Timeout for Kettle transformation, in seconds.

This command is based on the following format:

```
-x / --transformTimeout <value>
```

**Note:** This command is optional.

#### **Example of Executing a Bulk Load Client with Kettle**

For a single output file:

```
imbulkloadclient.bat -f Kettle -t C:/MyKettleJob.kjb -o  
C:/MyOutput.csv -x 60
```

For multiple output files:

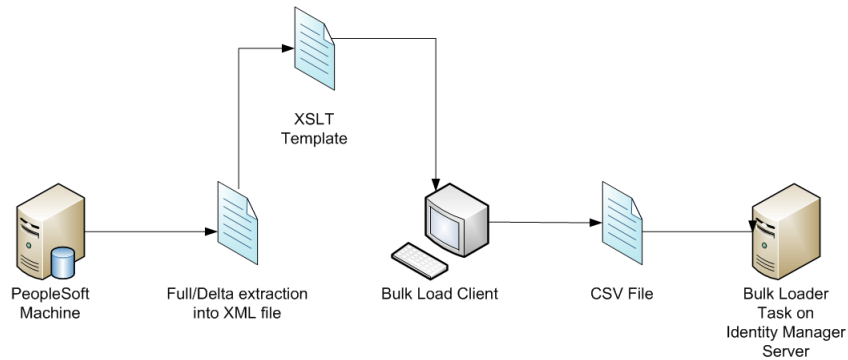
```
imbulkloadclient.bat -f Kettle -t C:/MyKettleJob.kjb -d  
C:/MyOutputDir -O MyOutput1.csv,MyOutput2.csv -x 60
```

## Use Case for PeopleSoft

The relevant user account information is first extracted manually from the authoritative data source: for example PeopleSoft. The Bulk Load Client can work with XML or CSV input file formats. If the information is XML, the file is transformed to CSV format by the Bulk Load Client using XSL transformation. The resultant CSV file is then sent by the Bulk Load Client to the CA Identity Manager Bulk Loader task. Based on the mapped admin tasks, users are created, modified, or deleted.

The following is an example of the Bulk Load Client cycle:

*Equation 1: The information is extracted into an XML file, transformed with an XSLT template, converted with the Bulk Load Client to CSV, then imported into IM Server*



**From the PeopleSoft machine:**

1. Extract either a full or delta dump of user records in the form of an XML file.
2. Create an XSLT template to convert the XML file into the standard CSV form that can be used by the CA Identity Manager Bulk Loader task.
3. Convert the XML file using XSLT template with the CA Identity Manager Bulk Load Client.

Bulk Load Client internally transforms the XML file into CSV format required by the CA Identity Manager Bulk Loader task. You can either write the CSV file to a disk file or use the CSV file to invoke the Bulk Loader task.

**Note:** The resultant CSV file can be loaded in smaller chunks.

4. Bulk Load Client uses the CSV file to invoke the Bulk Loader task using the TEWS interface.

If the CSV file has been broken up into smaller chunks, Bulk Load Client invokes the Bulk Loader task for each of the chunks. Subsequent chunks are sent to the Bulk Loader task once the SOAP response from the previous request is received and the response indicates that the previous request is submitted successfully.

5. The SOAP response is logged to a file or written to the standard output.

The following use cases are supported for the Bulk Load Client:

- Full Dump
- Delta Dump
- Scheduling of the full or delta load

## Full Dump

A full dump is a complete dump of all users. The full dump data extraction must present the current state of each record at the time of the extraction.

With PeopleSoft HRMS, the full table synchronization message *PERSON\_BASIC\_FULLSYNC* is used to publish the full table. This message publishes all the user data records to a local XML file. The XML file can then be used to feed into Bulk Load Client. The *PERSON\_BASIC\_FULLSYNC* message is customized to suit your specific needs so that it maps all the records to a view only extracts currently affecting the data. A sample message file (peoplesoft2.xml) comes with the installation and is located under the "samples" directory. This file contains sample messages for *PERSON\_BASIC\_FULLSYNC*.

Refer to the *PeopleSoft Integration Broker PeopleBook* for detailed information on how to set up PeopleSoft Integration Broker and a full table data publish.

## Delta Dump

A delta dump is made of all user changes since the last time a delta or full dump was made. This dump presents the current state of each record modified since the previous delta or full dump identifies the record as deleted, if the user or the account no longer exists.

With PeopleSoft HRMS, there is a pre-defined message (PERSON\_BASIC\_SYNC) that publishes every change made to the user data records. Use the PeopleSoft Integration Broker to publish these changes to a local XML file. This XML file can then be loaded by Bulk Load Client. A sample message file (for example peoplesoft1.xml) comes with the installation and is located under the "samples" directory. This file contains a sample message for PERSON\_BASIC\_SYNC.

**Note:** PERSON\_BASIC\_SYNC publishes every change made to the user data record to its own file, so there could be many files to load.

A message definition is created that publishes all the changes made since the last full or delta dump into one single file. For additional assistance with how to create the custom message, refer to Oracle Support.

## Scheduling a Load

Scheduling the load is done using native OS capabilities and not as part of Bulk Load Client.

## Using the XSLT Template

If the data extracted from the PeopleSoft machine is in an XML file, an XSLT template file called peoplesoft.xslt has been supplied to carry out the transformation into the CSV format. For information on how the CSV file should be formatted, see "Feeder File Format" in the *CA Identity Manager Administration Guide*.

This template file works with PeopleSoft Rowset-based message format and is customizable. For instructions on how to customize this file, check the comments in the template.

**Note:** The template file is located under the *samples* directory.

## Bulk Load Client Error and Response Handling

Bulk Load Client reports to the user on the status of the SOAP request that is sent to the Bulk Loader task. The report will be to a standard out and/or log file. Only network connection, SOAP or TEWS errors are reported. A successful response to the request does not necessarily mean that the CA Identity Manager task has been processed without error. The task ID of each successfully submitted task will be output to allow cross-referencing with the User Console's View Submitted Tasks (VST) tab and CA Identity Manager log files.

The Bulk Loader task can be monitored as any other task using VST. Each nested CA Identity Manager task can be checked on this tab.

The XSLT transformation error is handled the same way as the errors mentioned above, for example, the error message is output to standard out and the log file. When an error is encountered, it will log the error and exit without submitting the task.

## Bulk Load Client Log Files

The following are the examples of logging destinations and a logging configuration file for the Bulk Load Client:

- Logging to standard out (console window) is set to `java.util.logging.Level.INFO` when the command line option `-verbose` is absent. The logging level is set to `java.util.logging.Level.CONFIG` when the option `-verbose` is set.
- Logging to standard out is always available no matter whether logging to a log file is configured or not.
- You can provide a logging configuration file to configure extra logging destination. The configuration file is set by starting the application with:  

```
java -Djava.util.logging.config.file=configFile MainClass
```
- A logging configuration file will be provided to log the message to the file `imbulkloadclient.log` in the logs subdirectory in the application installation folder.

The following is an example of the logging configuration file:

```
# log to a file
handlers= java.util.logging.FileHandler

# global logging level. The valid settings are SEVERE, WARNING, INFO,
# CONFIG, FINE, FINER and FINEST
.level= INFO

# file handler configuration
java.util.logging.FileHandler.pattern = ../logs/imbulkloadclient.log
java.util.logging.FileHandler.append = true
java.util.logging.FileHandler.limit = 50000
java.util.logging.FileHandler.count = 1
java.util.logging.FileHandler.formatter = java.util.logging.SimpleFormatter
```

## Axis Library Logging

The Axis library that we use as the stub classes to submit task to the CA Identity Manager Server has its own logging. A log4J configuration file “log4j.properties” is provided in the `/conf` directory and writes to the log file “axis.log” in or logs directory.

## Changing Bulk Load Client Password

You can change the password for the bulk load client.

**Follow these steps:**

1. Edit the `imbulkloadclient.properties` file.
2. Replace the cipher-text password with a plain-text password.
3. Run the following command:

```
install-directory\Bulk Loader\bin > imbulkloadclient.bat -e  
"..\conf\imbulkloadclient.properties" -S
```

The cipher-text password replaces the plain-text password.



# Appendix D: Sample Connector

---

This section contains the following topics:

[Introduction](#) (see page 493)

[Terminology](#) (see page 493)

[Modes](#) (see page 493)

[Implementing the Connector](#) (see page 496)

[Account Management Screens](#) (see page 497)

[Further Enhancements](#) (see page 497)

## Introduction

A sample scripting connector (sdkuposcript) is being included in this release to show functionality similar to the previous Universal Provisioning (UPO) Connector. Sdkuposcript is the Sdkscript connector extended to implement UPO style exits. The following sections detail the steps to extend Sdkscript. As with Sdkscript, Sdkuposcript is implemented in JavaScript.

## Terminology

UPO exits provide the entry points within a user provisioning request where custom code can be referenced.

Program exits are the user-developed custom code referenced by UPO exits. This connector provides two sample exits: a SendMail exit and a Logging exit. The SendMail exit sends an email message containing details of the user provisioning request to an email address configurable at the connector level. The Logging exit stores the user provisioning request details to a file.

## Modes

Sdkuposcript operates in the following two modes:

- Non-managed mode
- Managed mode.

The mode is configured at the connector level on a per-endpoint basis.

## Non-managed Mode (Asynchronous mode)

In non-managed mode, program exits are used to alert the system administrator of a non-managed system regarding user provisioning requests. Two program exits are provided: a SendMail exit and a Logging exit. Both of these exits are enabled at the endpoint level for simplicity, for example, either all UPO exits invoke the SendMail exit or none at all. See [Further Enhancements](#) (see page 497) for enabling program exits at the UPO exit level.

This connector defines 10 UPO exits in non-managed mode:

### **ADD\_ACCOUNT**

Invoked when a new account is created.

### **DELETE\_ACCOUNT**

Invoked when an account is deleted.

### **MODIFY\_ACCOUNT**

Invoked when an account is modified, except for password, account status or request status changes. Password and status modifications invoke different UPO exits.

### **RENAME\_ACCOUNT**

Invoked when an account is renamed.

### **CHANGE\_ACCOUNT\_PASSWORD**

Invoked when the password of an account is changed.

### **ENABLE\_ACCOUNT**

Invoked when the eTSuspended attribute of an account is set to enabled.

### **DISABLE\_ACCOUNT**

Invoked when the eTSuspended attribute of an account is set to disabled.

### **INVOCATION\_ERROR**

Invoked when a UPO exit fails or returns an error. This exit then throws an exception which results in a failed user provisioning request. Note that this is invoked when there is an error in the exit invocation, not due to an error on the endpoint.

### **REQUEST\_PENDING**

Invoked when a UPO exit was invoked successfully. A file is created containing the account name to indicate that a request for that account is pending. In this state, no other requests are acceptable and any such request should result in an exception.

**Note:** This implementation works well if there is only one CA IAM CS in the provisioning system. If there is more than one CA IAM CS, this implementation does work. Refer to SLA Exits for an alternative solution.

### **REQUEST\_COMPLETED**

Invoked when the request status is marked as completed. The request file, created on a previous REQUEST\_PENDING, is deleted, indicating that further user provisioning requests for the account are now acceptable.

In non-managed mode, the UPO exits do not do anything other than invoke the SendMail or Logging exits if so configured.

**Note:** You are still required to explore the endpoint to create the necessary placeholders such as account and group containers. But exploring in this mode, or performing lookup on specific accounts, does not return or create new accounts.

## Managed Mode (Synchronous mode)

In managed mode, this connector also uses UPO exits, but the UPO exits perform the actual provisioning operations on the endpoint. The operations being performed are the same as what the sdkscript connector performs.

For simplicity, the managed mode UPO exits do not invoke any of the program exits, but there is no reason why this cannot be coded into the connector, if so required.

This connector provides seven UPO exits:

### **ADD\_ACCOUNT**

Invoked when a new account is created.

### **DELETE\_ACCOUNT**

Invoked when an account is deleted.

### **MODIFY\_ACCOUNT**

Invoked when an account is modified.

### **RENAME\_ACCOUNT**

Invoked when an account is renamed.

### **READ\_ACCOUNT**

Invoked when a SEARCH for a UPO account is requested.

### **LIST\_ACCOUNTS**

Invoked when a SEARCH for enumerating accounts is requested. A list of accounts is returned.

### **INVOCATION\_ERROR**

Invoked when a user provisioning operation has failed. An exception is thrown which results in a provisioning request error.

## Implementing the Connector

Perform the following steps to transform the sdkscript connector into the sdkupscript connector:

In the sdkdyn metadata

1. Add the following connector level attribute definitions.
  - a. managedEndpoint (eTDYN-bool-01) – Used to configure the operational mode of an endpoint.
  - b. useSendMailExit (eTDYN-bool-02) – Used to indicate that the SendMail program exit is invoked by the UPO exits.
  - c. useLogExit (eTDYN-bool-03) – Used to indicate that the Logging program exit is invoked by the UPO exits.
  - d. mailservers (eTDYN-str-03) – Specifies the host name of the mail server that the SendMail exit connects to.
  - e. mailrecipient (eTDYN-str-04) – Specifies the email address that the SendMail sends the mail to.
  - f. mailsender (eTDYN-str-05) – Specifies the email address that the SendMail exit uses as the sender.
2. Add the following account level attribute definition in the sdkdyn metadata.
  - a. requestStatus (eTDYN-int-01) – This indicates the status of the request. This attribute definition is used mainly to receive the completed status of the request.
3. Define the program exits.

Two program exits are provided as samples. The SendMail exit gets the mail related connector level attributes and sends the message passed to it by the UPO exit. The mail subject is also passed to it by the invoking UPO exit. The code can be changed to include CC recipients if required.

The Logging exit writes the details of the request to a file, in a sub-directory of that specified by eTDYNConnectionURL.

4. Define the UPO exits.

One function is defined for each UPO exit. Where there are similarly named exits, a suffix is added indicating the operational mode where that exit is used, so there are functions such as ADD\_ACCOUNT\_NONMANAGED, ADD\_ACCOUNT\_MANAGED, ENABLE\_ACCOUNT, and so forth.

The non-managed mode exit functions package the request details in XML, which are made as similar as possible to the data block generated by the UPO connector. This xml block is then passed to the SendMail or Logging program exits, if so configured.

The managed mode exit functions perform the provisioning operations as in the sdkscript connector.

5. Re-structure the code of the functions specified in the opbindings.

Whereas with sdkscript, the provisioning operations are performed right in the body of the opbindings functions, the sdkuposcript functions first check the operational mode of the endpoint, then invoke the appropriate UPO exit.

## Account Management Screens

Account screens can be generated for inclusion in the User Console help. The CA Identity Manager 12.6.4 Web User Interface Account Screen Generation document should be consulted if account screens are desired.

Even though this connector uses the DYN namespace, this connector is thought of as a static endpoint type because metadata has already been provided. However, for future connectors that might want to use some of the additional attributes related to UPO implementation, Connector Xpress r12.5 12.6.4 must be used to create new metadata having these additional attributes and properties.

Two more presentation metadata properties must be added to the additional attributes. These are description and inputHint. In addition, two logical groupings can be added: one group containing the useSendMailExit and useLoggingExit attributes, and the other group containing the mailserver, mailrecipient and mailsender attributes. The other additional attributes may be included in the group containing the other attributes for the object.

The additional attributes are simple types that can already be handled by the current JIAM and CA Identity Manager server framework, so there is no need to create additional JIAM or CA Identity Manager handlers. Once the metadata has been completed, you can then proceed with the Role Definition Generator to create the necessary files needed for deployment.

## Further Enhancements

This connector shows one way to implement UPO style exits on a scripting connector. It has been designed to show the salient points in transforming the sdkscript connector into one that uses exits. To avoid clutter that may hide these salient points, some of the UPO features have been left out. This section discusses how those features can be added.

## Configuring a Program Exit for Each UPO Exit

The program exits are enabled at the endpoint level. That is, either all UPO exits invoke the program exits, or none of them do. This connector can be enhanced to enable the program exits to be configured for each UPO exit.

You can implement these in one of the following ways:

- Add one boolean attribute for each program exit – UPO exit pair. There will be additional attributes such as `useAddAccountSendMailExit`, `useAddAccountLoggingExit`, `useDeleteAccountSendMailExit`, `useDeleteAccountLoggingExit`, and so forth. The code checks the appropriate boolean attribute for each provisioning request to determine whether or not to invoke the program exit.
- Add a multi-valued string attribute for each UPO exit, where such attribute contains the name of the program exit to invoke.

## Invoking Program Exits on Managed Mode UPO Exits

The code can be modified to enable invoking program exits from managed mode UPO exits. For this connector, the code was not modified because the managed mode exits are already performing the provisioning operations. If desired, this can be changed.

## Enabling / Disabling UPO Exits

Similar to invoking program exits as mentioned previously, more boolean attributes can be added to indicate whether or not a specific UPO exit is invoked at all, regardless of any other configuration the UPO exit has.

One use of this is to disable the `RENAME_ACCOUNT` exit if such functionality is not available at the endpoint.

## SLA Exits

UPO utilizes an SLA (Service Level Agreement) Monitor to poll for requests in the pending state. This connector can be enhanced to provide polling for the existence of request files, although there may be issues if this CA IAM CS is part of an environment containing more than one CA IAM CS, and the location of the request files is localized within each CA IAM CS. A recommended solution is to make use of third party products or systems to store requests data and provide the monitoring of those requests. In this case, the `REQUEST_PENDING` and `REQUEST_COMPLETED` exits make connections to those third party systems to update the requests data.