

HP OpenView Select Identity

Connector for Microsoft Active Directory LDAP Servers

Installation and Configuration Guide

**Connector Version: 3.3
Select Identity Version: 3.3**



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

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

Additional third party software used by Select Identity includes:

- JasperReports developed by SourceForge.
- iText (for JasperReports) developed by SourceForge.
- BeanShell.
- Xalan from the Apache XML Project.
- Xerces from the Apache XML Project.
- Java API for XML Processing from the Apache XML Project.
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- JavaMail from SUN Reference Implementation.
- Java Secure Socket Extension (JSSE) from SUN Reference Implementation.
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- OpenSPML Toolkit from OpenSPML.org.
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- Hibernate from Hibernate.org.
- BouncyCastle engine for keystore management, bouncycastle.org.

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Installing the Connector

The Active Directory LDAP connector enables HP OpenView Select Identity to perform tasks on Active Directory LDAP servers. This connector relies on JNDI, which is the LDAP resource provider interface, to exchange data with LDAP.

The following tasks are supported by the Active Directory LDAP connector:

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

The Active Directory LDAP connector is packaged in the following files:

- `TALDAPv3.rar` – contains the connector binary files
- `schema.jar` – contains the attribute mapping file for this system, which control how Select Identity fields are mapped to LDAP fields

These files are located in the `LDAP Active Dir` directory on the Select Identity Connector CD.



This connector is supported on non-US platforms. This connector relies on the JNDI (LDAP's resource provider interface) to exchange data with LDAP.

System Requirements

The Active Directory LDAP connector is supported on the following Select Identity server configuration:

Select Identity Version	Application Server	Database
3.0.2	WebLogic 8.1.2 on Windows 2003	SQL Server 2000
	WebLogic 8.1.2 on Solaris 9	Oracle 9i
	WebLogic 8.1.2 on HP-UX 11i	Oracle 9i
	WebSphere 5.1.1 on Solaris 9	DB2 8.2 (or DB2 8.1 Service Pack 7)
3.3	WebLogic 8.1.4 on Windows 2003	SQL Server 2000

The connector is supported with Active Directory on Windows 2000 and Windows 2003. On Windows 2000, you can enable secure communication (LDAPS) for this connector. On Windows 2003, you *must* enable LDAPS. See [Using Secure LDAP on page 11](#) for configuration details.

This connector is supported on non-US platforms.

Deploying on the Web Application Server

To install the Active Directory LDAP connector on the Select Identity server, complete these steps:

- 1 Create a subdirectory in the Select Identity home directory where the connector's RAR file will reside. For example, you could create the `C:\Select_Identity\connectors` folder on Windows. (A connector subdirectory may already exist.)
- 2 Copy the `TALDAPv3.rar` file from the Select Identity Connector CD to the connector subdirectory.
- 3 If deploying the connector on WebLogic, complete the following steps. If deploying on WebSphere, skip to [Step 4 on page 10](#).
 - a Create a schema subdirectory in the Select Identity home directory where the connector's mapping file(s) will reside. For example, you could create the `C:\Select_Identity\schema` folder. (This subdirectory may already exist.)
 - b Extract the contents of the `schema.jar` file (on the Select Identity Connector CD) to the schema subdirectory.
 - c Ensure that the `CLASSPATH` environment variable in the WebLogic server startup script references the schema subdirectory.
 - d Start the application server if it is not currently running.
 - e Log on to the WebLogic Server Console.
 - f Navigate to **My_domain** → **Deployments** → **Connector Modules**.
 - g Click **Deploy a New Connector Module**.
 - h Locate and select the `TALDAPv3.rar` file from the list. It is stored in the connector subdirectory.
 - i Click **Target Module**.
 - j Select the **My Server** (your server instance) check box.
 - k Click **Continue**. Review your settings.
 - l Keep all default settings and click **Deploy**. The Status of Last Action column should display Success.

- 4 If deploying the connector on WebSphere, complete the following steps:
 - a Stop the application server.
 - b Extract the contents of the `schema.jar` file (on the Select Identity Connector CD) to the `WebSphere\AppServer\lib\ext` directory.
 - c Start the application server.
 - d Log on to the WebSphere Application Server Console.
 - e Navigate to **Resources** → **Resource Adapters**.
 - f Click **Install RAR**.
 - g In the Server path field, enter the path to the `TALDAPv3.rar` file. It is stored in the subdirectory created in [Step 1](#).
 - h Click **Next**.
 - i In the Name field, enter a name for the connector.
 - j Click **OK**.
 - k Click the **Save** link (at the top of the page).
 - l On the Save to Master Configuraton dialog, click the **Save** button.
 - m Click **Resources** → **Resource Adapters**.
 - n Click the new connector.
 - o Click **J2C Connection Factories** in the Additional Properties table.
 - p Click **New**.
 - q In the Name field, enter the name of the factory for the connector. For the SQL connector, enter **eis/LDAPv3**.
 - r Click **OK**.
 - s Click the **Save** link.
 - t On the Save to Master Configuraton dialog, click the **Save** button.
 - u Restart WebSphere.
- 5 Modify the mapping file, if necessary. This file is described in detail in [Understanding the Mapping File on page 15](#).

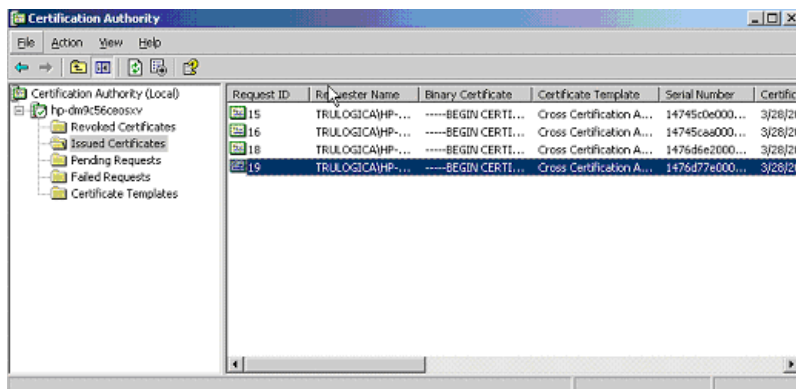
After installing the connector, see [Installing the Connector on page 7](#) for information about registering and configuring the connector in Select Identity.

Using Secure LDAP

You must use secure LDAP (LDAPS) to connect to Windows Active Directory for user password changes. Without this, the Active Directory LDAP connector cannot update passwords in Active Directory. Also, for Active Directory on Windows 2003, you must use LDAPS for all tasks.

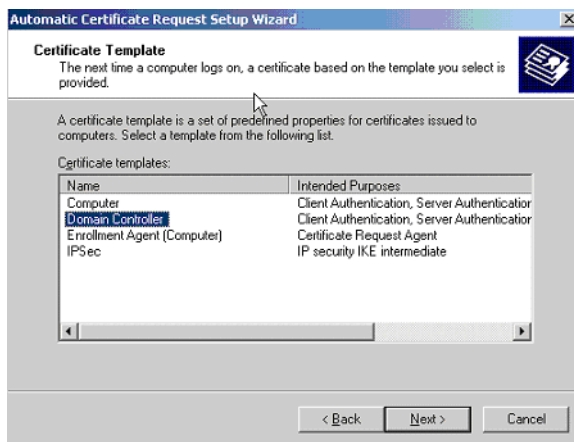
Complete the following steps to enable secure communication (LDAPS) on the Active Directory system:

- 1 Install the Certificate Services Component from the Windows CD.
- 2 Configure HTTPS on the system.
- 3 Create a Certificate Authority (from Administrative Tools → Certification Authority), which also creates a root certificate. The following shows the certificate after it is created on Windows 2003:

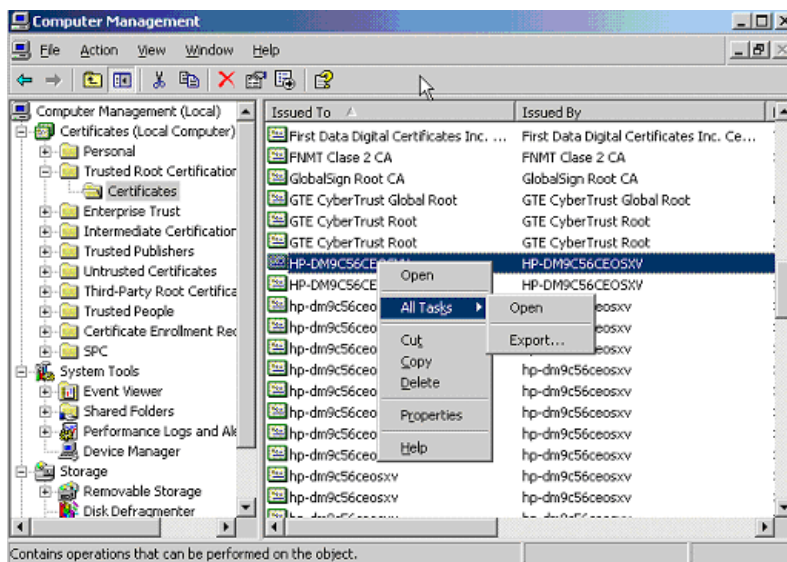


- 4 Create an Automatic Certificate Request (from Administrative Tools → Domain Controller Security Policy → Public Key Policies).

When prompted, select **Domain Controller**, as shown here:



- 5 After the new entries are displayed in Administrative Tools → Certification Authority → Issued Certificates, open the certificate (using the snap-in from mmc), which is located under Trusted Root Certification Authorities → Certificates and has the same name as the CA.



- 6 Export the certificate and specify a file name with the extension **.cer**.
- 7 Download the certificate to the Select Identity server from the Active Directory server by loading the following URL in a browser on the Select Identity server:

http://AD_host/certsrv

Specify the login credentials for the Active Directory server when prompted. Be sure to download the certificate to the %JAVA_HOME%\jre\lib\security directory.

You can also copy the certificate to the Select Identity server.

- 8 From the command line, change directories to the %JAVA_HOME%\jre\bin directory and verify the certificate by printing it using the following command:

keytool -printcert -v -file filename.cer

It should display similar to this:

```
C:\>cd %java_home%\jre\lib\security
C:\%java_home%\jre\lib\security>keytool -printcert -v -file AD_03_28_1.cer
Owner: CN=HP-DM9C56CEOSXU, DC=trulogica, DC=local
Issuer: CN=HP-DM9C56CEOSXU, DC=trulogica, DC=local
Serial number: 7f08ce59f430a6884a09f8ad7aaabcbf
Valid from: Fri Dec 10 14:13:35 CST 2004 until: Thu Dec 10 14:17:47 CST 2009
Certificate fingerprints:
    MD5: 5B:BB:F6:A7:ED:4D:43:52:21:67:06:13:02:96:6A:98
    SHA1: 7B:97:6C:5F:81:53:2D:FF:DB:3F:89:67:6B:83:D8:9B:C3:48:E8:6E
```

- 9 Install the certificate on the Select Identity server, as follows:
 - a Import the certificate into the cacerts keystore using this keytool command:


```
keytool -import -v -trustcacerts -alias alias -file filename.cer -keystore cacerts
```
 - b When challenged, enter the keystore password.
 - c Specify **yes** when prompted to trust the certificate.
 - d Ensure that the certificate is imported by listing it:


```
keytool -list -alias CA123 -keystore file_name
```
 - e Copy the keystore file to the %JAVA_HOME%\jre\lib\security directory, which may overwrite an existing file.
 - f Restart the application server.

- 10 To verify that the Select Identity server can connect to the Active Directory server using a secure connection (LDAPS), specify **ldaps://AD_host:636** for the Access URL when you create a resource for the connector. See [Step 3 on page 22](#) for details.

Contact your systems administrator for details or help with the configuration and procedure.

Understanding the Mapping File

The Active Directory LDAP connector provides the `activedir.xml` mapping file. This file was created in XML, according to SPML standards, and it is bundled in the `schema.jar` file. The `activedir.xml` file contains the attributes required by the resource application. It maps user account additions and modifications from Select Identity to Active Directory LDAP. When you deploy a resource using the Select Identity Resources pages, you can review this file.

You can create attributes that are specific to Select Identity using the Attributes page in the Select Identity client. These attributes can be used to associate Select Identity user accounts with system resources by editing the connector mapping file described in this chapter. This process becomes necessary because, for example, a single attribute “username” can have a different name on different resources, such as “login” for UNIX, “UID” for a database, and “userID” on a Windows server.

This file does not need to be edited unless you want to map additional attributes to your resource. If attributes and values are not defined in this mapping file, they cannot be saved to the resource through Select Identity.

General Information

The following operations can be performed in the mapping file:

- Add a new attribute mapping
- Delete an existing attribute mapping
- Modify attribute mappings

Here is an explanation of the elements in the XML mapping files provided by the Active Directory LDAP connector:

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

Provides standard elements for header information.

- **<objectClassDefinition>**

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

- **<properties>**

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

- Create (CREATE)
- Read (READ)
- Update (UPDATE)
- Delete (DELETE)
- Enable (ENABLE)
- Disable (DISABLE)
- Reset password (RESET_PASSWORD)
- Expire password (EXPIRE_PASSWORD)
- Change password (CHANGE_PASSWORD)

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

- true — the operation is supported by the connector
- false — the operation is not supported by the connector and will throw `PermissionException`
- bypass — the operation is not supported by the connector but will not throw any exception; the operation is simply bypassed

Here is an example:

```
<objectClassDefinition name="User" description="Active
Directory User">
  <properties>
    <attr name="CREATE">
      <value>true</value>
    </attr>
    <attr name="READ">
      <value>true</value>
    </attr>
```

- **<memberAttributes>**

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

Each <attributeDefinitionReference> element contains the following attributes:

- Name — the name of the reference.
- Required— if this attribute is required in the provisioning (set to true or false).
- concero:tafield — the name of the Select Identity resource attribute.
- concero:resfield — the name of the physical resource attribute from the resource schema. If the resource does not support an explicit schema (such as UNIX), this can be a tag field that indicates a resource attribute mapping.

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

Here is an example:

```
<memberAttributes>
  <attributeDefinitionReference name="User Name"
    required="true" concerto:tafield="[User Name]"
    concerto:resfield="cn" concerto:isKey="true"
    concerto:init="true" />
```

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

- The connector attribute names are specified in square braces, like this: `[xyz]`. The value of attribute `xyz` is taken from the `UserModel` during provisioning.
- Composite attributes can be specified in the Active Directory LDAP connector mapping file. To do this, specify `[attr1] xxxx [attr2]` as the connector attribute. This specifies that the value of the `attr1` and `attr2` attributes should be combined with the string `xxxx` to form a mapping for the specified resource field. Active Directory LDAP connector has code to handle these composite mappings.

- **<attributeDefinition>**

Defines the properties of each object's attribute. For example, the attribute definition for the `HomeDir` attribute defines that it must be between zero and 100 characters in length and can contain the following letters, numbers, and characters: `a-z`, `A-Z`, `0-9`, `@`, `+`, and a space.

Here is an excerpt from the `ActiveDir.xml` file:

```
<attributeDefinition name="HomeDir" description="User Home
directory" type="xsd:string" >
```

```

<properties>
  <attr name="minLength">
    <value>0</value>
  </attr>
  <attr name="maxLength">
    <value>128</value>
  </attr>
  <attr name="pattern">
    <value><![CDATA[[a-zA-Z0-9@+]]> </value>
  </attr>
</properties>
</attributeDefinition>

```

- **<concerro:entitlementMappingDefinition>**
Defines how entitlements are mapped to users.
- **<concerro:objectStatus>**
Defines how to assign status to a user.
- **<concerro:relationshipDefinition>**
Defines how to create relationships between users.

Active Directory LDAP Mapping Information

The following are the attribute mappings supported for Active Directory LDAP. These are listed in the `activedir.xml` mapping file. You can add, modify, or delete attributes once you are familiar with the contents of this file. You can edit the Select Identity resource attributes; they reflect the identity information as seen in Select Identity. The physical resource attributes are literal attributes of user accounts on Active Directory LDAP. These attributes cannot be changed.

Select Identity Resource Attribute	Active Directory LDAP Attribute	Description
User Name	cn	Key field on the resource
Password	UnicodePwd	
First Name	givenname	

Select Identity Resource Attribute	Active Directory LDAP Attribute	Description
Last Name	sn	
User Name	samaccountname	
FirstName + LastName	displayname	
Directory	homeDirectory	
Last Name + First Name	userPrincipalName	
Address 1	streetAddress	
Address 2	postOfficeBox	
City	l	
State	st	
Zip	postalCode	
Title	title	
Business Phone	telephoneNumber	
Home Phone	homePhone	
Profile Path	profilePath	
Script Path	scriptPath	
Description	description	
Disable function	userAccountControl=514	Disables a user
Enable function	userAccountControl=512	Enables a user

Also, if you are using LDAP, not LDAPS, edit the following attribute in the mapping file:

```
<attributeDefinitionReference name="userAccountControl"
  required="true" concero:tafield="546"...
```

to assign 512 to the tafield attribute:

```
<attributeDefinitionReference name="userAccountControl"
  required="true" concero:tafield="512"...
```

This will create the account without a password, though the account will be disabled.

Configuring the Connector

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

- 1 Before deploying the connector in Select Identity, connect to LDAP using an LDAP browser or another utility. This will help ensure that the LDAP resource is available and the correct parameters are known before deploying the resource in Select Identity.
- 2 Register the connector with Select Identity by clicking the **Deploy New Connector** button on the Connectors home page. Complete this procedure as described in the “Connectors” chapter of the *HP OpenView Select Identity Administrator Guide*.

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

> [Home](#) > [Connectors](#) : LDAP

Connector Information	
* Connector Name:	LDAP
* Pool Name:	eis/LDAPv3

- 3 Deploy a resource that uses the newly created connector. On the Resources home page, click the **Deploy New Resource** button. When configuring the resource, refer to the following table for parameters specific to this connector:

Field Name	Sample Values	Description
Resource Name	ActiveDirectory	Name of the target resource.
Resource Type	AD LDAP	The connector that was deployed in Step 2 on page 21 .
Authoritative Source	No	Whether this resource is a system that is considered to be the authoritative source for user data in your environment. You must specify No because the connector cannot synchronize account data with the Select Identity server.
Associate to Group	Selected	Whether the system uses the concept of groups. For the AD LDAP connector, select this option.
Access URL	ldap://136.168.1.20:389 ldaps://192.168.1.19:636	URL access to the resource. If using secure LDAP (ldaps) for password changes, specify ldaps as the protocol and 636 as the port.
Suffix	dc=qa, dc=hp, dc=com	The domain(s) to which the users will be provisioned.
Login Name	cn=Administrator,cn=Users, dc=qa, dc=hp, dc=com	Login account with administrative privileges to add and delete users. This is required to log in to the resource.
Password	Password123	Password corresponding to the login account.

Field Name	Sample Values	Description
User Suffix*	cn=users	Suffix of user's distinguished name. This is the location in the tree where the users will be provisioned.
User Object Class	top, person, organizationalPerson, user	Object class for the users.
Group Suffix*	cn=users	Suffix part of group's distinguished name. This is the location in the tree where the user groups will be provisioned.
Group Object Class	top, group	Object class of user groups.
Mapping File	ActiveDir.xml	Location of the connector mapping file, which is used to map resource attributes to Select Identity attributes.

* This connector supports the addition of users to different OUs. To enable this, by specify the appropriate values for the User Suffix and Group Suffix while creating the resource.

Complete the steps in this procedure as described in the "Resources" chapter of the *HP OpenView Select Identity Administrator Guide*. After

you deploy the resource for the Active Directory LDAP connector, the Access Info page of the resource properties will look similar to this:

> [Home](#) > [Resources](#) > [View Resource : AD-LDAP](#)

Resource Access Information	
* Resource Name:	AD-LDAP
Access URL:	ldap://16.73.17.69:389
Suffix:	dc=qa,dc=trulogica,dc=com
Login Name:	cn=administrator,cn=users,dc=qa,dc=trulogica,dc=com
Password:	*****
* User Suffix:	cn=users
* User Object Class:	top,person,organizationalPerson,user
* Group Suffix:	cn=users
* Group Object Class:	top,groupofuniquenames
* Mapping File:	ActiveDir.xml

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

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

for the Active Directory LDAP connector, the View Attributes page for the resource will look similar to this:

(Resource Name=AD-LDAP)				
<< < Page <input type="text" value="1"/> of 1 > >>				Total Records:20
Name	Min Length	Max Length	Attribute Mapped To	Authoritative
Address 1	1	128		
Address 2	1	128		
AD-LDAP_ENTITLEMENTS	1	255	AD-LDAP_ENTITLEMENTS	Y
AD-LDAP_KEY	1	255	AD-LDAP_KEY	Y
Business Phone	1	20		
City	1	128		
Description	1	256		
Directory	0	128		
Email	1	256		
First Name	1	64	FirstName	N
Home Phone	1	20		
Last Name	1	64	LastName	N
Mobile Phone	1	20		
Password	1	64	Password	N
Profile Path	1	128		
Script Path	1	128		
State	1	128		
Title	1	50		
User Name	1	64	UserName	N
Zip	1	50		

- 5 Create a Service that will use the newly created resource. To do so, click the **Deploy New Service** button on the Services home page. Complete this procedure as described in “Services” of the *HP OpenView Select Identity Administrator Guide*. You will reference your new resource created in [Step 3](#) while creating this service.

If you wish, you can verify that users are provisioned by the connector. See [Test Commands on page 28](#).

Uninstalling the Connector

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

- All resource dependencies are removed.
- The connector is deleted using the Connectors pages on the Select Identity client.

On WebLogic

Perform the following to delete a connector:

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

On WebSphere

Complete the following steps to uninstall the connector on WebSphere:

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



Test Commands

This appendix contains commands that you can use to test whether a user was created or a password was changed by the connector.

Use the following command to verify that a password was set properly for the provisioned user:

```
net use \\IP_addr * /user:username
```

Here is an example:

```
net use \\16.73.17.69 * /user:aa25
```

After entering the password, one of the following messages displays:

- *Success:*
The command completed successfully.
- *Failure:*
System error 1326 has occurred.
- *Logon failure:*
Logon failure: unknown user name or bad password.
- *If a connection exists for the specified user (if net use was issued elsewhere):*
System error 1219 has occurred.

Multiple connections to a server or shared resource by the same user, using more than one user name, is not allowed. Disconnect all previous connections to the server or shared resource and try again.

To delete a connection, enter this command:

```
net use \\IP_Addr /delete
```