



cDir 2.5 Installation Guide

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About This Guide

Audience

This guide was written for a Microsoft Windows 2003/2008 server administrator with intermediate knowledge of the BlackBerry Enterprise Server environment.

Prerequisite Knowledge

LDAP (Lightweight Directory Access Protocol) is used by cDir to read directory information. This guide assumes a basic knowledge of LDAP and the applicable directory implementation of LDAP. For more information, please review the LDAP standards and documents links at the following URL:

<http://www.mozilla.org/directory/standards.html>

This guide assumes basic knowledge of Microsoft Windows 2003/2008 Server, Internet Information Server (IIS) and SQL Server.

This guide assumes intermediate knowledge of the BlackBerry Enterprise Server and Mobile Data Service (MDS).



Pre-Install Checklist

BlackBerry Enterprise Server

Requirements:	<ul style="list-style-type: none"><input type="checkbox"/> BlackBerry Enterprise Server v4.0 or higher<input type="checkbox"/> Mobile Data Service running ¹<input type="checkbox"/> BlackBerry Enterprise Server is configured as a push server ¹<input type="checkbox"/> Mobile Data Service configured to store push submissions in the management database ¹<input type="checkbox"/> Mobile Data Service is configured to send the email address and PIN number of a BlackBerry device with each HTTP request from the BlackBerry Browser ²<input type="checkbox"/> The server running the Mobile Data Service must be able to ping the web server hosting cDir by IP address and DNS name
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- Note(s):
1. Please see the BlackBerry Enterprise Server Administration Guide for instructions on how to start and configure the Mobile Data Service.
 2. Please see Appendix A for information on how to configure Mobile Data Service to send the email address and PIN number.

BlackBerry Enterprise Server Database Engine¹

Requirements:	<ul style="list-style-type: none"><input type="checkbox"/> Enabled for mixed-mode authentication from the web server hosting cDir<input type="checkbox"/> Server admin account with password configured
---------------	--

- Note(s):
1. Please see Appendix B for information on how to configure the database engine

Web Server hosting cDir

Requirements:	<ul style="list-style-type: none"><input type="checkbox"/> Microsoft Windows 2003/2008 Server Standard or Web Edition, Windows 2008 Server Standard or Web Edition.<input type="checkbox"/> Member server of an Active Directory domain ¹<input type="checkbox"/> Microsoft .NET Framework Version 3.5 SP1 installed<input type="checkbox"/> Internet Information Server (IIS) installed<input type="checkbox"/> IIS Web Service Extension ASP.Net V2.0.xxxx allowed<input type="checkbox"/> The web server hosting cDir must be able to ping the BlackBerry Management Database server by IP address and DNS name.<input type="checkbox"/> The web server hosting cDir must be able to ping the BlackBerry Enterprise Server by IP address and DNS name
---------------	---

- Note(s):
1. Required if Active Directory will be used to authenticate users to the cDir Management Console.



Installation Worksheet

Please fill in all settings prior to beginning the installation.

- Section numbers will be referenced in the installation steps.
- Default settings are shown in brackets.
- Passwords should be recorded in accordance with an enterprise password policy

Section 1: BlackBerry Mobile Data Service

1A	IP Address:	
1B	DNS Name:	

Section 2: cDir Web Site

2A	Virtual Directory Name (cDir):	
2B	Application Pool ¹ :	
2C	Host name:	

- Note(s):
1. The Application Pool should have the following properties:
 - a. .Net Framework Version: v2.0
 - b. Managed Pipeline Mode: Classic
 - c. Identity: Network Service

Section 3: BlackBerry Management Database Server ¹

3A	IP Address:	
3B	DNS Name:	
3C	Database Name (BESMgmt) ² :	
3D	Server Admin Account ³ :	
3E	Server Admin Password:	

- Note(s):
1. If using MSDE locally, the database server is the same as the BlackBerry Enterprise Server.
 2. The default database name is BESMgmt.
 3. The default server admin account is 'sa'.

Section 4: cDir Registration Information

4A	User Name:	
4B	Organization:	
4C	Phone Number:	
4D	Email Address:	
4E	License Key:	

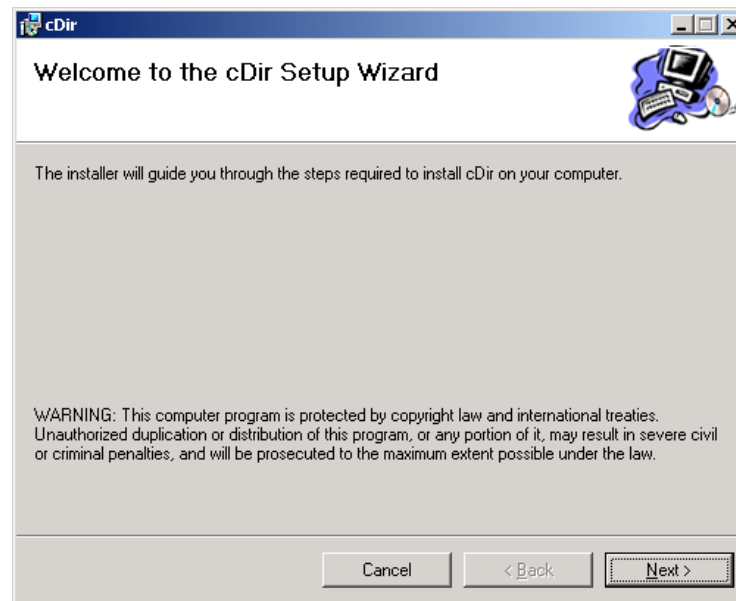


Section 5: cDir SQL Security

5A	User Name:	
5B	Password:	

Installation

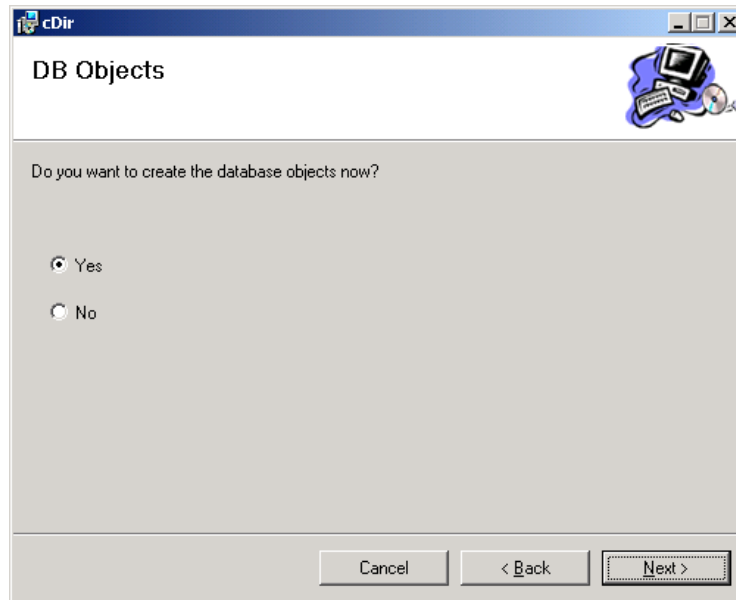
1. Complete the Pre-Install Checklist.
2. Complete sections 1 through 4 of the Installation Worksheet.
3. Login to the web server with a local administrator account.
4. Double-click on setup.exe from the cDir installation directory.



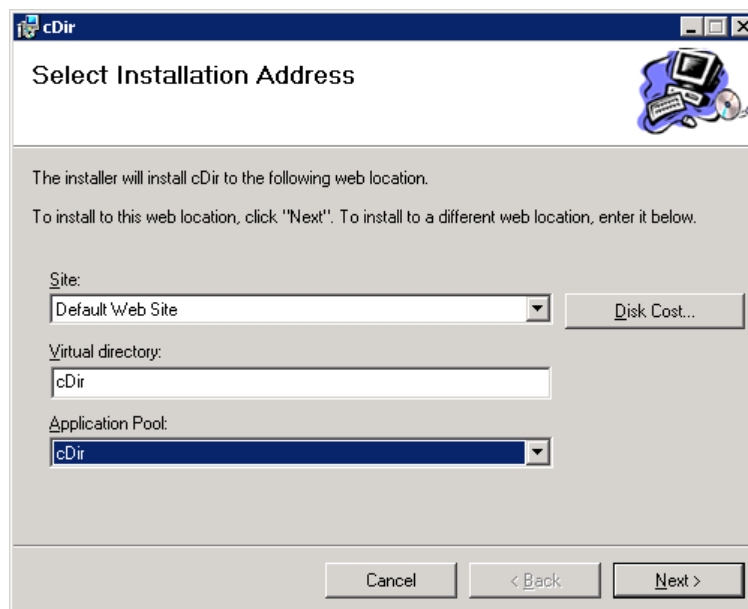
5. Click the Next button.



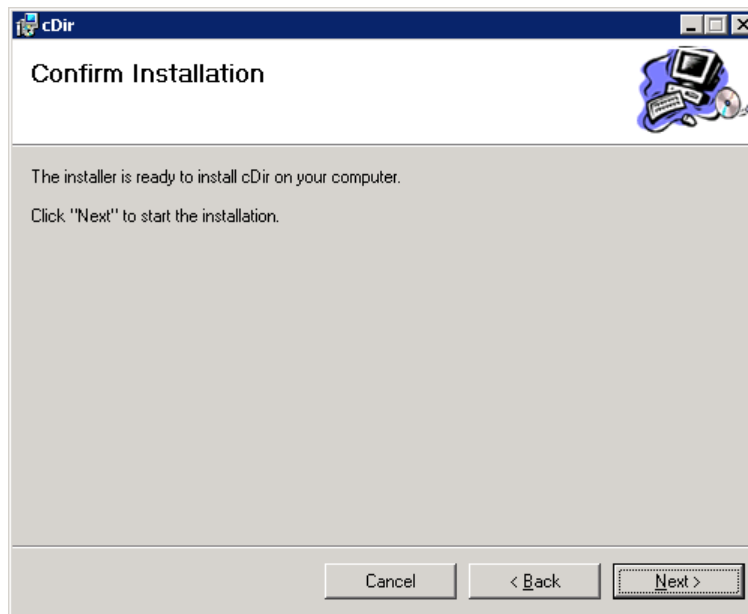
6. Review the End-User License Agreement (“EULA”) license agreement.
7. If acceptable, click on I Agree, and then click the Next button.



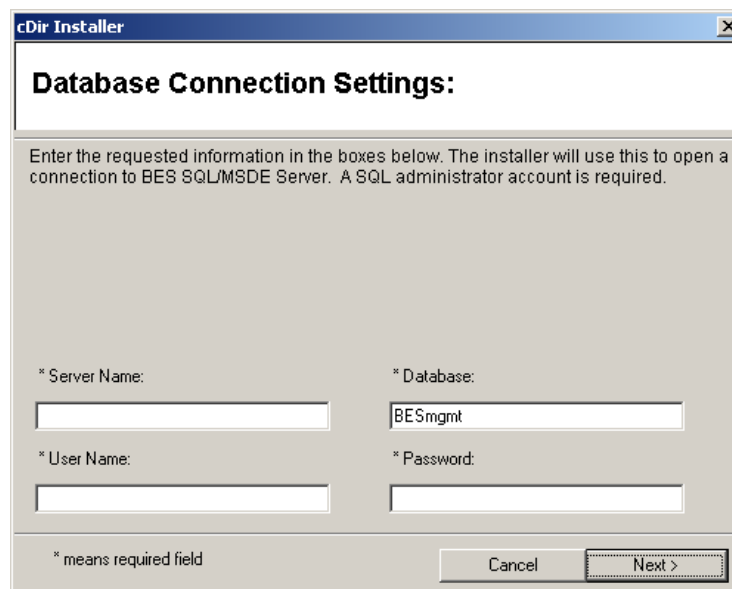
8. To create the cDir database objects, click Yes, otherwise, click No. Normally you would choose Yes for a new installation.
9. Click the Next button.



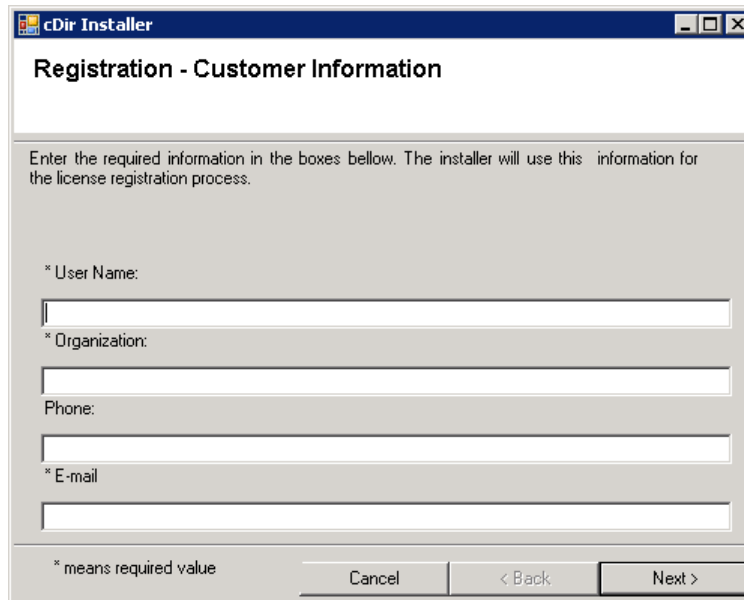
10. Fill in the virtual directory name (Section 2A) that will be created on the web server for cDir.
11. Choose the Application Pool (Section 2B) for the cDir application.
12. Click the Next button.



13. Click the Next button to start installing the cDir files.
14. If you chose to install the database objects in step 7, continue to step 14, otherwise skip to step 19.

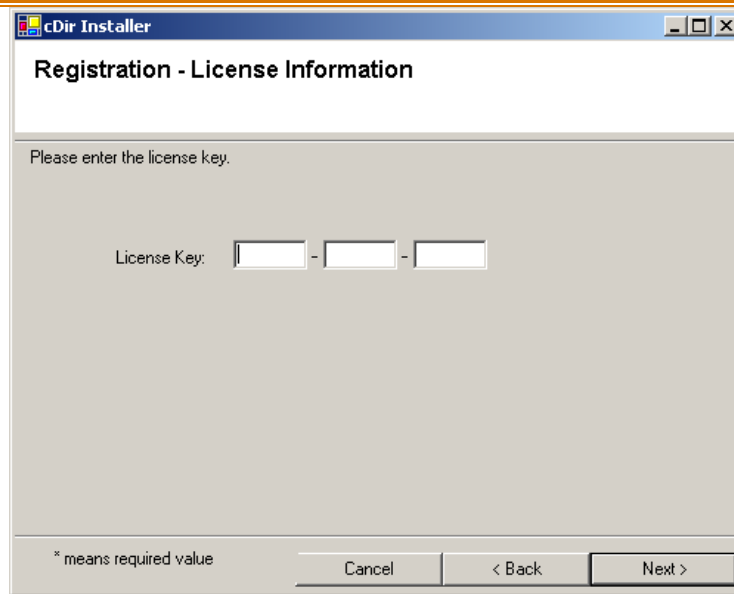


15. Fill in database server DNS name (Section 3B).
16. Fill in BlackBerry management database name (Section 3C).
17. Fill in the database server administrator user name (Section 3D).
18. Fill in the database server administrator user password (Section 3E).
19. Click the Next button.



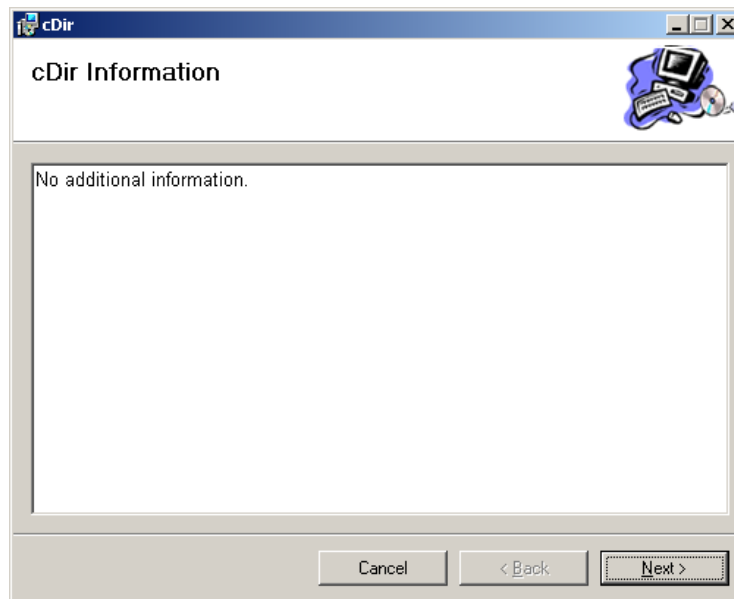
The screenshot shows a Windows-style dialog box titled "cDir Installer" with a sub-title "Registration - Customer Information". Below the title bar, there is a text area with the instruction: "Enter the required information in the boxes below. The installer will use this information for the license registration process." Below this instruction are four text input fields, each with an asterisk indicating it is required: "* User Name:", "* Organization:", "Phone:", and "* E-mail". At the bottom left of the dialog, there is a note: "* means required value". At the bottom right, there are three buttons: "Cancel", "< Back", and "Next >".

20. Fill in the user name (Section 4A).
21. Fill in the organization (Section 4B).
22. Fill in the phone number (Section 4C).
23. Fill in the email address (Section 4D).
24. Click the Next button.



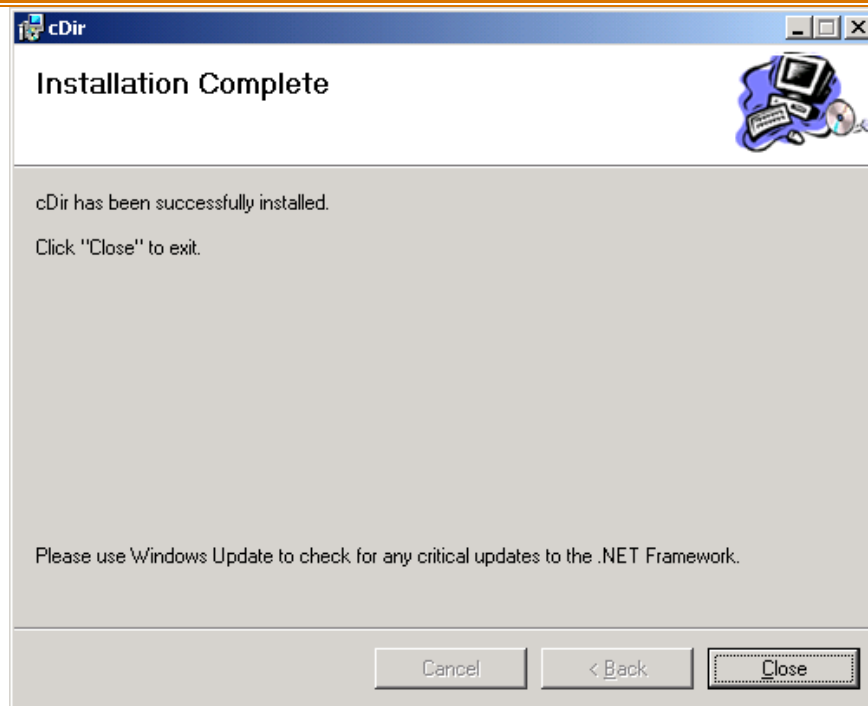
25. Fill in the license key (Section 4E). The License Key fields are case sensitive.

26. Click the Next button.



27. Review any additional information.

28. Click the Next Button.



29. The cDir installation is complete. Click the Close button.

cDir Management Console Security

The cDir installer creates a local Windows group on the web server, named cDir Managers. Only members of the cDir Managers group can be authenticated to the cDir Management Console.

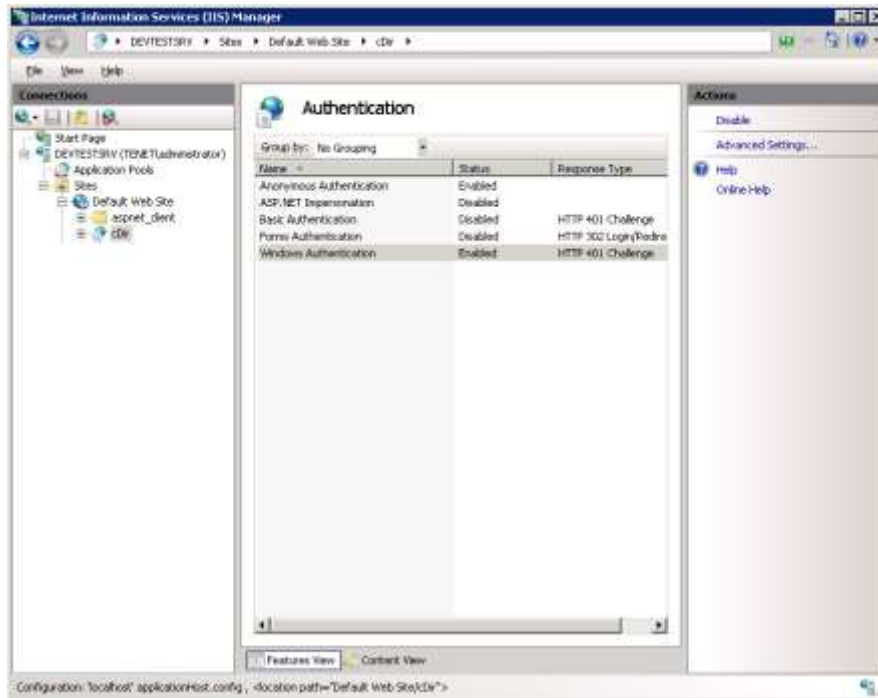
The user account that completed the installation of cDir is automatically added to the cDir Managers group. Additional users can be added if required.

Enable Integrated Windows Authentication at IIS level on IIS7

1. Launch Internet Information Services (IIS) Manager (Start...All Programs...Administrative Tools)
2. Expand <web server name>
3. Expand Sites
4. Expand Default Web Site
5. Click on cDir
6. In the middle pane, double-click Authentication



7. Right click Windows Authentication and click Enable

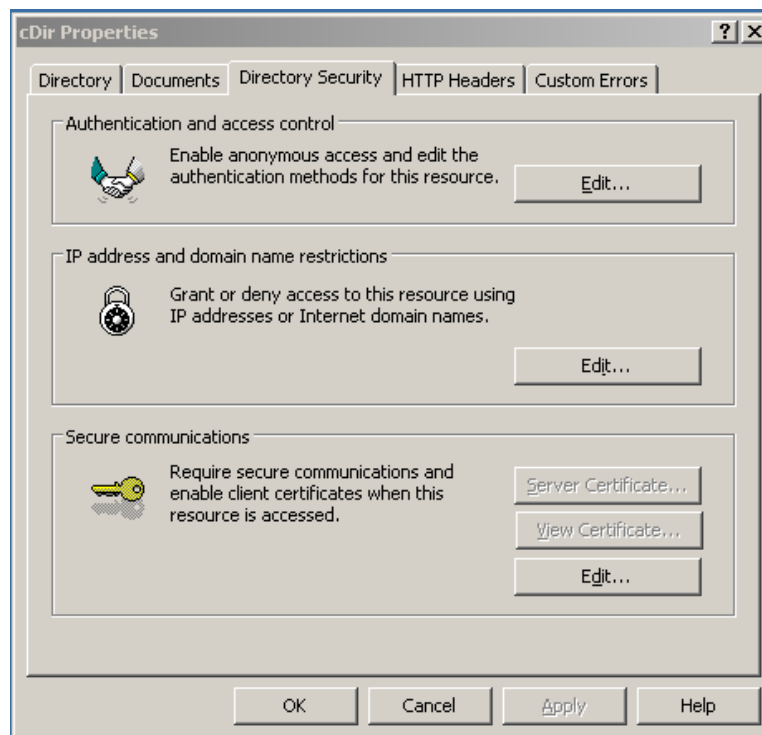


8. Close Internet Information Services (IIS) Manager

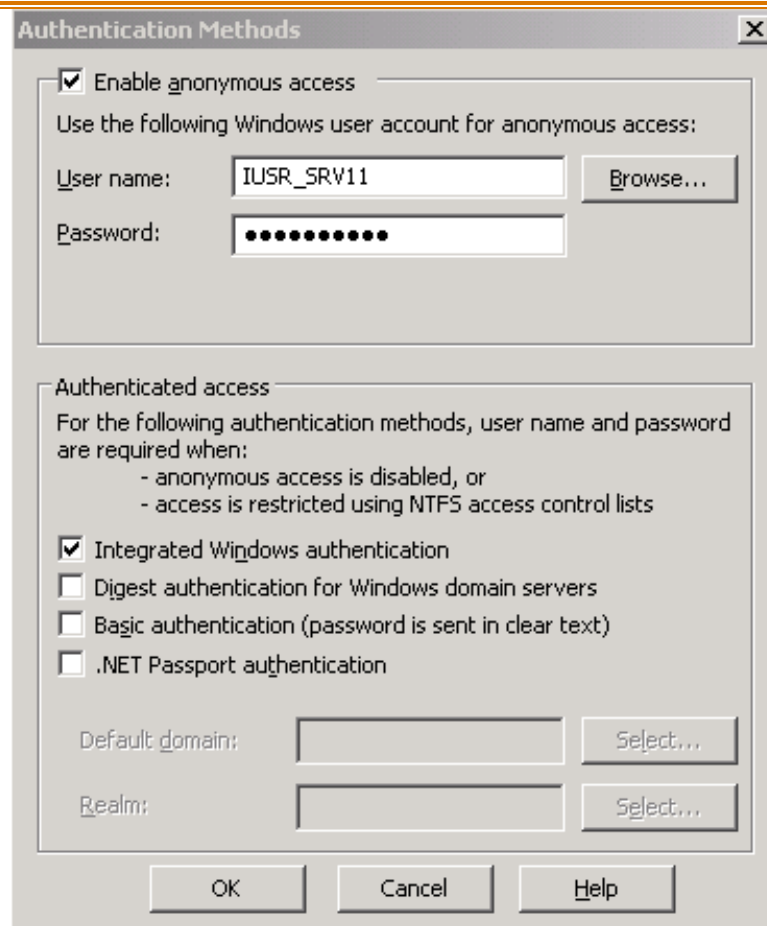
Enable Integrated Windows Authentication at IIS level on IIS6

The cDir virtual server must be configured to use Integrated Windows Authentication:

1. Open Internet Information Services (IIS) Manager (Start...Programs...Administrative Tools)
2. Double-click on <web server name>
3. Double-click on Web Sites
4. Double-click on Default Web Site
5. Right-click on cDir, then click Properties
6. Click on the Directory Security tab



7. In the Authentication and Access control section, click on the Edit button to open the Authentication Methods dialog box

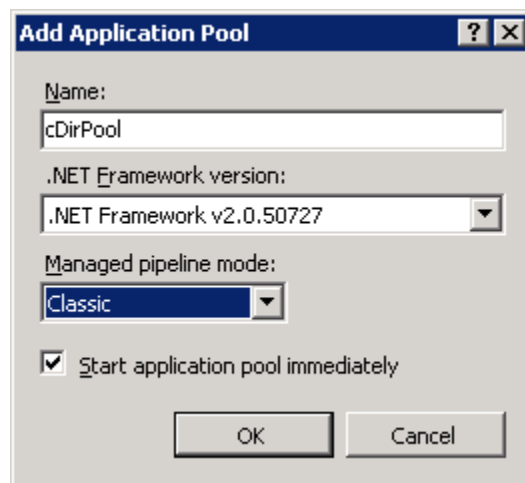


8. In the Authenticated Access section, click on the Integrated Windows Authentication checkbox
9. Click OK
10. Click OK
11. Close Internet Information Services (IIS) Manager

Configure cDir Management Console to use the correct version of ASP.Net version on IIS7

Define an application pool

1. Open IIS console manager
2. Expand your IIS server
3. Right Click on Application Pools, and select Add Application Pool

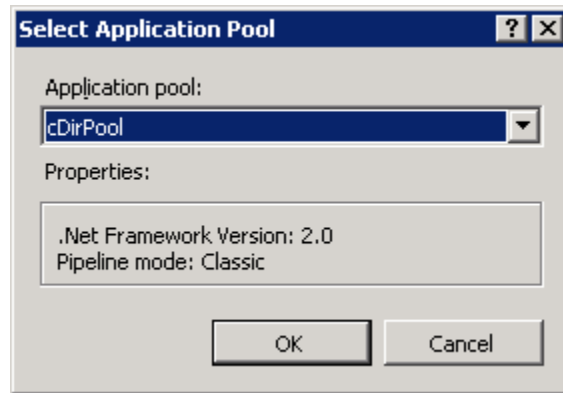


4. Type cDirPool for the new pool name
5. Select .Net Framework v2.0.xxxxx
6. Select Classic on Managed pipeline mode
7. Click OK

Assign cDir to the application pool

1. Go to Sites Folder and expand it
2. Expand the website where cDir is defined
3. Right Click on cDir site
4. Select Manage Application >> Advanced Settings,
5. Click on the Application Pool field
6. Click the "..." button

7. On the pop-up window, select the cDirPool created before or the desired Application Pool.

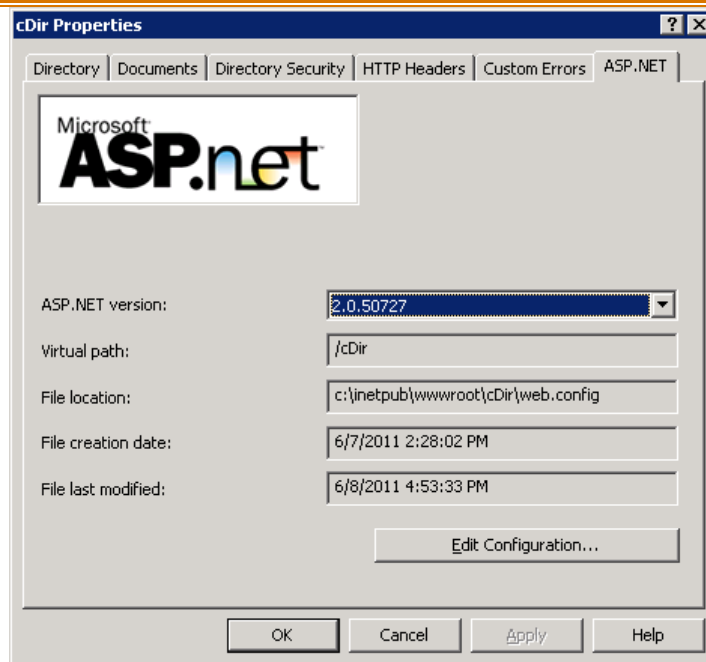


8. Click the OK to close all the open windows.

Configure cDir Management Console to use the correct ASP.NET version on IIS6

To set the appropriate ASP.NET version:

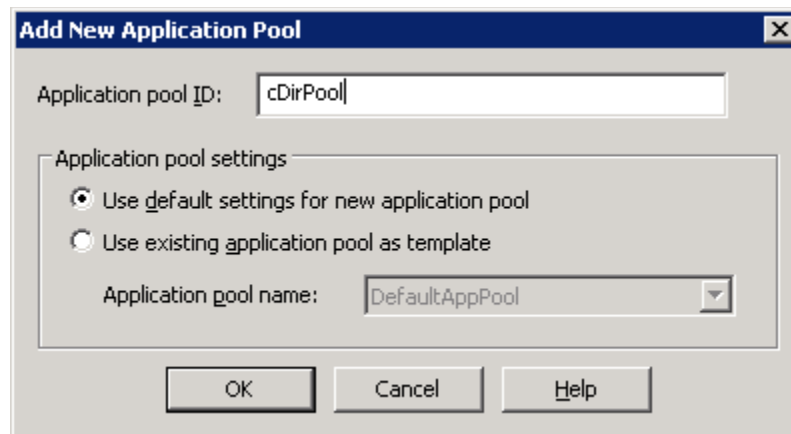
1. Open Internet Information Services (IIS) Manager (Start...Programs...Administrative Tools)
2. Double-click on <web server name>
3. Double-click on Web Sites
4. Double-click on Default Web Site
5. Right-click on cDir, then click Properties
6. Click on the ASP.NET tab



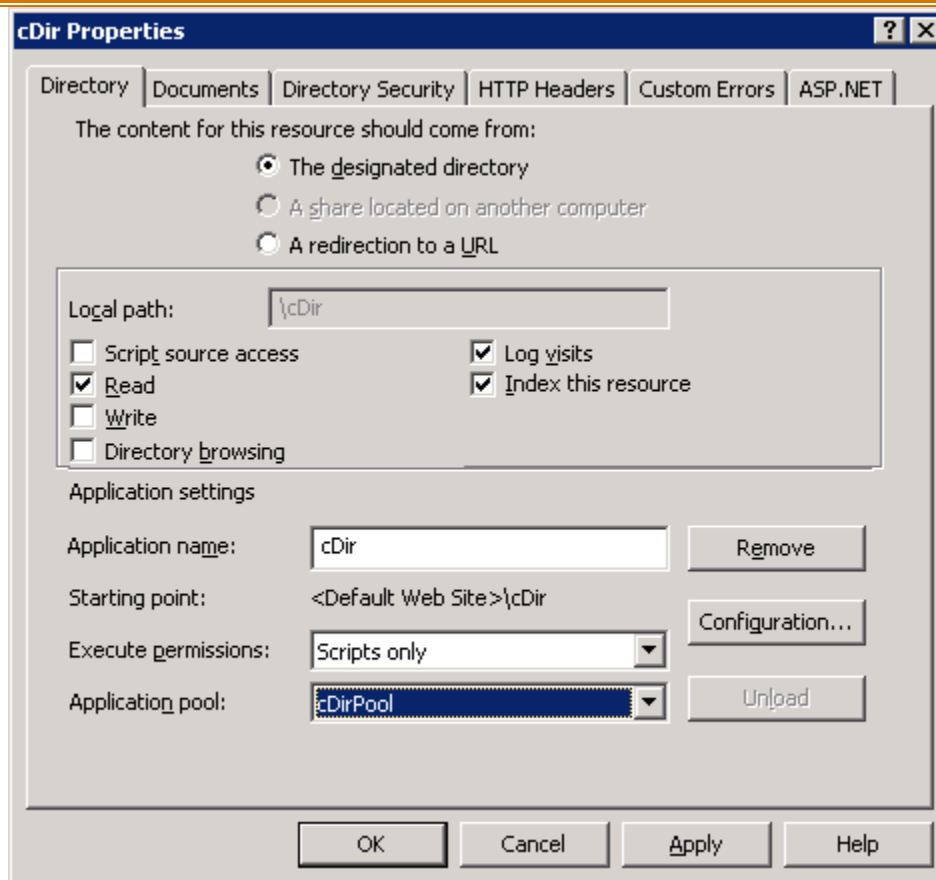
7. Set ASP.NET version to 2.0.xxxxx
8. Click Apply
9. Click OK
10. Close Internet Information Services (IIS) Manager

Configure cDir Management Console to use the correct Application pool on IIS6

1. Open IIS console manager
2. Expand your IIS server
3. Right Click on Application Pools, and select New → Application Pool

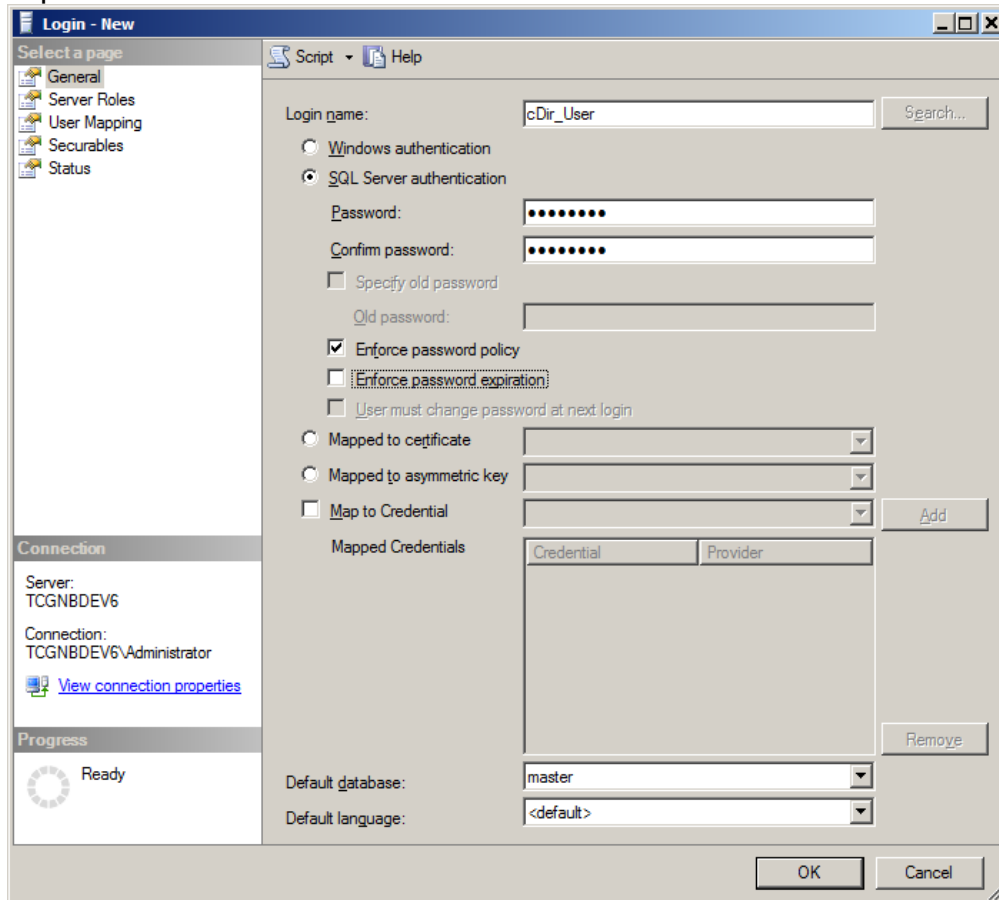


4. Type cDirPool for the new pool name
5. Click OK
6. Go to WebSites Folder and expand it
7. Expand the website where cDir is defined
8. Right Click on cDir site
9. On the directory tab's Field Application Pool, Select cDirPool created before



10. Click apply and OK to close

7. Fill in the Login Name field with the name of the new SQL login i.e. cDir_User.
8. Select SQL Server authentication
9. Fill in a password and then confirm it again on the next field.
10. Uncheck user must change password at next login and enforce password expiration.



The screenshot shows the 'Login - New' dialog box with the following configuration:

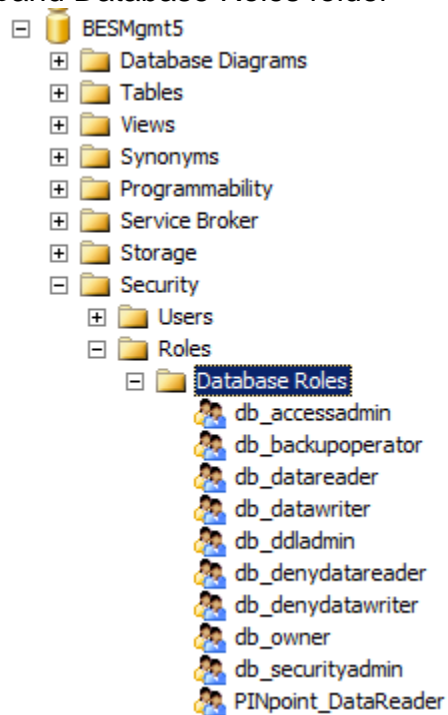
- Login name: cDir_User
- Authentication: SQL Server authentication
- Password: [masked]
- Confirm password: [masked]
- Specify old password
- Old password: [empty]
- Enforce password policy
- Enforce password expiration
- User must change password at next login
- Mapped to certificate: [empty]
- Mapped to asymmetric key: [empty]
- Map to Credential
- Mapped Credentials table: [empty]
- Default database: master
- Default language: <default>

11. Select the User Mapping Page
12. Click the checkbox in the Map column next to the BESMgmt database
13. Click OK to save and close

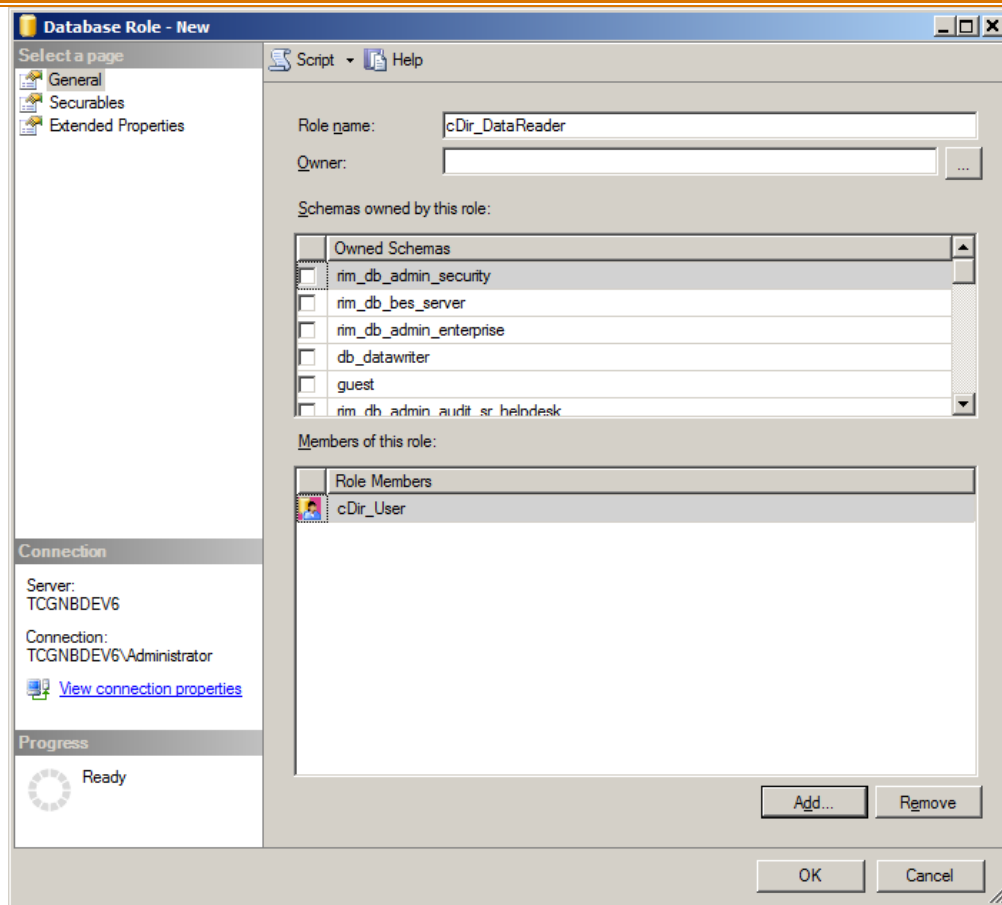
NOTE: Record the login name and password in section 5 of the Installation Worksheet.

To create a SQL Role for cDir

1. Open SQL Server Management Studio
2. Expand the Servers group
3. Expand the Databases group
4. Expand BESMgmt (your BES database name) Database
5. Expand Security folder
6. Expand Roles folder
7. Expand Database Roles folder



8. Right-click on Database Roles
9. Select New Database Role
10. Fill in the Role name field as cDir_DataReader
11. Add cDir_User as a member to this role

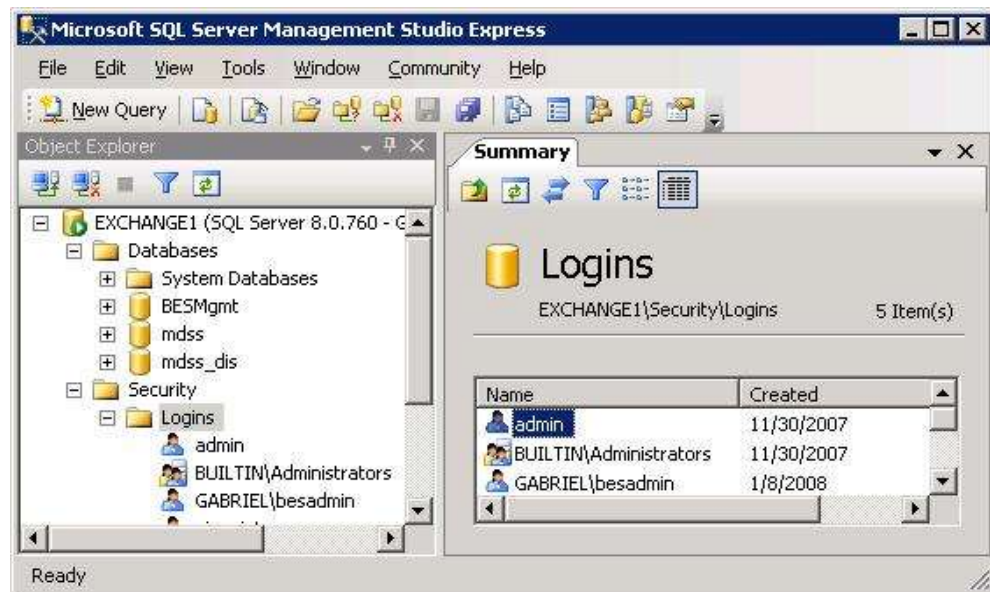


12. Click OK to confirm and close the window

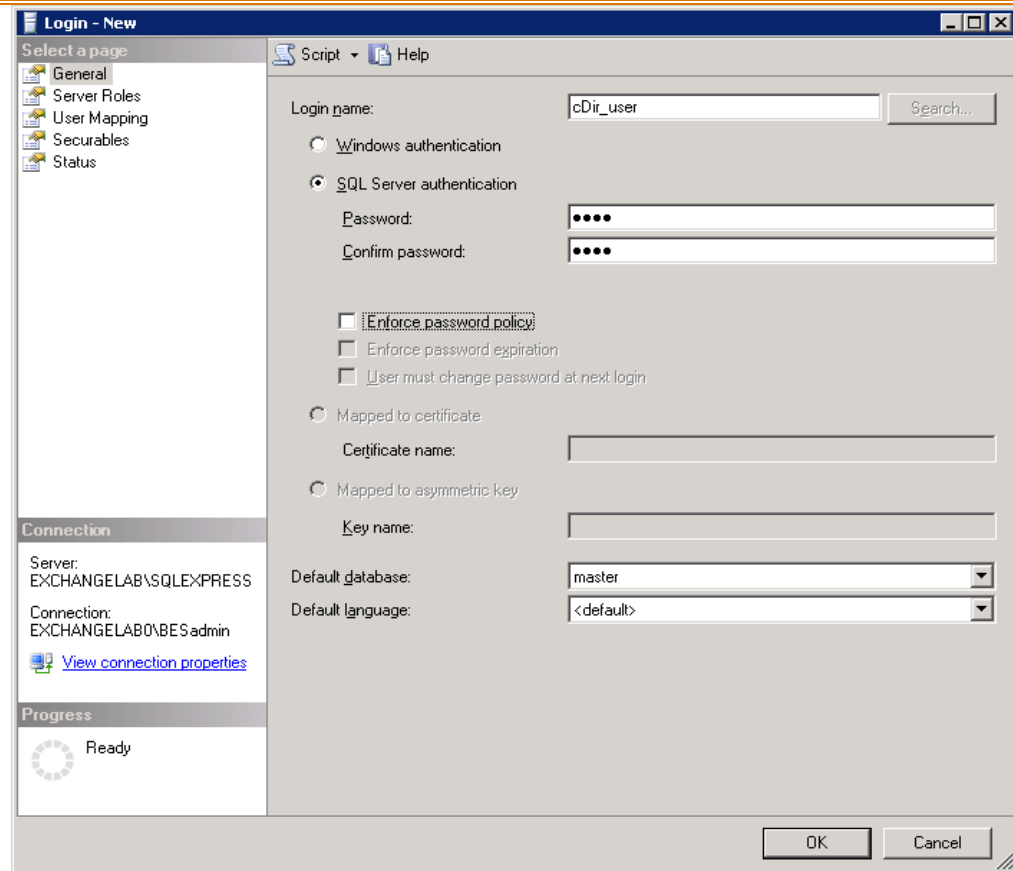
BlackBerry Enterprise Server using SQL Server 2005

To create a SQL login for cDir:

1. Open SQL Server Management Studio
2. Expand the Server group
3. Expand the Security folder
4. Expand the Logins folder



5. Right-click on Logins and select New Login

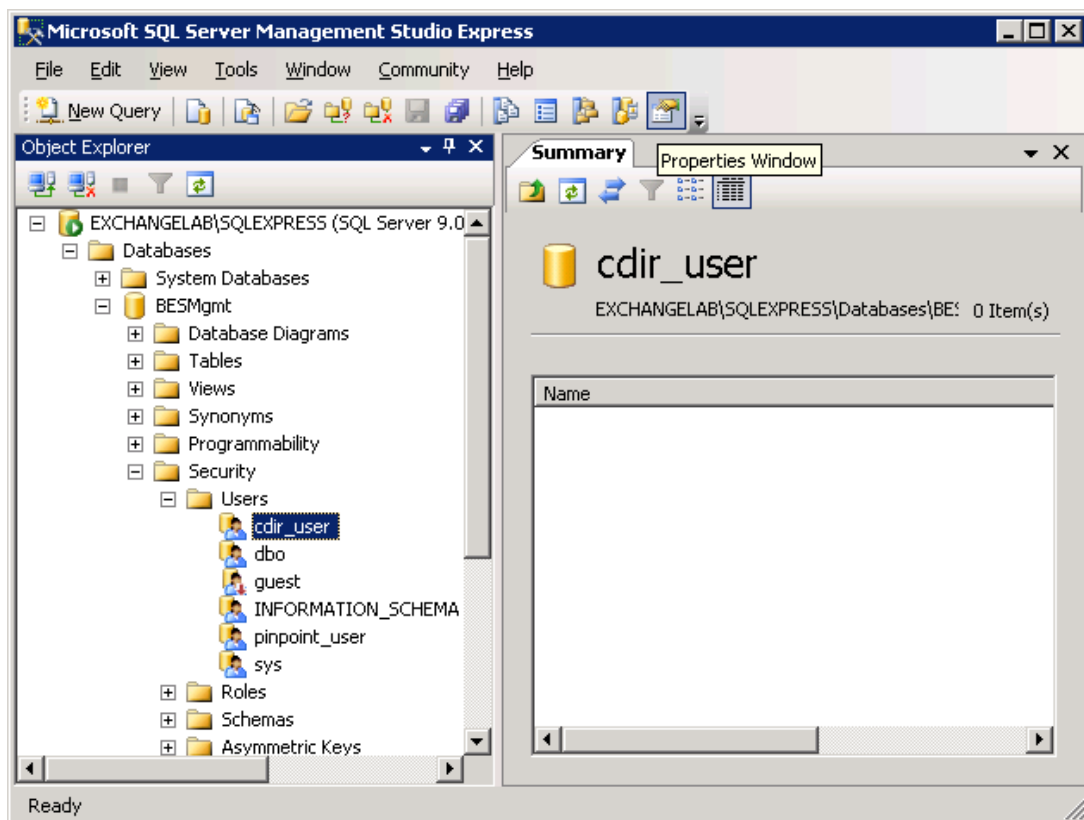


6. Select the General Page
7. Fill in the Login Name field with the name of the new SQL login i.e. cDir_User.
7. Select SQL Server authentication
8. Fill in a password and then confirm it again on the next field
9. Make sure the following fields are un-checked
 - Enforce password expiration
 - User must change password at next login
10. Select the User Mapping Page
11. Click the checkbox in the Map column next to the BESMgmt database
12. Click OK to save and close

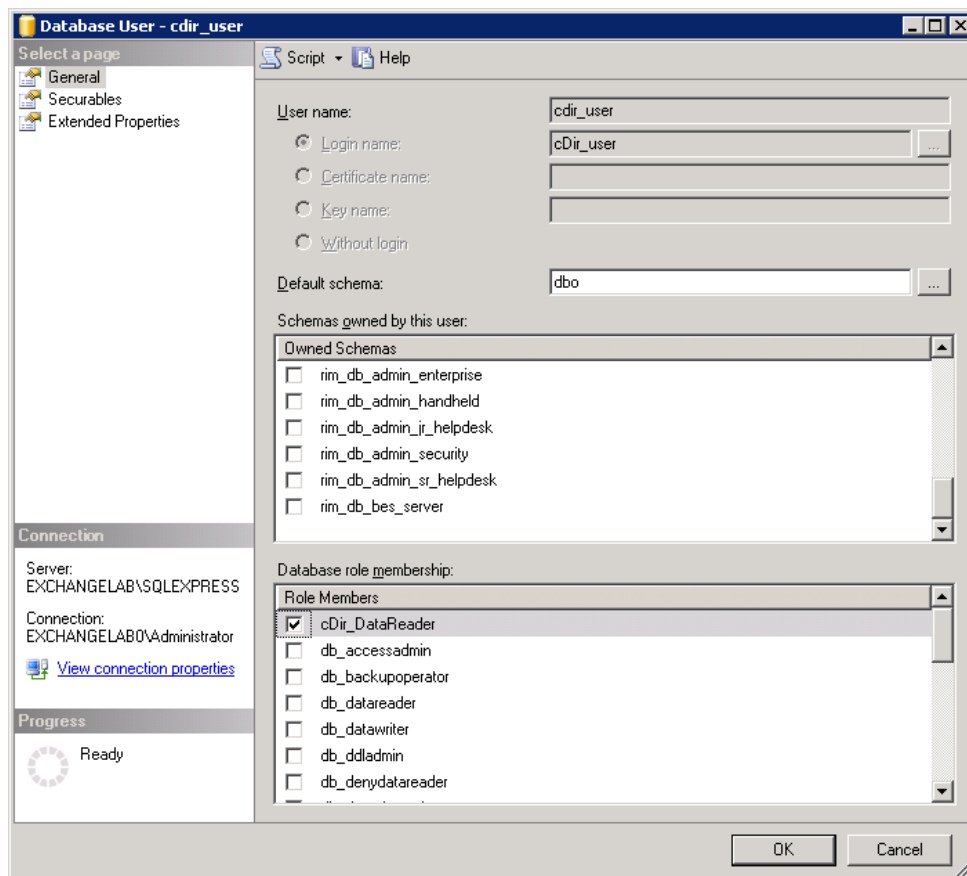
NOTE: Record the login name and password in section 5 of the Installation Worksheet.

Edit the SQL user and assign it to a Role

1. Open SQL Server Management Studio
2. Expand the Servers group
3. Expand the Databases group
4. Expand BESMgmt (your BES database name) Database
5. Expand Security folder
6. Expand Users folder
7. Right Click over the cDir User name already created and select Properties



8. In Role Members section check cDir_DataReader checkbox
9. Click OK button to confirm



Initial cDir Configuration

The following steps should be followed to initially configure cDir after a successful installation.

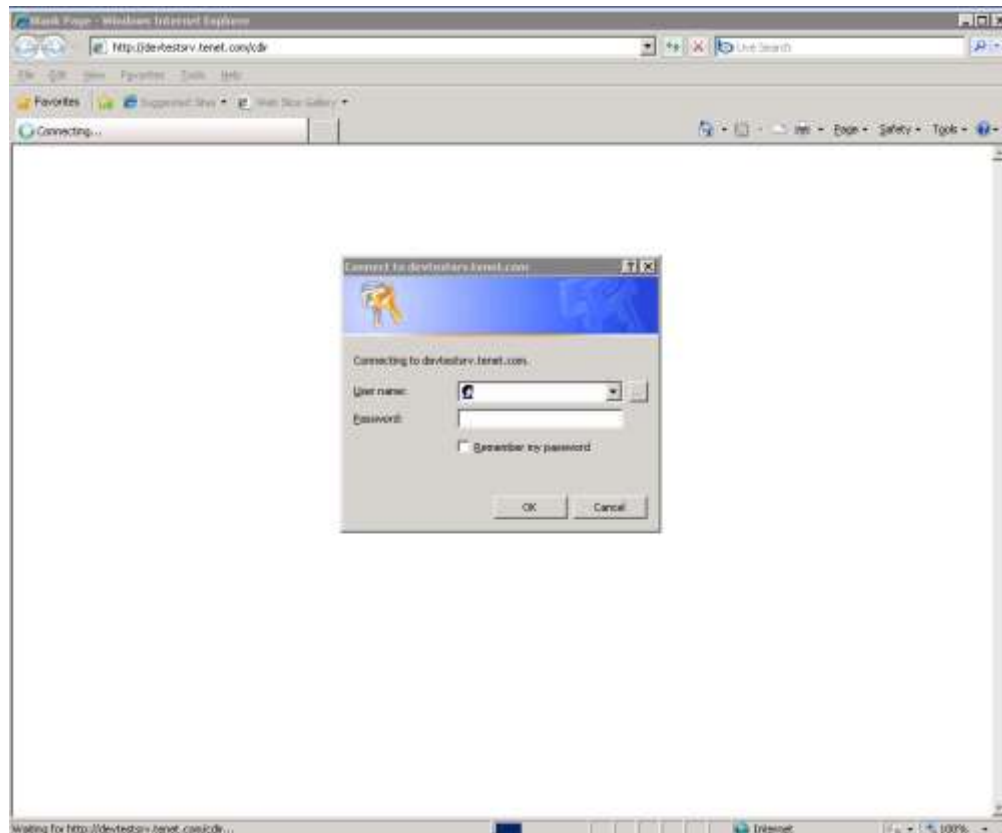
Initial Configuration Steps:	<ol style="list-style-type: none">1. Login to the cDir Management Console2. Define a primary directory3. Import directory templates4. Assign user access rights5. Define BlackBerry Settings6. Define Object and Attributes
------------------------------	--

A LDAP browser such as Softerra LDAP Administrator (<http://www.ldapadministrator.com>) can be useful to have an overall LDAP view of directories while configuring cDir.

Login to the cDir Management Console

1. Launch the cDir Management Console from:

`http://<web_server_IP_or_DNS_name>/cDir`



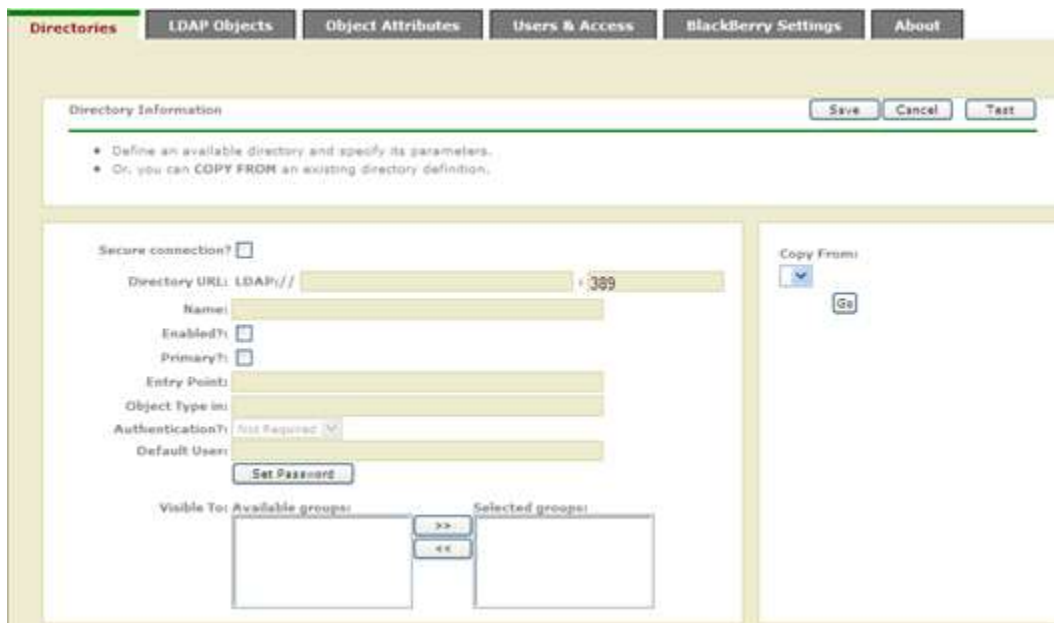
2. When prompted, login using an account that is a member of the cDir Managers group.

Define a Primary Directory

The primary directory is used to provide authorization to users and devices accessing cDir. The primary directory can also be queried like all other defined directories. The email address of the user assigned to a BlackBerry device is used as the primary key for all LDAP queries for authorization.



1. On the Directories page, click on the Add New button.



2. On the add new directory page:
 - a. Fill in the Directory URL field with the fully-qualified domain name of the primary directory server. For example:

Directory URL: LDAP:// ldap1.tenet.com : 389

- b. Fill in the Name field with a descriptive name for the directory.

- c. Click on the Enabled? check box.
- d. Click on the Primary? check box.
- e. Fill in the Entry Point field with the base/entry point for LDAP queries.

In a Microsoft Active Directory environment with a domain named acme.com, the entry point would most likely be `dc=acme,dc=com` (note the comma in between the domain parts).

In a Novell eDirectory environment with a top-level organization named ACME, the entry point would most likely be `o=ACME`.

- f. Fill in the Object Type In field with the LDAP attribute in a directory object that describes the object type. In the majority of directories, this field should contain the attribute `objectClass`. Some directory implementations use `structuralObjectClass`. If multiple Object Types are required, enter them using tilde ~ as a delimiter.
- g. The Authentication? Field is not used in this version of cDir. cDir defaults to anonymous access if either the Default User or Password fields are left empty.
- h. Fill in the Default User field with the full LDAP DN of a user in the directory that will be used for all LDAP queries to this directory. This user should have sufficient access to read the Objects and Attributes of interest.
- i. Click on the Set Password button.
- j. Fill in the Password and Confirm Password fields from section 5B of the Installation Worksheet.
- k. Click on the Save button.

The settings will be written to the configuration file. A message will be displayed to indicate if the settings were saved successfully. Once the password is saved to the configuration file, it will no longer be displayed.

The management console will also attempt to make an authenticated connection to the directory with the supplied credentials. A message will also be displayed if the connection to the database fails.

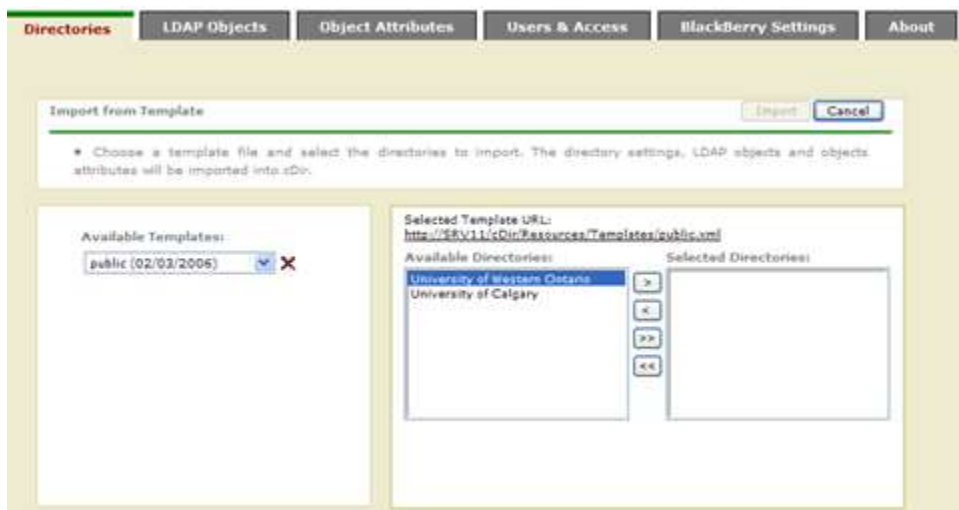
Note: If the Default User field is left blank, the management console will attempt an anonymous connection to the directory. Please refer to the directory documentation on how anonymous connections are handled.


Import Directory Templates

Directory templates are XML files that contain LDAP directory, object and attribute definitions. The cDir installation includes a template of two public directories in the Templates directory. Additional templates for different directories are available for download from the cDir product web site (<http://www.tenet.com/apps/cdir>).



1. On the Directories page, click on the Import button.



2. Choose *public* from the Available Templates dropdown list.
3. Click on the select all  button to select both directories to be imported. The directories will move from the Available Directories list to the Selected Directories list.
4. Click on the Import button.

Assign User Access Rights

The primary directory is used to provide authentication and authorization of users to the directories defined in cDir.

Authentication

Authentication occurs at two levels: the MDS server and the BlackBerry device.

The IP address of the MDS server from which devices requests are coming from must be defined in the Authorized MDS Servers tab of the BlackBerry Settings page. This configuration will be completed in the next section.

At the device level, the email address that is associated with a user's device must be an attribute of a user object that is returned in the results of a group definition.

By default, one group is defined in cDir named `_ALL`. The `_ALL` group will query the primary directory for all person-type objects. By default, cDir looks for persons in the following object classes: `inetOrgPerson`, `person`, and `organizationalPerson`.



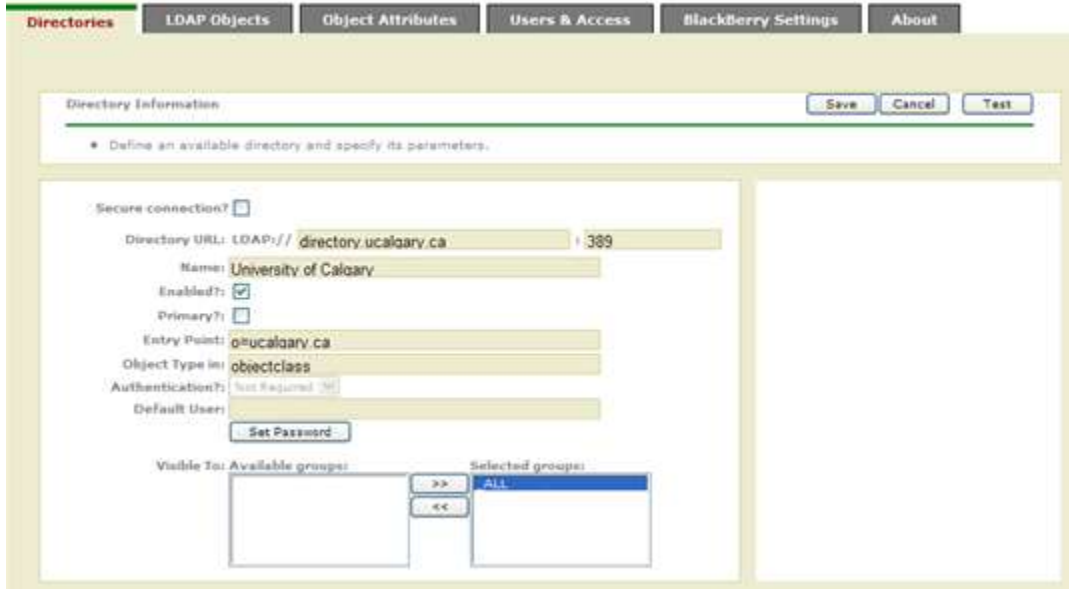
1. On the Users & Access page, in the User Groups tab:
 - a. Click on the Members icon next to the `_ALL` group.


A list of users will be displayed. Confirm that the user associated with the test BlackBerry device is listed with an email address in the Email column.

Authorization

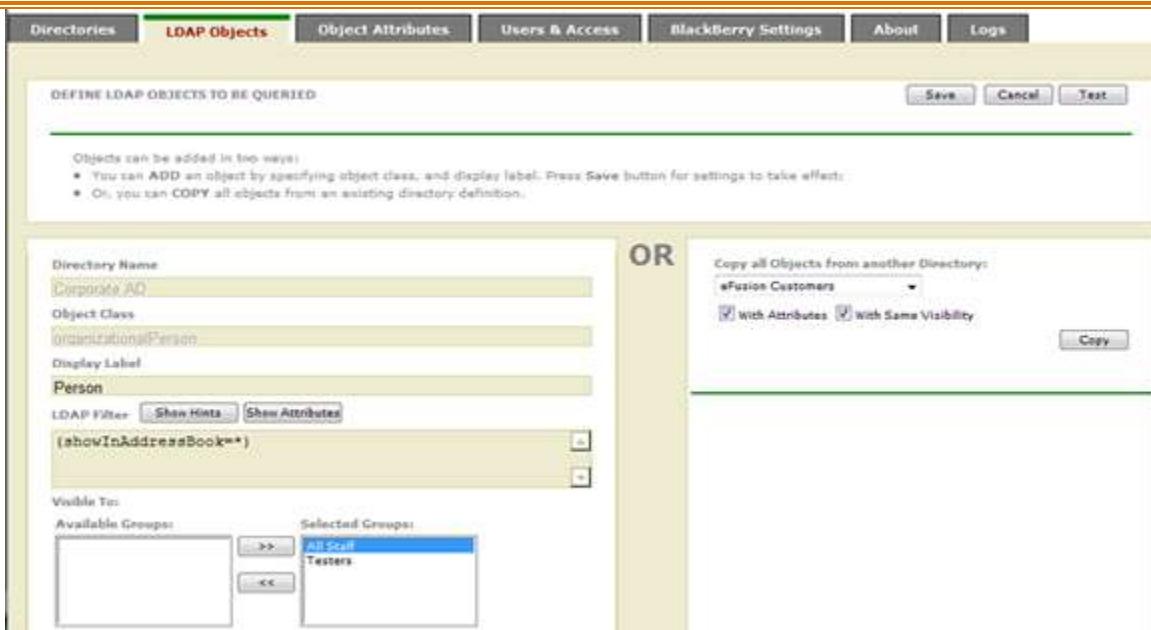
Authorization occurs at two levels: the directory and the individual objects classes in the directory.



A user can be restricted to which directories and objects they can query from the BlackBerry device based on their group membership.



1. To allow access to the public directories, on the Directories page:
 - a. Click on the Edit icon next to the University of Calgary directory definition.
 - b. In the Available Groups list, click on the `_ALL` group.
 - c. Click the Add Group  button. The `_ALL` group will move from the Available Groups list to the Selected Groups list.
 - d. Click on the Save button.

Repeat steps a-d for the University of Western Ontario directory definition.



2. To allow access to the objects in the public directories, on the LDAP Objects page:
 - a. Choose the University of Calgary directory from the Choose Directory dropdown list.
 - b. Click on the Edit  icon next to the inetOrgPerson object definition.
 - c. In the Visible To list, click on the _ALL group.
 - d. Click on the Add Group  button. The _ALL group will move from the Available Groups list to the Selected Groups list.
 - e. Click on the Save button.

Repeat steps a-e for each object (inetOrgPerson, organizationUnit, uwoRole and uwoUnit) in the University of Western Ontario directory by first selecting the directory from the Choose Directory dropdown list.



3. This step will confirm that the _ALL group has been granted the appropriate rights. On the Users & Access page, in the User Groups tab:
 - a. Choose All from the Directory dropdown list.
 - b. Choose All from the Group dropdown list.
 - c. Confirm the With Objects check box is selected.
 - d. Confirm the All radio button is selected in the User section.
 - e. In the _ALL column, confirm Yes appears beside both directories and each of the object types in the directories.

Note: The optional field LDAP filter could be also used to restrict further on the data visibility. It allows an administrator to type an additional LDAP filter that combined at run time with the end user's filter on all the Search and Reverse look-up requests. For example: It could be used to hide all disabled accounts for an organizationalPerson object.

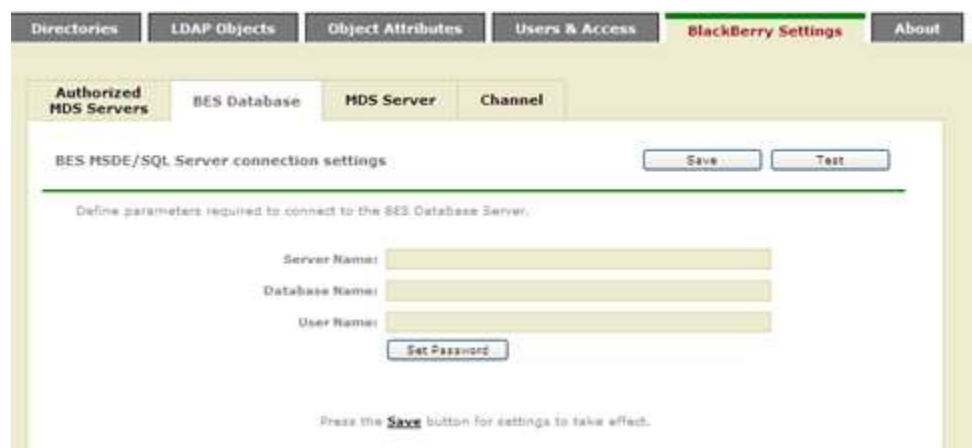
Define BlackBerry Push Settings (Optional)

Follow these steps if you have a BlackBerry Enterprise Server and you want to push a cDir shortcut icon to the end-users' BlackBerry smartphones.



1. On the BlackBerry Settings page, in the Authorized MDS Servers tab:
 - a. Click on the Add New MDS Server button
 - b. Fill in the MDS IP Address field with the IP Address of the BlackBerry Mobile Data Service server from section 1A of the Installation Worksheet.
 - c. Click on the Save button.

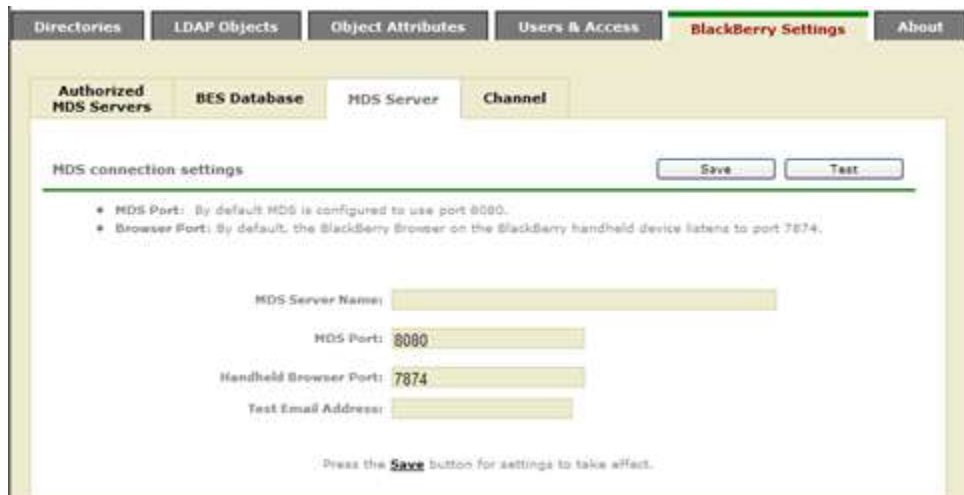
The settings will be written to the configuration file. A message will be displayed to indicate if the settings were saved successfully. If saved successfully, the IP address will be listed in the table of authorized MDS servers.



2. On the BlackBerry Settings page, in the BES Database tab:
 - a. Fill in the Server Name field with the DNS Name of the BlackBerry Enterprise Server management database server from section 2B of the Installation Worksheet.
 - b. Fill in the Database Name field with the BlackBerry Enterprise Server management database name from section 2C of the Installation Worksheet.
 - c. Fill in the User Name field with the cDir SQL login name from section 5A of the Installation Worksheet.
 - d. Click on the Set Password button.
 - e. Fill in the Password and Confirm Password fields from section 5B of the Installation Worksheet.
 - f. Click on the Save button.

The settings will be written to the configuration file. A message will be displayed to indicate if the settings were saved successfully. Once the password is saved to the configuration file, it will no longer be displayed.

The management console will also attempt to make a connection to the BlackBerry Enterprise Server management database with the supplied credentials. A message will also be displayed if the connection to the database fails.



The screenshot displays the BlackBerry Settings page in a management console. The top navigation bar includes tabs for Directories, LDAP Objects, Object Attributes, Users & Access, BlackBerry Settings (highlighted), and About. Below this, there are sub-tabs for Authorized MDS Servers, BES Database (selected), MDS Server, and Channel. The main content area is titled 'MDS connection settings' and contains the following fields and instructions:

- MDS Server Name:** An empty text input field.
- MDS Port:** A text input field containing the value '8080'.
- Handheld Browser Port:** A text input field containing the value '7874'.
- Test Email Address:** An empty text input field.

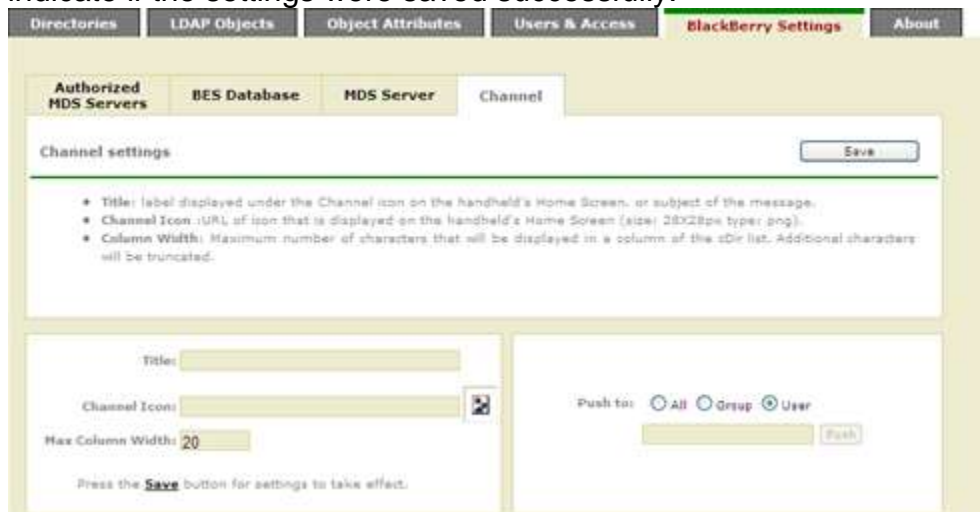
At the top right of the settings area, there are 'Save' and 'Test' buttons. Below the fields, there are two bullet points providing default information:

- MDS Port: By default MDS is configured to use port 8080.
- Browser Port: By default, the BlackBerry Browser on the BlackBerry handheld device listens to port 7874.

At the bottom of the settings area, a note states: 'Press the **Save** button for settings to take affect.'

3. On the BlackBerry Settings page, in the MDS Server tab:
 - a. Fill in the MDS Server Name field with BlackBerry Enterprise Server DNS name from section 1B of the Installation Worksheet.
 - b. The MDS port field is populated with 8080 by default.
 - c. The Handheld Browser port field is populated with 7874 by default.
 - d. Click on the Save button.

The settings will be written to the configuration file. A message will be displayed to indicate if the settings were saved successfully.



The screenshot shows the BlackBerry Settings page with the 'BlackBerry Settings' tab selected. Underneath, the 'MDS Server' sub-tab is active. The 'Channel settings' section is visible, containing a 'Save' button and a list of settings: Title, Channel Icon, and Max Column Width. Below these are input fields for Title, Channel Icon, and Max Column Width. The 'Push to:' section has radio buttons for 'All', 'Group', and 'User', with 'User' selected. A 'Push' button is also present. A note at the bottom says 'Press the Save button for settings to take effect.'

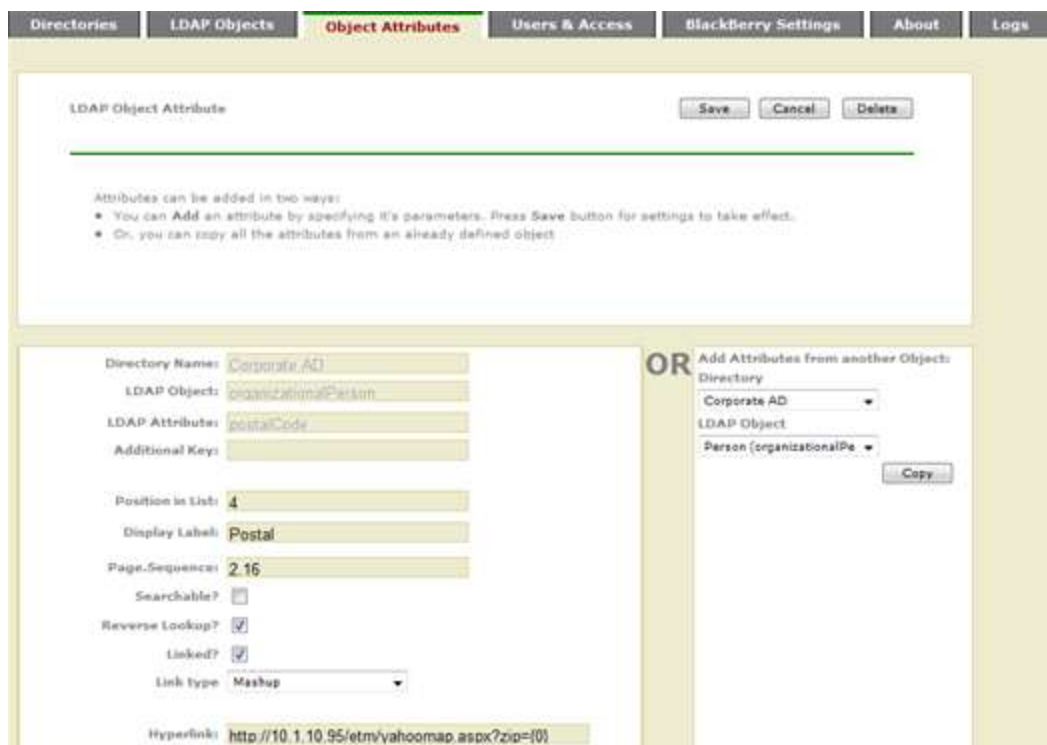
4. On the BlackBerry Settings page, in the Channel tab:
 - a. Fill in the Title field. This title will display under the cDir icon on the main menu of the BlackBerry device. Example: cDir
 - b. Fill in the Channel icon field with the URL of an image file. A default image file is included in the cDir directory:

`http://<web_server_IP_or_DNS_name>/cDir/img/cDir.png`

The icon must be PNG (Portable Network Graphics) format and 28x28 pixels in size. If the image file can be accessed from the cDir Management Console, it will be shown after the field is updated.
 - c. Click on the Save button.

The settings will be written to the configuration file. A message will be displayed to indicate if the settings were saved successfully.

Define Attributes



4. Create or Update an Object Attribute

a. LDAP Attribute

There are 2 types of attributes that you can create,

i. LDAP field attribute from your corporate directory.

For example postalCode

ii. Dummy field. If the attribute start with the prefix “_” the field will be a static label and won’t bring any value from the directory

For this type of fields “Position in List” should be left blank or 0 as it won’t query for any value on the directory

b. Position in List: is the position in the results list. If left blank or 0 the field won’t be displayed on the results list and will be displayed only on the details screen.

c. Searchable: Allows this field to be searchable on the search page

d. Reverse Lookup: queries the LDAP directory and returns the list of objects that shares the same attribute value. On the picture above sample it returns the list of persons with the same postal code of the person where we click over.

e. Link Type:

- **Details:** when selected means that this field is linked to the detail screen

-
- **Subquery:** Allows creation of subqueries that can relate one directory to another
 - **Mailto:** link this field to create an email
 - **Mashup** Use this link type when is desired to embed the output of the specified URL within the details page of cDir.
Note: cDir ships with a proof of concept example for mashup link, called BESQuery (please see below more details about it).
 - **Others:** Normally used to setup a hyperlink associated with a field
 - **PIN:** Links the field with a PIN-to-PIN message
 - **Tel:** link this field to link to a phone call. Also filters the phone numbers and remove any extra character to make it compatible with device phone numbers call.

(**) BESQuery:

BESQuery is a web page that could be invoked using 2 types of parameters and returns information from BES database (e.g. mobile phone, PIN, etc) for a specific user.

Following are few examples for BESQuery:

- To retrieve a list of fields for a specific user:
../BESQuery.aspx?email=somename@somedomain.com
- To retrieve a single value for a specific user.
../BESQuery.aspx?email=somename@somedomain.com&attribute=pin

From cDir it could be used in two ways:

- As a “mashup” link (this will embed the output of BESQuery within the flow of the details page).
- As a “others” link (this acts like a standard hyperlink).

Notes:

All the available attributes are displayed in the XSLT/BESQuerySingleValue.xls file.

The output could also be customized, since it is rendered using an XSL file.

Customize the Search and Results pages

Starting with version 2.1 the following customizations are available:

- cDir can be configured to display the corporate logo and a tag line.
- cDir could be set-up to use a custom Quick Search Form.

These configuration settings are exposed in the Web.config file stored under the root of the cDir application.

To add a custom logo and tag line follow the steps below:

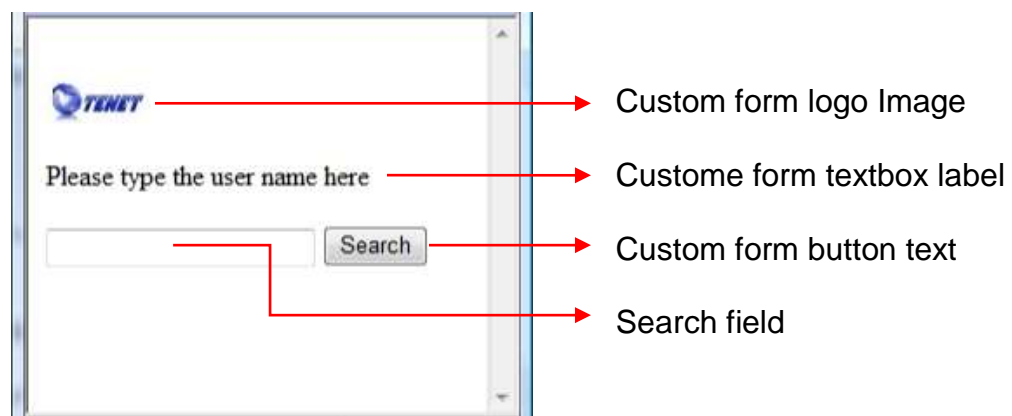
1. Locate the Web.config file stored under the root of the cDir application (the default location is YourDriveLetter:\inetpub\wwwroot\cDir).
2. Create a back-up of your Web.config file.
3. Open the Web.config file using Notepad.
4. To setup the corporate logo on the Search pages:
 - Locate the key called "Corporate.Logo.Search.Pages.Image.Path".
 - Change the "value" attribute to point to the absolute URL of your Corporate Logo Image. If desired the image could be stored under the Img folder within the root of cDir application. In that case you can use a relative URL for the "value" attribute (e.g. Img/YourLogo.png).
5. To setup the corporate logo on the Results pages:
 - Locate the key called "Corporate.Logo.Results.Pages.Image.Path".
 - Change the "value" attribute to point to the absolute URL of your Corporate Logo Image. If desired the image could be stored under the Img folder within the root of cDir application. In that case you can use a relative URL for the "value" attribute (e.g. Img/YourLogo.png).
6. By default the Logo Image will be aligned to right. The Logo Image alignment is customizable too:
 - Locate the key called " Corporate.Logo.Image.Align ".
 - Change the "value" attribute to one of the following values: Left, Center, Right as desired. The default value is "Right".
7. To display a Tag Line on the Search pages:
 - Locate the key called " Corporate.Tag.Line ".
 - Change the "value" attribute to your custom tag line.

To enable the custom Quick Search Form follow the steps below:

1. Locate the Web.config file stored under the root of the cDir application (the default location is YourDriveLetter:\inetpu\wwwroot\cDir).
2. Create a back-up of your Web.config file.
3. Open the Web.config file using Notepad.
4. To enable the Quick Search form:
 - Locate the key called " Search.Custom.Form.Enabled ".
 - Change the "value" attribute to "1". By default the Custom Search form is disabled, its value is set to "0".
5. To display the corporate logo on the Search page:
 - Locate the key called " Search.Custom.Form.Logo.Image.Path ".
 - Change the "value" attribute to point to the absolute URL of your Corporate Logo Image. If desired the image could be stored under the Img folder within the root of cDir application. In that case you can use a relative URL for the "value" attribute (e.g. Img/YourLogo.png).
6. To setup the label that is displayed before the Search Textbox:
 - Locate the key called " Search.Custom.Form.TextBox.Label ".
 - Change the "value" attribute to the desired text.
7. To setup the text that is displayed on the Search Button:
 - Locate the key called " Search.Custom.Form.Button.Text ".
 - Change the "value" attribute to the desired text.
8. To setup the conditional operator used on the Search Criteria:
 - Locate the key called " Search.Custom.Form.Conditional.Operator ".
 - Change the "value" attribute to one of the following values: Equals, Starts, Contains. The default value is: Contains.

Note: the Custom Form will always:

- search on the first Directory visible to the logged in user;
- look for the first Object for that Directory visible to the current logged in user;
- use the first Searchable Attribute defined to build the search criteria.



Testing cDir

The following steps should be used to test the cDir application after successfully completing the initial configuration steps. A BlackBerry device that has been provisioned successfully on the BlackBerry Enterprise Server (identified in Section 1 of the Installation Worksheet) is required to complete these tests.

Test 1: Test a channel push to a BlackBerry device

This test will confirm cDir is able to initiate a push of test content from the BlackBerry Enterprise Server to a BlackBerry device using the Mobile Data Service.

1. Launch the cDir Management Console
2. When prompted, login using an account that is a member of the cDir Managers group.
3. On the BlackBerry Settings page, in the MDS Server tab:
 - a. Fill in the Test Email Address field with the email address of the user associated with the BlackBerry device.
 - b. Click the Test button.

cDir will attempt to push a new channel to the BlackBerry device. A message will be displayed to indicate if the channel was pushed successfully.

An icon named cDir Test will appear on the ribbon bar (main menu) of the BlackBerry device. Click on the cDir Test icon to view the content that was pushed to the BlackBerry Browser cache. The cDir Test channel can be safely deleted from the Browser Channel section of the BlackBerry Browser bookmarks.

Test 2: Test push of the cDir channel icon to a BlackBerry device

This test will confirm cDir is able to push the cDir channel icon from the BlackBerry Enterprise Server to a BlackBerry device using the Mobile Data Service.

1. On the BlackBerry Settings page, in the Channel tab:
 - a. Confirm the User radio button is selected.

-
- b. Fill in the field with the email address of the user associated with the BlackBerry device.
 - c. Click the Push button.

A message will be displayed to indicate if the channel was pushed successfully.



An icon (defined in Step 4) will appear on the ribbon bar of the BlackBerry device. Click on the icon to start the cDir application.

Test 3: Test cDir directory query

This test will follow an example of a typical cDir query for a person in a directory.

1. Launch the cDir application in your browser (alternatively, if using a BlackBerry smartphone, click on the cDir icon in the home screen to start the application).



2. On the Directories page, choose the desired Directory.



3. On the Objects page, choose the desired Object.



4. On the Attributes page, choose the Field to search by.




5. On the Search page, type the keywords to search for and press the desired search button.



6. On the Search Results List page, click on the View Details link to view more details.



7. On the Search Results Details page, click on the lookup  icon next to the name of the department to search for all people in this department.



Appendix A - How to configure Mobile Data Service to send the email address and PIN number of a BlackBerry

IMPORTANT: The following steps outline changes to a configuration file used by the BlackBerry Mobile Data Service. Please ensure you create a backup copy before making any changes to the original file.

The Mobile Data Service must be configured to send the email address and PIN number of the BlackBerry device with each HTTP request from the BlackBerry Browser. This is required for cDir to determine from which BlackBerry device a request is originating.

1. On the BlackBerry Enterprise Server for Microsoft Exchange or Novell GroupWise, browse to:

```
c:\program files\research in motion\blackberry enterprise  
server\MDS\servers\<server_name>\config\
```

On BlackBerry Enterprise Server for IBM Lotus Domino, browse to:

```
c:\program files\research in motion\blackberry enterprise  
server\MDS\servers\instance\config\
```

2. Create a backup copy of the rimpublic.property file.
3. Open the rimpublic.property file with Notepad or a similar text editor.
4. Add the following lines to the end of the file:

```
[HTTP HANDLER]  
application.handler.http.header=email,pin
```

5. Save the file.
6. Restart the BlackBerry Mobile Data Service from the BlackBerry Manager or Service control panel.

Appendix B – How to configure the BlackBerry Enterprise Server Database Engine for SQL server authentication

The BlackBerry Enterprise Server Database Engine must be configured to allow TCP connections and SQL server authentication from the web server hosting cDir.

IMPORTANT: The following steps will interrupt communication between the BlackBerry Enterprise Server and the management database, potentially causing a brief service interruption for BlackBerry users. These steps should NOT be performed during peak usage periods.

For additional information, please see the following references:

- Microsoft How To Article KB827204
<http://support.microsoft.com/kb/827204/EN-US/>
- Microsoft How To Article KB325003
<http://support.microsoft.com/kb/325003/EN-US/>

BlackBerry Enterprise Server using SQL Server 2008

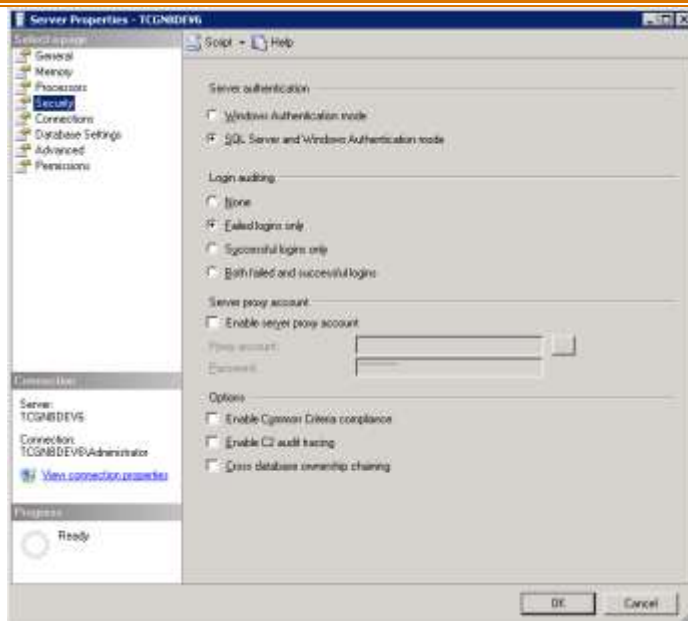
The SA account is configured during the installation of SQL Server. Please contact your database administrator for more information.

For additional information, please see the following reference:

MSDN - How to change Server Authentication Mode (SQL Server Management Studio)
[http://msdn.microsoft.com/en-us/library/ms188670\(v=SQL.100\).aspx](http://msdn.microsoft.com/en-us/library/ms188670(v=SQL.100).aspx)

To configure SQL server for mixed-mode authentication:

1. Open SQL Server Management Studio
2. In Object Explorer, right-click the server, and then click Properties
3. On the Security page, under Server authentication, select SQL Server and Windows Authentication mode and then click OK



4. In Object Explorer, right-click your server, and then click Restart. If SQL Server Agent is running, it must also be restarted.

BlackBerry Enterprise Server using SQL Server 2005

The SA account is configured during the installation of SQL Server. Please contact your database administrator for more information.

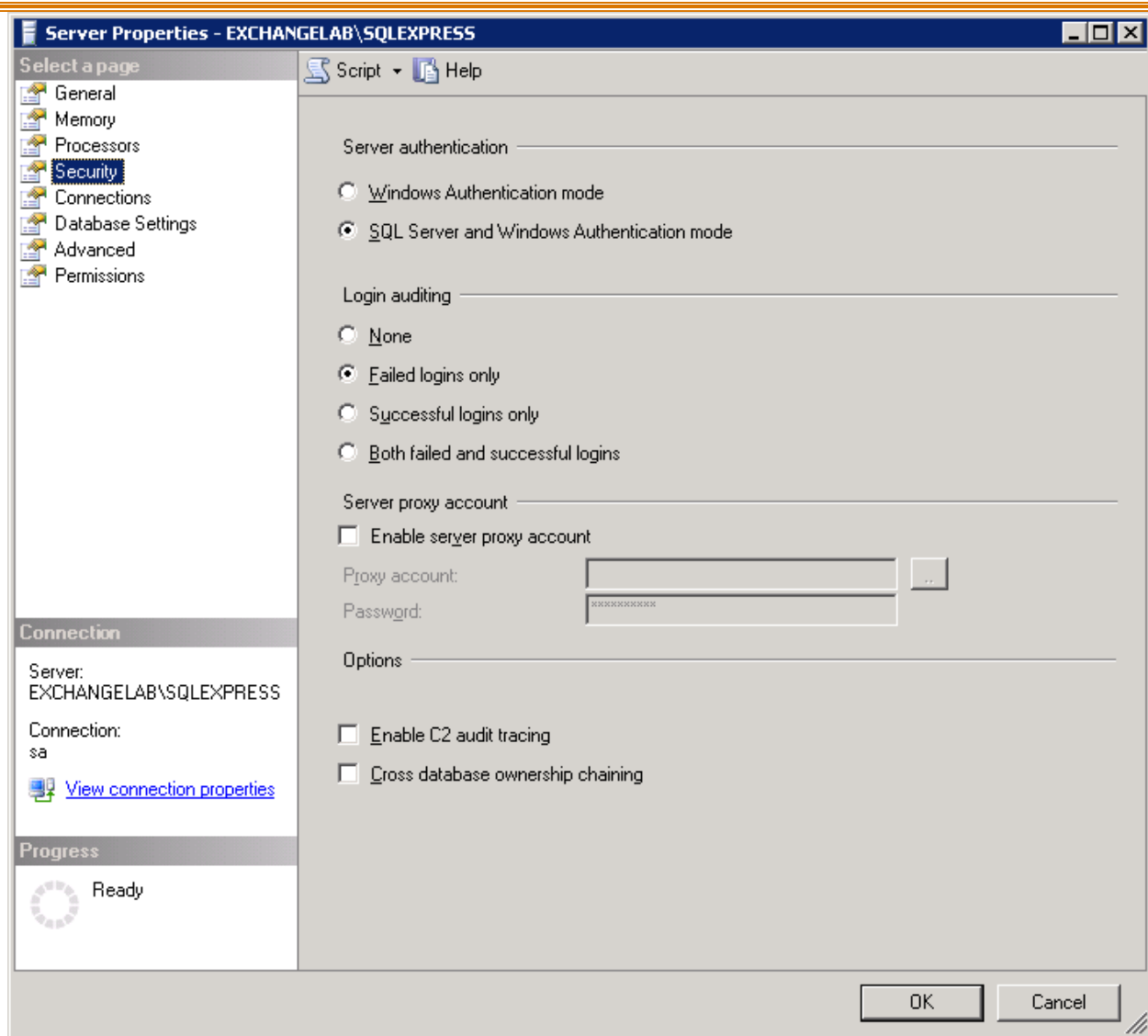
For additional information, please see the following reference:

- MSDN - How to change Server Authentication Mode (SQL Server Management Studio)

[http://msdn.microsoft.com/en-us/library/ms188670\(SQL.90\).aspx](http://msdn.microsoft.com/en-us/library/ms188670(SQL.90).aspx)

To configure SQL server for mixed-mode authentication:

1. Open SQL Server Management Studio
2. In Object Explorer, right-click the server, and then click Properties
3. On the Security page, under Server authentication, select SQL Server and Windows Authentication mode and then click OK
4. In Object Explorer, right-click your server, and then click Restart. If SQL Server Agent is running, it must also be restarted.



BlackBerry Enterprise Server using MSDE 2000

Enable TCP connectivity to MSDE. From a command-prompt:

1. Change the directory to C:\Program Files\Microsoft SQL Server\80\Tools\Binn.
2. Type svrnetcn.exe and press ENTER to open the SQL Server Network Utility screen.
3. Click on Named Pipes and TCP/IP, then click Enable after selecting each one.
4. Click Apply, and then click OK to close the SQL Server Network Utility screen.
5. Close the command prompt and restart MSDE.

Configure MSDE for Mixed-Mode authentication:

1. In Control Panel, open the Services tool to stop MSSQLSERVER and all other related services (such as SQLSERVERAgent)
2. Open Registry Editor. Click Start, click Run, type regedt32, and then click OK.
3. Locate the following subkey:

HKEY_LOCAL_MACHINE\Software\Microsoft\MSSqlserver\MSSqlServer\
4. In the right pane, double-click the LoginMode subkey.
5. In the DWORD Editor dialog box, set the value of this subkey to 2, make sure that the Hex option is selected, and then click OK.
6. Restart the MSSQLSERVER and the SQLSERVERAgent services for this change to take effect.

Configure the SA account password:

1. Open a command prompt window.
2. Type the following command, and then press ENTER:

```
osql -U sa
```

This connects you to the local, default instance of MSDE by using the SA account.

3. Type the following commands, one per line, and press ENTER at the end of each line:

```
sp_password null, 'mynewpassword', 'sa' <ENTER>
```

```
go <ENTER>
```

NOTE: Make sure that you replace 'mynewpassword' with the new password.

4. Type Exit, and then press ENTER.

BlackBerry Enterprise Server using SQL Server 2000

The SA account is configured during the installation of SQL Server. Please contact your database administrator for more information.

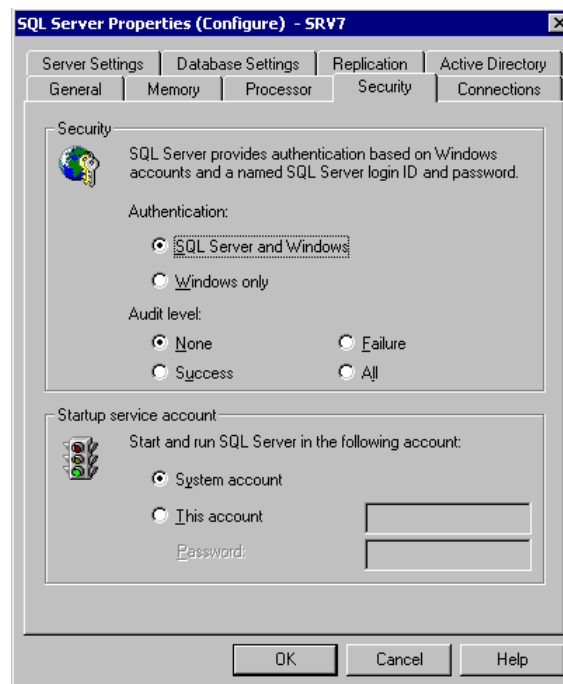
For additional information, please see the following reference:

- MSDN - How to set up Mixed Mode security (Enterprise Manager)

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/howtosql/ht_6_secrty_2dh5.asp

To configure SQL server for mixed-mode authentication:

1. Open Enterprise Manager
2. Expand the server group
3. Right-click on the database server hosting the BlackBerry Enterprise Server management database
4. Click Properties



5. Click on the Security tab



6. In the Authentication section, click on the SQL Server and Windows option
7. Click OK

Appendix C: Database Server Configuration - BlackBerry Enterprise Server using MSDE 2000

The following steps should be completed on the BlackBerry Enterprise Server.

To create a SQL login for cDir:

1. Open a command prompt window.
2. Type the following command, and then press ENTER:

```
osql -U sa
```

When prompted, type in the SA password, and then press ENTER. This connects you to the local, default instance of MSDE by using the SA account.

3. Type the following commands, one per line, and press ENTER at the end of each line:

```
exec sp_addlogin @loginame = 'cDir_user', @passwd = 'password'  
, @defdb = 'BESMGMT' <ENTER>
```

```
go <ENTER>
```

NOTE: Make sure that you replace 'password' with a password for the cDir_user account.

4. Type the following commands, one per line, and press ENTER at the end of each line:

```
USE BESMGMT <ENTER>
```

```
exec sp_grantdbaccess @loginame = 'cDir_user', @name_in_db =  
'cDir_user' <ENTER>
```

```
go <ENTER>
```

5. Type the following commands, one per line, and press ENTER at the end of each line:

```
USE BESMGMT <ENTER>
```

```
exec sp_addrolemember @rolename = 'cDir_datareader', @membername  
= 'cDir_user' <ENTER>
```

go <ENTER>

6. Type Exit, and then press ENTER.
7. Test the new login by typing the following command:

osql -U cDir_user

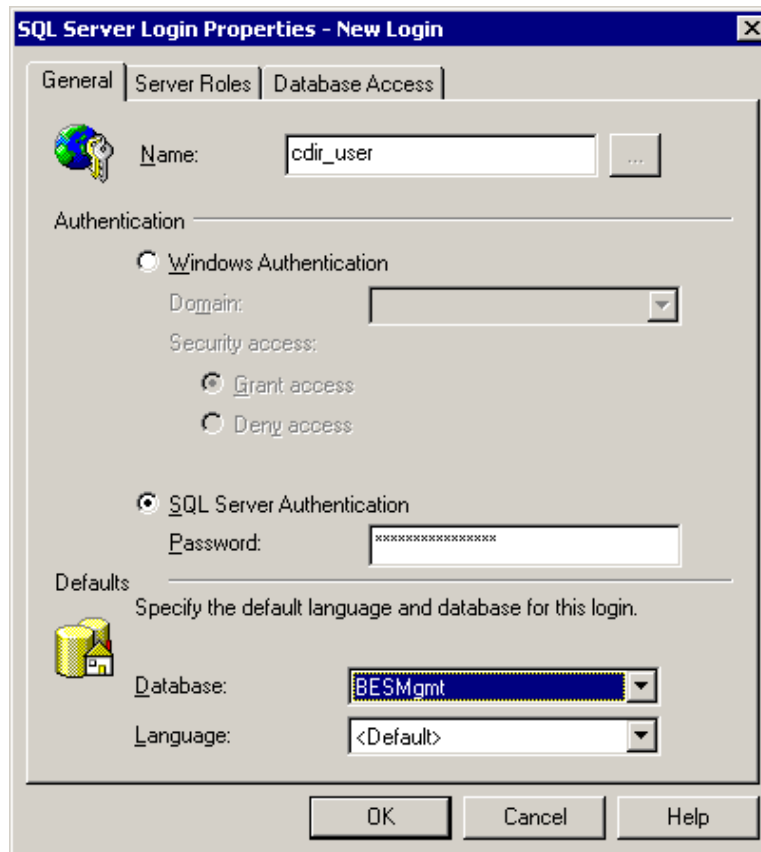
When prompted, type in the cDir_user password, and then press ENTER. This connects you to the local, default instance of MSDE by using the cDir_user account.

8. Type Exit, and then press ENTER.
9. Record the login name and password in section 5 of the Installation Worksheet.

Appendix D: Database Server Configuration - BlackBerry Enterprise Server using SQL Server 2000

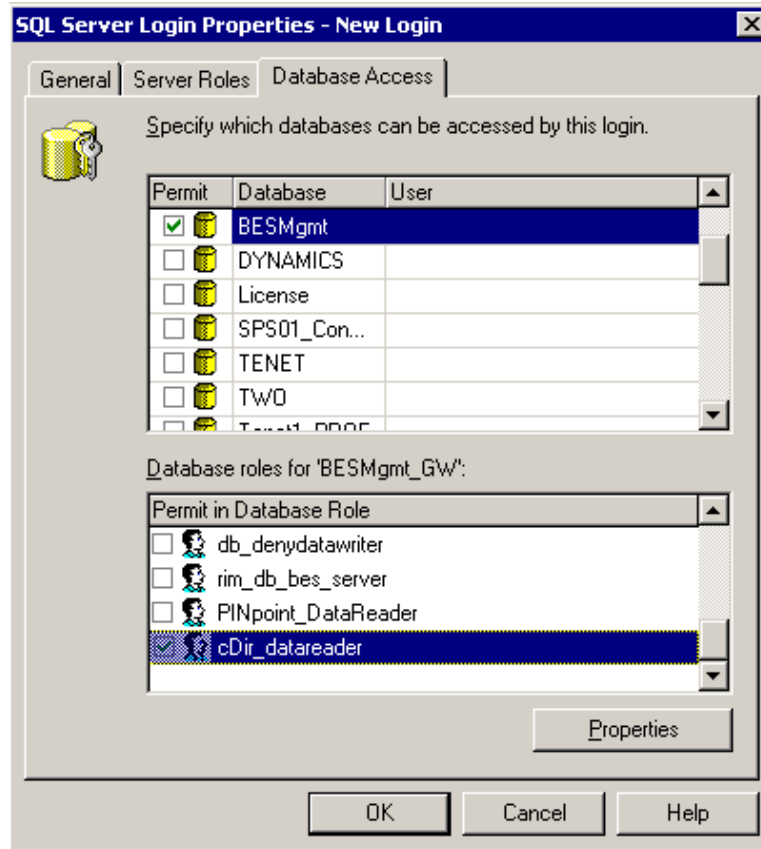
To create a SQL login for cDir:

1. Open Enterprise Manager
2. Expand the server group
3. Double-click the database server hosting the BlackBerry Enterprise Server management database
4. Double-click the Security folder
5. Right-click on Logins, and then click New Login



6. Fill in the Name field with the name of the new SQL login i.e. cDir_user.
7. In the Authentication section, click on the SQL Server Authentication option and fill in a password.

8. Choose BESMgmt from the Database dropdown list.
9. Click on the Database Access tab.



10. Click the checkbox in the Permit column next to the BESMgmt database.
11. Click the checkbox next to the cDir_datareader role.
12. Click OK.

Record the login name and password in section 5 of the Installation Worksheet.



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