

Coveo Enterprise Search 6.1

Lotus Notes Connector

Coveo's *Lotus Notes* connector allows users to index *Lotus Notes* databases, including documents, metadata, attachments and security.

Features

The following details the features available in the connector:

- Indexing of all *Lotus Notes* databases:
 - Mail, Address Book, Document Library, etc.;
 - Documents, metadata, attachments, OLE objects, security.
- **Security:** Security permissions on *Lotus Notes* items are indexed and can be fully mapped to their corresponding NT securities. Also, permissions on views/folders can optionally be indexed.
- **Live indexing:** Updated documents in a database (content/security) are periodically re-indexed by the connector.
- **Pause/Resume:** When indexing *Lotus Notes* databases, the connector can be paused and resumed.
- All databases under a common folder can be indexed using a single address.
- Metadata mappings can be fully customized (mapping of *Lotus Notes* fields to CES fields).
- Search results can redirect users to the original documents, which are directly in the *Lotus Notes Client*.
- Most recent releases of *Lotus Notes*, as well as *Domino x64* and *Domino Suse* platforms are supported.

Requirements

In order for the *Lotus Notes* connector to work properly, the following is required:

- *Lotus Notes/Domino* 7.03 or later
- *Coveo Enterprise Search* (CES) 6.0

Installation

▶ Coveo Enterprise Search

CES can be installed on the *Lotus Notes Server (Domino)* if it is a *Windows Server*; however, it is strongly recommended to install it on a dedicated *Windows Server*.

▶ Lotus Notes Client

Logon to the CES server with the same account used for the CES service.



Install *Lotus Notes Client* on the CES server and configure it with a *user.id* file having *Read access* to all databases to index (administrator account).

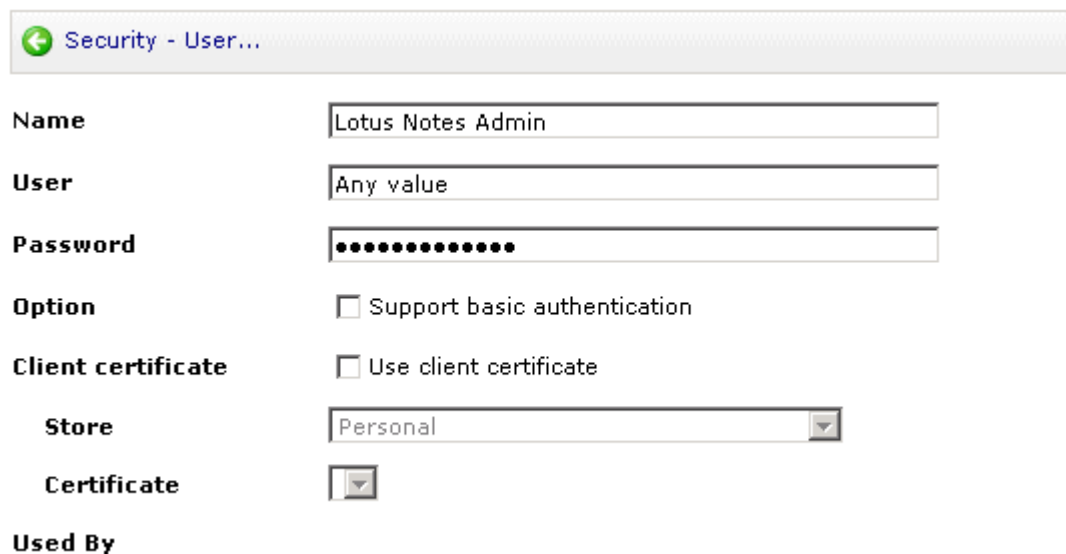
Note that before being able to start indexing, you have to open at least one database on the targeted server using the Lotus Notes client. This mandatory step is to ensure the Notes settings file (notes.ini) is properly configured.

Configuration

▶ How to Configure a User Identity

Before using the connector, a CES user identity must be configured. The user must have full *Read* access to all *Lotus Notes* databases crawled. To add a user identity, perform the following procedure:

1. In the Administration Tool, access the **Administrators** page (Configuration > Security).
2. In the left navigation pane, click **User Identities**. The **User Identities** page is displayed.
3. Click . The **Modify User Identity** page is displayed.
4. In the **Name**, **User** and **Password** fields, enter the credentials of the user login account. Note that the *User* field can have any value but cannot be empty; it is used internally as an identifier by both the connector and the security provider.
5. Click  **Save**.



← Security - User...

Name

User

Password

Option Support basic authentication

Client certificate Use client certificate

Store

Certificate

Used By

▶ How to Index a Lotus Notes Source

A *Lotus Notes* source can target a list of specific databases or an entire folder on the server, meaning that all databases under this folder will be indexed. To create a new *Lotus Notes* source, perform the following procedure:

1. In the Administration Tool, access the **Sources and Collections** page (Index > Sources and Collections).
2. In the **Sources** section, click . The **Add Source** page is displayed.




3. Enter the appropriate values for the selected *Lotus Notes* databases:

Field	Description	Example
Name	Any descriptive name.	My Mailbox
Source Type	The connector used.	Notes
Addresses	The list of starting addresses for the connector, one address per line.	<i>notes://dominoserver:port/path/database.nsf</i> For more information concerning <i>Lotus Notes</i> starting addresses, refer to Appendix A – Lotus Notes Starting Addresses .
Fields	The fields set used.	An existing fields set or (new) to create a new fields set for this source. Selecting (new) redirects to the new Fields Set page after the source is saved.
Notes Settings File Path*	The full path to the <i>notes.ini</i> file. Useful when the file is not in the default <i>Lotus Notes</i> installation folder.	<i>D:\lotusdata\notes.ini</i> . If left empty, this parameter is assigned the path of the current <i>Lotus Notes</i> installation. For example, <i>C:\Program Files\lotus\notes\notes.ini</i> (V7).
User ID File Path*	The full path to the <i>user.id</i> file. Useful whenever the file is renamed or is not in the <i>Lotus Notes</i> folder.	<i>C:\Program Files\lotus\notes\data\user.id</i> If left empty, this parameter is assigned the complete path of the current/last user.id used in the <i>Lotus Notes</i> client.
Index Security On Views	Whether security permissions on views are indexed or not.	Select this option to index security on views. For more information concerning <i>Lotus Notes</i> security, refer to Appendix D – Using Security Mapping Files .
Ignored Forms*	The list of <i>Lotus Notes</i> forms ignored while crawling and indexing documents.	<i>FileIdentification;ServerParameter;(…)</i> By default, this parameter is assigned a list of common forms that should not be indexed by the connector. Any other form type in the database should have its corresponding field mappings defined. For more information concerning <i>Lotus Notes</i> field mappings, refer to Appendix B – Using Lotus Notes Field Mappings .
Number of Refresh Threads	The number of threads used while crawling <i>Lotus Notes</i> items.	The default value is 1.
Max Number of Retries	The maximum number of retries for the current query.	The default value is 3. After 3 retries, the current query will be suspended and this will most likely stop the crawling. In any case, this is handled as a timeout by the connector.
Server Query Timeout	The timeout value (in seconds) allowed for a query to be executed against the <i>Domino</i>	The default value is 30.

	server.	
EnableSafeMode**	Whether or not the crawling safe-mode is enabled, to avoid conflicts when crawling corrupted Notes databases.	The default value is <i>False</i> . The safe-mode must be enabled for all Notes sources and any Notes security provider (parameter set to <i>True</i>).
LocalDatabaseMappingFilePath**	The complete path to the mapping file for local databases.	<i>C:\CES6\Config\NotesLocalDatabaseMapping.config</i> For more information concerning local Notes databases, refer to Appendix E – Crawling local databases .
AddressBookServerURL**	The URL of the Domino server that stores the Address Book. Useful when the Address Book is located on a server different from the one being crawled.	<i>notes://dominoserver:port (remote Domino Address Book)</i> <i>or</i> <i>notes:/// (only; local Personal Address Book)</i>
AddressBookExpansionTimeout**	The timeout value (in seconds) allowed for the initial expansion of the Domino Address Book. To be used with large Address Books only.	The default value is 30.
UsersCacheLifeSpan**	The refresh interval (in seconds) of the users cache (local copy of the Domino Address Book).	The default value is 1440. For more information concerning the users cache, refer to Appendix F – Understanding the Notes users cache .
GetFormsTimeout**	The timeout value (in seconds) allowed for the extraction of fields and forms when accessing the Fields section of a source.	The default value is 30.
Authentication User identity	Use the previously created user identity.	Any <i>Lotus Notes</i> Administrator account.


* These parameters are optional.

** These parameters are optional and must be added manually to a source.

4. Click  **Save**.
5. If (new) is selected for the **Fields** field, you will be redirected to the new Fields Set page:
 - a. Add *Lotus Notes* custom fields in the new field set. For more information concerning *Lotus Notes* field sets, refer to [Appendix C – Using Lotus Notes Field Set Custom Fields](#).
 - b. Click  **Source: My Mailbox -...** where *My Mailbox* is the source name.
6. Click  **Start**.

▶ **How to Setup a Security Provider**

To index securities in *Lotus Notes*, define a *Lotus Notes* security provider. The security provider allows CES to expand *Lotus Notes* users/groups and map them to their corresponding NT users/groups:

1. In the Administration Tool, access the **Security** page (Configuration > Security).
2. In the left navigation pane, click **Security Providers**. The **Security Providers** page is displayed.
3. Click . The **Modify Security Provider** page is displayed.
4. Enter the following information in the appropriate fields:

Field	Description
Name	Descriptive name for the security provider (e.g. Lotus Notes Security Provider).
DLL Path	Full path to the additional connector's security provider handler. Usually, this is C:\Program Files\Coveo Enterprise Search 6\bin\Coveo.CES.CustomCrawlersSecurityProvider.dll.
User Identity	User identity required to login to the <i>Lotus Notes</i> server.
Parameters	Syntax to use is Parameter1=Value;Parameter2=Value; (...). The following is a typical parameters field: AssemblyPath="C:\Program Files\Coveo Enterprise Search 6\bin\Coveo.CES.CustomCrawlers.Notes.dll"; ServerName=DominoServerName;SecurityMappingFilePath=C:\NotesSecurityMappings.config; AllowMultipleResolutionMethods=False;UserIdFilePath="c:\admin.id";TempPath=C:\CES6\Temp\


Note that parameters must be separated by semicolons and any path-related parameter must have its value enclosed by double quotes whenever it contains one or more space characters. The parameters as well as the security mapping file are automatically reloaded once they are modified.

Here are all available parameters :


Parameter	Description
AssemblyPath	The complete path to the DLL file <i>Coveo.CES.CustomCrawlers.Notes.dll</i>
ServerName	The name of the Domino server that holds the Domino Address Book. Leave empty ("") when the Personal Address Book is used (local names.nsf).
UserIdFilePath	
SecurityMappingFilePath	The complete path to the security mapping file.
TempPath	The folder where temporary files are stored by the security provider. This folder must be unique for each security

	provider.
IniFilePath*	The complete path to the Notes Settings file (notes.ini). To be used with a multi-user install of the Notes Client only.
AllowMultipleResolutionMethods*	Whether or not the security mapping file contains multiple resolution methods. When enabled, this parameter will make sure every NT username being formed is validated against Active Directory.
EnableSafeMode*	Whether or not the crawling safe-mode is enabled, to avoid conflicts when crawling corrupted Notes databases.
AddressBookExpansionTimeout*	The timeout value (in seconds) allowed for the initial expansion of the Domino Address Book. To be used with large Address Books only.
UsersCacheLifeSpan*	The refresh interval (in seconds) of the users cache (local copy of the Domino Address Book).

* There parameters are optional.

5. In the **Option** section, select **Support expand group** and **Support expand user**.
6. Click  **Save**. The **Security Providers** page is displayed.

Name	<input type="text" value="Notes Security Provider"/>
DLL Path	<input type="text" value="C:\Program Files\Coveo Enterprise Search 6\Bin\Wiri"/>
User Identity	<input type="text" value="system/domino"/> ? <input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Manage user identities"/>
Parameters	<input type="text" value='AssemblyPath="C:\Program Files\Coveo Enterprise S'/>
SAML Redirection URI	<input type="text"/>
SAML Artifact Resolver URI	<input type="text"/>
SAML Logout URI	<input type="text"/>
SAML Signature Certificate File Name	<input type="text"/>
SAML Signature Certificate Password	<input type="password"/>
SAML Artifact Argument Name	<input type="text" value="SAMLart"/>
SAML Post Response Argument Name	<input type="text" value="SAMLResponse"/>
SAML Back Target Argument Name	<input type="text" value="TARGET"/>
Authorization Cache Timeout	<input type="text" value="3600"/>
Authentication Cookie Expiration	<input type="text" value="1"/> ?
Option	<input type="checkbox"/> Do not block exceptions <input type="checkbox"/> Require authorization <input type="checkbox"/> Support access list <input checked="" type="checkbox"/> Support expand group <input checked="" type="checkbox"/> Support expand user <input type="checkbox"/> Run in 64 bits

7. Back in the *Lotus Notes* source, click **Permissions** in the left navigation pane in order to assign the new security provider.
8. Select **Use a security provider** as well as the security provider created previously.
9. Click  [Apply Changes](#).

Appendix A – Lotus Notes Starting Addresses

The starting address represents the starting point on any *Lotus Domino Server* from which content is retrieved and indexed. It is formed of a standard scheme, a server identifier, a path to the database file and the filename of the database.

Note: It is possible to specify multiple starting addresses within the same source.

▶ **Syntax**

Lotus Notes starting addresses can have one of the following formats:

Format	Description
notes://dominoserver/path/database.nsf	Standard format for a starting address. For information concerning the <i>dominoserver</i> part of the starting address, refer to the Domino Servers and Domains section.
notes://dominoserver/path/database.nsf/>ViewName	Identical to the previous format, but with the name of a view appended to it. Only documents returned by this view are indexed. You can also append cascaded views, i.e. />View1/View2.
notes://dominoserver/path/	This format is used to index all databases found under the specified folder. Databases in subfolders are also indexed.
notes:///path/database.nsf/>ViewName	The scheme “notes:///” is used to index local Notes databases. These databases must be stored under the <i>Data</i> folder of the Lotus Notes client (typically c:\program files\lotus\notes\data). In other words, the <i>path</i> part of the starting address is a relative path starting from the <i>Data</i> folder (root).

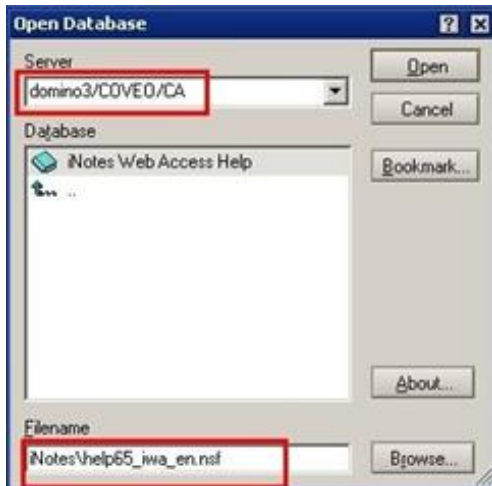
▶ **Domino Servers and Domains**

The *dominoserver* part of the starting address can have one of the following formats:

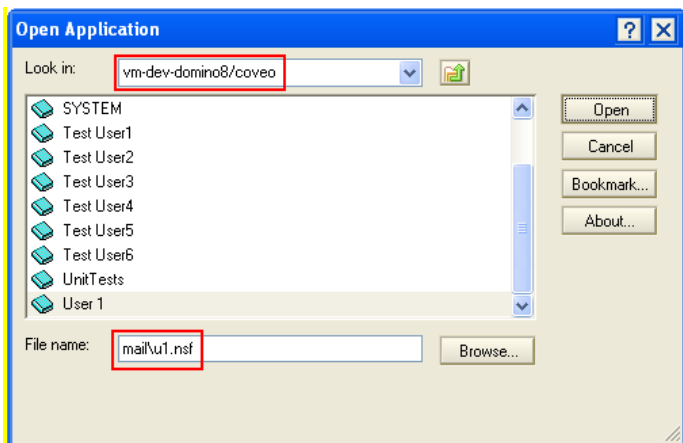
Format	Description	Example
IP Address	IP address of the <i>Domino</i> server in the network.	111.111.111.111
DominoServerName	Server and default domain configured in <i>Lotus Notes</i> client.	domino3 or vm-dev-domino8

To know the exact Server Name and Domain Name:

- For releases preceding *Lotus Notes 7*, open the **Open Database** dialog and retrieve the information from the **Server** field (File > Database > Open).

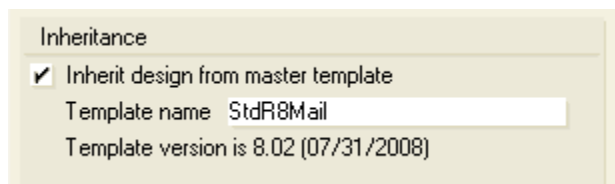


- For releases after *Lotus Notes 8*, open the **Open Application** dialog and retrieve the information from the **Look in** field (File > Open > Lotus Notes Application).

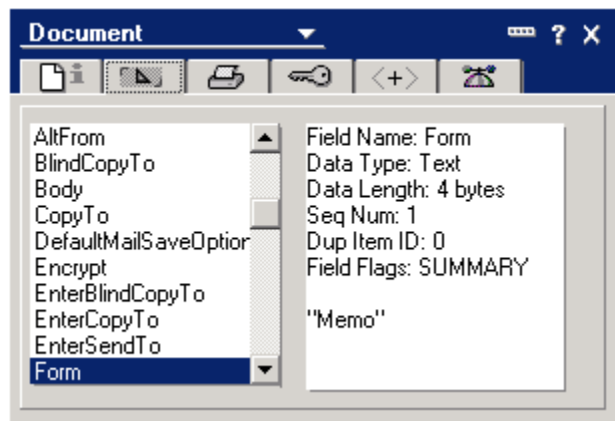


Appendix B – Using Lotus Notes Field Mappings

There are several database types in Lotus Notes. To each type is associated a template. For instance, you can create mail databases, discussion databases, document library databases, etc. The template of a database can be identified from its properties:



Each template defines the design elements of a database. Among these design elements, you have Fields and Forms that define the appearance of documents in the user interface of Lotus Notes. Each document type has an associated Form. For instance, a mail database can contain mails, appointments, tasks, etc. The Form of a document can be identified from its properties:





Beyond the Form field, there are several other fields available on a Notes document. Documents indexed in CES can have their custom/system fields filled with either one of these Notes fields. Actually, field mappings are used for this specific purpose; you can define mappings between CES fields and *Lotus Notes* fields. For example, it is possible to define which *Lotus Notes* fields are used to form the title of a document indexed in CES. The field mappings section is divided into two sections: Databases and Fields.

The **Databases** section allows the user to specify the *Lotus Notes* databases to use as templates in order to retrieve forms and fields from. When no database is defined as a template, the first one is used by default.

notes://svr-index11/mail/aacord.nsf
 notes://svr-index11/mail/aaronowi.nsf
notes://svr-index11/mail/aben ▾ Add

The more template databases defined there are, the slower the forms and fields retrieving will be. A warning is displayed if more than 10 template databases are defined.

▶ How to Add Lotus Notes Template Databases

1. In the Administration Tool, access the **Sources** page (Index > Sources and Collections).
2. Click the appropriate source. The **Source** page is displayed.
3. In the left navigation pane, click **Fields**. The **Fields** page is displayed.
4. Click the databases selection dropdown `notes://svr-index11/mail/aben ▾` and select the appropriate database.
5. Click  **Add**. The new template database is displayed in alphabetical order with the existing ones.
6. Repeat steps 4 and 5 to add a new template database.
7. Click  **Apply Changes**. The template databases are saved and the page is reloaded.

▶ How to Remove Lotus Notes Template Databases

1. In the Administration Tool, access the **Sources** page (Index > Sources and Collections).
2. Click the appropriate source. The **Source** page is displayed.
3. In the left navigation pane, click **Fields**. The **Fields** page is displayed.
4. Locate the template databases to remove.
5. Unselect the checkboxes next to the appropriate template.
6. Click **Apply Changes**. The template databases are saved and the page is reloaded.

The **Fields** section is where field mappings are defined. A user can map the indexed document title, body and various CES system fields for each form. Each form is displayed as follows:

Memo


Fields	Value
Document Title	<input type="text" value="[%[Subject]]"/>
Document Body	<input type="text" value="[Automatic]"/>
sysauthor	<input type="text" value="[%[From]]"/>
<input type="text" value="sysaboutme"/> ▼	<input type="text" value=""/> Add
Available Metadata	%[\$Abstract], %[\$KeepPrivate], %[AltFrom], %[BlindCopyTo], %[Body], %[Classification], %[ConfidentialString], %[CopyTo], %[DefaultMailSaveOptions], %[EnterBlindCopyTo], %[EnterCopyTo], %[EnterSendTo], %[ExpandPersonalGroups], %[FaxToList], %[Form], %[From], %[Logo], %[Query_String], %[SendTo], %[SetClassification], %[Subject], %[dLogo], %[useApplet], %[wBody]

Default mappings are already set for common forms. The last line displays all the *Lotus Notes* fields that can be assigned to CES fields. Note that although any Lotus Notes field can be assigned to the **Document Body** field (*Body* is suggested in most cases), you can also use the *[Automatic]* expression, meaning that the original layout and styles in the document will be preserved (RTF format). However, expect a performance penalty when using it. Refer to [Appendix E - Technical / Performance Considerations](#) for more information.


▶ How to Add Lotus Notes Field Mappings

1. In the Administration Tool, access the **Sources** page (Index > Sources and Collections).
2. Click the appropriate source. The **Source** page is displayed.
3. In the left navigation pane, click **Fields**. The **Fields** page is displayed.
4. Locate the form to which a field mapping will be added.
5. Click the CES system field selection dropdown ▼ and select the appropriate field.
6. Enter the appropriate *Lotus Notes* fields in the **Value** field. This can represent one (e.g.: “[From]”) or several (e.g.: “[From][SendTo]”) fields. Text can also be added before, between and after fields (e.g.: “From: [From] – To: [SendTo]”). The **Value** field can be plain text (e.g.: “Plain Text”).
7. Click **Add**. The new field mapping is displayed in alphabetical order.
8. Repeat steps 4 through 7 for each field mapping to add.
9. Click **Apply Changes**. The field mappings are saved and the page is reloaded.

▶ How to Modify Lotus Notes Field Mappings

1. In the Administration Tool, access the **Sources** page (Index > Sources and Collections).
2. Click the appropriate source. The **Source** page is displayed.
3. In the left navigation pane, click **Fields**. The **Fields** page is displayed.
4. Locate the form for which a field mapping will be modified.
5. Locate the field mapping to modify.
6. Modify text in the **Value** field of the field mapping to modify.
7. Repeat steps 4 through 6 for each field mapping to modify.
8. Click  **Apply Changes**. The field mappings are saved and the page is reloaded.

▶ How to Delete Lotus Notes Field Mappings

1. In the Administration Tool, access the **Sources** page (Index > Sources and Collections).
2. Click the appropriate source. The **Source** page is displayed.
3. In the left navigation pane, click **Fields**. The **Fields** page is displayed.
4. Locate the form to remove a field mapping to.
5. Locate the field mapping to delete.
6. Remove text in the **Value** field of the field mapping to delete.
7. Repeat steps 4 through 6 for each field mapping to delete.
8. Click  **Apply Changes**. The field mappings are saved and the page is reloaded.



Appendix C – Using Lotus Notes Field Set Custom Fields

A Notes fields set represents a collection of system and custom fields. It can be customized, such that custom fields can be added/removed as needed and filled using the specified fields from Lotus Notes. A Notes fields set can be shared among several Notes sources.

▶ How to Create a New Field Set from the Add Source Page

To automatically create a new field set for the source, select **(new)** from the **Fields** field when creating a *Lotus Notes* source.

▶ How to Create a New Field Set from the Fields Section of a Source Page

1. In the Administration Tool, access the **Sources** page (Index > Sources and Collections).
2. Click the appropriate source. The **Source** page is displayed.
3. In the left navigation pane, click **Fields**. The **Fields** page is displayed.
4. Click  **Add**. The **Add Field Set** page is displayed.
5. Enter the appropriate information in the **Name** and **Description** fields.
6. Click  **Save**. The **Field Sets** page is displayed.

▶ **How to Create a New Field Set from the Field Sets Page**

1. In the Administration Tool, access the **Field Sets** page (Configuration > Fields).
2. Click . The **Add Field Set** page is displayed.
3. Enter the appropriate information in the **Name** and **Description** fields.
4. Click . The **Field Sets** page is displayed.

The **Lotus Notes Custom Fields** section is divided by forms. Each form has a **Show/Hide** link to display/hide its fields. The **Metadata Name** column contains the *Lotus Notes* fields. The **Any Form** fields represent all the fields in the other forms without metadata name duplicates. An **Any Form** custom field will store the *Lotus Notes* field content for documents of any form that contains the *Lotus Notes* field. Selecting or unselecting a form checkbox selects or unselects all the form fields even if the fields are hidden.

Metadata Name	Name	Default Value	Field Queries	Free Text Queries	Group By	Sort by
The forms and fields below are fetched from the addresses of the Lotus Notes sources that uses this fields set. The "Any Form" fields are all the fields in the forms below without metadata name duplicates. Selecting an item in this list will create a custom field that will be filled for documents of a form that contains it.						
<input type="checkbox"/>	Any Form					Show
The following fields are separated by form. Selecting an item in this list will create a custom field that will be filled only for documents of this form.						
<input type="checkbox"/>	Appointment					Show
<input type="checkbox"/>	Bookmark					Show
<input type="checkbox"/>	Memo					Hide
<input type="checkbox"/>	\$Abstract					
<input type="checkbox"/>	\$KeepPrivate					
<input type="checkbox"/>	AltFrom					
<input type="checkbox"/>	BlindCopyTo					
<input type="checkbox"/>	Body					


▶ **How to Add Lotus Notes Custom Fields**

1. In the Administration Tool, access the **Field Sets** page (Configuration > Fields).
2. Click the appropriate field set. The **Custom Fields** page is displayed.
3. In the left navigation pane, click **Lotus Notes**. The **Lotus Notes Fields** page is displayed.
4. Locate the form to add to the custom field.
5. Click the **Show** link next to the form. The *Lotus Notes* form fields are displayed.
6. Select the checkbox next to the *Lotus Notes* field to which a custom field is added. A textbox and four checkboxes are displayed next to the *Lotus Notes* field.


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7. Modify the custom field name (optional).
8. Modify the four checkboxes (optional).
9. Repeat steps 4 through 8 for each custom field to add.
10. Click . The custom fields are saved and the page is reloaded.


▶ How to Modify Lotus Notes Custom Fields

1. In the Administration Tool, access the **Field Sets** page (Configuration > Fields).
2. Click the appropriate field set. The **Custom Fields** page is displayed.
3. In the left navigation pane, click **Lotus Notes**. The **Lotus Notes Fields** page is displayed.
4. Locate the form in which a custom field will be modified.
5. Click the **Show** link next to the form. The *Lotus Notes* form fields are displayed.
6. Locate the custom field to modify.
7. Modify the custom field name (optional).
8. Modify the four checkboxes (optional).
9. Repeat steps 4 through 8 for each custom field to modify.
10. Click  **Apply Changes**. The custom fields are saved and the page is reloaded.

▶ How to Modifying Lotus Notes Custom Field Default Value

1. In the Administration Tool, access the **Field Sets** page (Configuration > Fields).
2. Click the appropriate field set. The **Custom Fields** page is displayed.
3. In the left navigation pane, click **Lotus Notes**. The **Lotus Notes Fields** page is displayed.
4. Locate the form in which a custom field will be modified.
5. Click the **Show** link next to the form. The *Lotus Notes* form fields are displayed.
6. Locate the custom field used to modify the default value.
7. Click the *Lotus Notes* field name link. The **Edit Custom Field** page is displayed.
8. Modify the **Default Value** field.
9. Modify the four checkboxes (optional).
10. Click  **Apply Changes**. The custom field is saved and the **Lotus Notes** page is displayed.

▶ How to Delete Lotus Notes Custom Fields

1. In the Administration Tool, access the **Field Sets** page (Configuration > Fields).
2. Click the appropriate field set. The **Custom Fields** page is displayed.
3. In the left navigation pane, click **Lotus Notes**. The **Lotus Notes** page is displayed.
4. Locate the form from which the custom field will be deleted.
5. Click the **Show** link next to the form. The *Lotus Notes* form fields are displayed.
6. Select the checkbox next to the *Lotus Notes* field to delete. The field as well as the four checkboxes next to the *Lotus Notes* field are removed.
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7. Repeat steps 4 through 6 for each custom field to delete.
8. Click  **Apply Changes**. The custom fields are saved and the page is reloaded.

Appendix D – Using Security Mapping Files

The *Lotus Notes* security provider uses a security mapping file to map *Lotus Notes* security permissions to their corresponding NT security permissions. Inside this file, a set of rules defines how the mapping process must be achieved.

► Format and Syntax

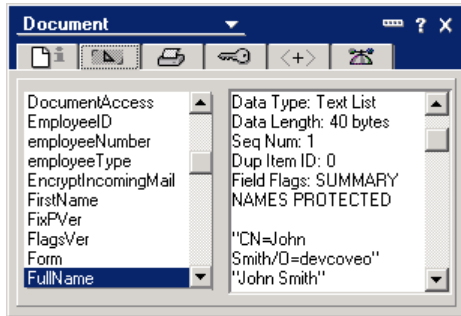
Mapping files offer two convenient ways of mapping securities:

- **Direct Mapping node:** directly maps a *Lotus Notes* user to its corresponding NT user. Use it whenever a user's account name does not follow any specific pattern. This can be particularly useful when you only have a handful of users to map, or for diagnosis purposes.
- **Resolution Method node:** specifies a *mapping pattern* to apply between users. This pattern can be formed of string constants, *fields from the Domino Address Book* and regular expressions. Use it whenever *Lotus Notes* user account names follow a specific pattern. This can be particularly useful when you have a large Address Book.

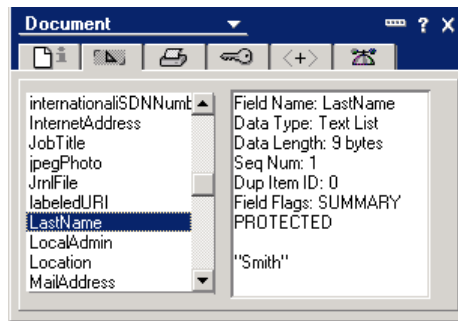
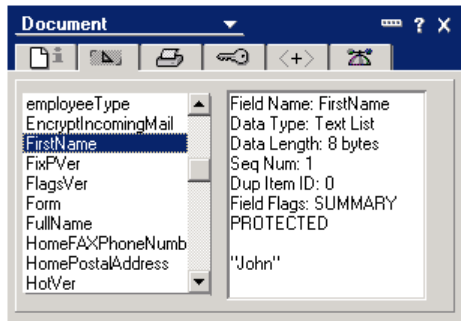
```
<?xml version="1.0" encoding="utf-8" ?>
<SecurityMapping>
  <DirectMappings>
    <DirectMapping>
      <Lotus>John Smith</Lotus>
      <Windows>devdomain\user0124</Windows>
    </DirectMapping>
    <DirectMapping>
      <Lotus>CN=John Smith/O=devcoveo @ Coveo</Lotus>
      <Windows>devdomain\user0135</Windows>
    </DirectMapping>
  </DirectMappings>
  <ResolutionMethods>
    <ResolutionMethod MethodName="FirstAndLastNames">
      <Format>devdomain\{firstNameArg}{lastNameArg}</Format>
      <Arguments>
        <Argument Name="firstNameArg">%[FirstName]</Argument>
        <Argument Name="lastNameArg">%[LastName]</Argument>
      </Arguments>
    </ResolutionMethod>
    <ResolutionMethod MethodName="FirstLetterLastName">
      <Format>devdomain\{firstLetterArg}{lastNameArg}</Format>
      <Arguments>
        <Argument Name="firstLetterArg"
Regex=".*\b(\w)">%[FirstName]</Argument>
        <Argument Name="lastNameArg">%[LastName]</Argument>
      </Arguments>
    </ResolutionMethod>
    <ResolutionMethod MethodName="DomainFirstAndLastNames">
      <Format>{domainArg}\{firstLetterArg}{lastNameArg}</Format>
      <Arguments>
        <Argument Name="domainArg">%[COVEO_ServerDomain]</Argument>
        <Argument Name="firstLetterArg"
Regex=".*\b(\w)">%[FirstName]</Argument>
        <Argument Name="lastNameArg">%[LastName]</Argument>
      </Arguments>
    </ResolutionMethod>
  </ResolutionMethods>
</SecurityMapping>
```

Here are some key observations from the previous example:

- The first Direct Mapping node directly maps the *Lotus Notes* user *John Smith* to the NT user *devdomain\user0124*. Remember that in the Domino Address Book on the server, each user has a field named *FullName*. This field is stored as an LDAP entry, such as *CN=John Smith/O=org/OU=orgUnit*. You can enter either only the CN part as the username in the *Lotus* node, i.e. *John Smith*, or the complete LDAP syntax as in the second Direct Mapping node, i.e. *CN=John Smith/O=devcoveo @Coveo*. The *Coveo* part represents the name of the Domino domain the server is member of. The @ character is mandatory.



- The first Resolution Method node combines the *FirstName* and *LastName* fields of *Lotus Notes* users to form the corresponding NT users. For example, the current *Lotus Notes* user being mapped is *John Smith*. Its corresponding NT user will be *devdomain\JohnSmith*.



- The second Resolution Method node uses a regular expression to extract the first letter from the *FirstName* field of *Lotus Notes* users. It also uses the *LastName* field, just like the first Resolution Method node does. For example, the first method fails while trying to map the user *John Smith*; the NT user being mapped now will be *devdomain\JSmith*.
- The last method is somewhat identical to the second one, except that the domain name used to form NT users is taken from the *COVEO_ServerDomain* field. This is a special Coveo field with a value corresponding to the name of the current *Domino* server. For example, the second method fails and the current *Domino* server from which *Lotus Notes* users are extracted is named *domino8.corp.domain.com*; hence, the NT user being mapped will be *domino8.corp.domain.com\JSmith*.
- Direct Mappings have priority over Resolution Methods. In other words, any mapping entered as a Direct Mapping will be used as *is* by the security provider, even if it is invalid (invalid Notes or NT user).
- Direct Mappings with a complete LDAP syntax have priority over Direct Mappings with a common name part only. In the example above, if there is a single *John Smith* in your organization, then use the short form (common name only). If there is more than one *John Smith* in your organization, then use the long form (full LDAP syntax). Note that by using the short form, you take the risk of mapping the wrong NT username to the wrong Notes username, as the short form queries the Address Book for the very first entry corresponding to *John Smith*.

- Users not specified as Direct Mappings will be mapped using one of the Resolution Methods provided. The first method will be executed on the first user found in the Domino Address Book and if the NT username being formed is invalid, the second method will be executed and so on. If all resolution methods fail, no NT user will be mapped to the current *Lotus Notes* user.

▶ Security Resolution Tool

To ease the creation and validation of security mapping files, it is possible to use the *Notes Security Resolution Tool* (found under *\$CoveoInstallationFolder\bin*). This command line tool performs the same steps as the security provider, meaning it goes through all *Lotus Notes* users available in the Domino Address Book and validates the Resolution Methods against each of them. Note that Direct Mappings are taken *as is* and are therefore not validated by the tool.

1. To generate a complete report about the resolution methods used in a security mapping file, use the following command line:

```
Coveo.CES.NotesSecurityResolutionTool.exe
/s:domino8.corp.domain.com /id:"c:\program files\lotus\notes\data\admin.id"
/p:"c:\ces5\config\NotesSecurityMappings.config" /show- /xml-
/o:"C:\temp\report.txt"
/t:"c:\temp"
```

For each resolution method, the report file will list all NT users that were either successfully or unsuccessfully mapped from Notes users. This file contains tab-separated values, therefore you can read it using any spreadsheet-application.

2. You can also generate a complete security mapping file from scratch by starting with a single resolution method. First step is to write a basic file with a single resolution method. Then, use the following command line:

```
Coveo.CES.NotesSecurityResolutionTool.exe
/s:domino8.corp.domain.com /id:"c:\program files\lotus\notes\data\admin.id"
/p:"c:\ces5\config\NotesSecurityMappings.config" /show- /xml+
/o:"c:\ces5\config\NotesSecurityMappingsUpdated.config" /im- /vm+
/t:"c:\temp"
```

For each successful user mapping (a corresponding NT user was found for the Notes user being currently processed), a Direct Mapping node will be created and appended to the output XML file. By using Direct Mapping nodes rather than Resolution Method nodes, validation is not required by the security provider and therefore processing them is much faster.

3. To list all available fields for a Notes user, use the following command line:

```
Coveo.CES.NotesSecurityResolutionTool.exe
/s:domino8.corp.domain.com /id:"c:\program files\lotus\notes\data\admin.id"
/p:"c:\ces5\config\NotesSecurityMappings.config" /show+ /o:"C:\temp\report.txt"
/t:"c:\temp"
```

The output will contain all available fields and their values. Use this as a reference to design resolution methods.

The following are the available parameters:

Parameter	Long form	Short form	Description
User ID File Path	/UserIdFilePath:<string>	/id:<string>	Complete path of the <i>user.id</i> file. If not specified, the default data path of the current <i>Lotus Notes</i> installation is used.

Server Name	/ServerName:<string>	/s:<string>	<i>Domino</i> server that contains the Global Address Book database.
Security Mapping File	/SecurityMappingFilePath:<string>	/p:<string>	Complete path to the security mapping file to validate.
Output File Path	/OutputPath:<string>	/o:<string>	Complete path to the output file. Format can be either text or XML, depending on the XmlOutput parameter.
Lotus Notes Data Path	/NotesDataPath:<string>	/d:<string>	Complete path to the Data folder of the current Lotus Notes installation.
Lotus Notes Settings File Path	/NotesINIFilePath:<string>	/ini:<string>	Complete path to the Notes Settings file (notes.ini). To be used with a multi-user Notes install.
Temporary Path	/TempPath:<string>	/t:<string>	Folder used by the tool to store its temporary files.
Show fields for user	/ShowFieldsForUser[+ -]	/show[+ -]	Metadata fields available for <i>Lotus Notes</i> users. The security mapping file will not be validated.
Xml Output	/XmlOutput[+ -]	/xml[+ -]	Whether a new XML security mapping file is output or not. When the xml- option is used, a report file is used. Use this in combination with the two following parameters.
Include Valid Securities	/IncludeValidSecurities[+ -]	/vm[+ -]	Outputs the valid user mappings found using the resolution methods as new Direct Mapping nodes inside the output XML file (Xml Output parameter must be activated).
Include Invalid Securities	/IncludeInvalidSecurities[+ -]	/im[+ -]	Output the invalid user mappings found using the resolution methods as new Direct Mapping nodes inside the output XML file (Xml Output parameter must be activated).

Appendix E – Indexing Local Databases

Notes documents can be crawled and indexed locally, meaning that databases can be stored on the CES server. Actually, no Domino server is required.

While this indexing method is convenient, you have to determine what usage you are planning for indexed documents. There are some technical limitations to consider:

- Local databases must be stored under the *Data* folder of the Lotus Notes client (typically `c:\program files\lotus\notes\data`). The only exception is if you use directory or database links. This feature allows you to store your databases elsewhere, while still being able to access them as if they were stored under the *Data* folder.
- Clicking a search result's link in the Coveo Search Interface will not open the document in Lotus Notes, unless the search was performed directly on the CES server (locally). When searches are performed remotely, the Quick View functionality is a good alternative to visualize documents.
- A User ID file with proper access to the databases to crawl is required.
- A complete Address Book is required in case you want the proper security permissions reflected in CES as well as the Email Search features. The next subsections describe the available alternatives.

▶ Using a Personal Address Book (local)

This method assumes that your Personal Address Book (`local.names.nsf`) is complete, meaning that it contains the users and groups used as security permissions on your Notes documents. In case it is incomplete or empty, you can create the missing users manually or import them from another Domino Address Book using a vCard file (see Import/Export feature with vCards in Lotus Notes). When using a vCard, make sure to export as much data as possible:



Groups need to be recreated manually because they cannot be exported. Note that the Email search interface will not work using this method, because there is no way, out-of-the-box, to link a local database file to a specific mailbox (email address). Use either one of the following methods if this is a concern for you.

▶ **Using a Domino Address Book (remote)**

This method assumes that your Domino Address Book (remote names.nsf) is complete, meaning that it contains the users and groups used as security permissions on your Notes documents. This is the typical and most preferred method. It is recommended to use the Domino Address Book in which users and groups were created originally (or one of its replicas). The email search interface will work here, as long as local databases are stored following the same folder structure as on the original Domino server (as specified in the original Domino Address Book).

Mail	
Mail system:	Notes
Domain:	domino.dev.coveo.com
Mail server:	vm-dev-domino/devcoveo
Mail file:	mail\jsmith
Forwarding address:	
Internet address:	JohnSmith@dev.coveo.com
Format preference for incoming mail:	Keep in senders' format
When receiving unencrypted mail, encrypt before storing in your mailfile:	No

For instance, a database that was stored under "data\mail\jsmith.nsf" on the original Domino server must also be stored locally under the same folder structure i.e. "data\mail\jsmith.nsf".

▶ **Using a Local Database Mapping File**

This method assumes that you have neither a complete local Personal Address Book nor a complete remote Domino Address Book. A local database mapping file is used to create a custom Address Book and define the security permissions for each local database to index. The following is a sample mapping file:

```
<?xml version="1.0" encoding="utf-8" ?>
<LocalDatabases>
  <AddressBook>
    <User name="CN=John Smith/O=corp">
      <MailDomain>MyMailDomain</MailDomain>
      <InternetAddress>jsmith@corp.com</InternetAddress>
      <MailFile>mail/jsmith.nsf</MailFile>
    </User>
  </AddressBook>
  <CommonMapping>
    <AllowedUsers>
      <AllowedUser type="Windows" allowed="true">
        <Name>corp\administrator</Name>
        <Server></Server>
      </AllowedUser>
    </AllowedUsers>
  </CommonMapping>
  <Mapping type="notes:///mail/jsmith.nsf">
    <AllowedUsers>
      <AllowedUser type="Windows" allowed="true">
        <Name>corp\jsmith</Name>
      </AllowedUser>
    </AllowedUsers>
  </Mapping>
</LocalDatabases>
```

```
<Server></Server>
  </AllowedUser>
</AllowedUsers>
</Mapping>
</LocalDatabases>
```

Here is the usage of each node type:

- **User node:** defines a user and its main fields. The name attribute has an LDAP format; you can determine this name from either the *FullName* field of a user or any other email-related field on a document (e.g. From: CN=John Smith/O=corp).
The *MainDomain*, *InternetAddress* and *MailFile* fields can be retrieved directly from the original Domino Address Book. However, you can customize them as you want:
 - The *MailDomain* field must match the original user's mail domain.
 - The *InternetAddress* field can be any email address you want. It will be used as the @sysmailbox field.
 - The *MailFile* field represents the relative path to the local database owned by the user, starting from the root folder (notes\data folder). In the above example, the local database is located under notes\data\mail\jsmith.nsf. **Make sure to use slash characters in the specified path, not backslashes.**
- **CommonMapping and Mapping nodes:** define the security permissions to index for local databases. Each local database being indexed should have a *Mapping* node with a *type* attribute that identifies the complete URL of the database (case insensitive). The *CommonMapping* node is used to define the security permissions that are common to all local databases. This node is optional.

Appendix F – Understanding the Notes Users Cache

The Notes connector and the Notes security provider both retrieve information about users from the Domino Address Book. Since this process can be time-consuming, especially in environments with several thousands of users, a copy of the Domino Address Book is kept locally. It is called the *users cache*. This cache is updated periodically with modifications, following a specific time interval (24 hours by default; see the *UsersCacheLifeSpan* parameter).

Each Notes source and each Notes security provider has its own cache stored on disk:

- Source: typically stored under
C:\CES6\Index\Crawlers\NotesStateInfo_{PhysicalIndexId}_{CollectionId}_{SourceId}_TempUserToFieldMappings.dat
- Security provider: stored under {TempPath}\TempUsersCache.dat

Since this cache is unique to each source/security provider and built only once, synchronization problems can occur in the following situations:

- The Address Book is modified frequently on a 24-hour period, whereas Refresh/Live Indexing runs as well as security cache updates occur rarely. As a result, the users cache does not hold an up-to-date representation of the Address Book. Solution: decrease the Live Indexing delay of your source and/or the *UsersCacheLifeSpan* parameter's value, both in the source and the security provider. Also reschedule security cache updates so that they happen more frequently.
- Either the starting addresses or the *AddressBookServerURL* parameter in a Notes source are modified to point to an entirely different server. As a result, the users cache still holds content from the Address Book on the previous server. Solution: stop the CES service, delete the specific DAT file

used by the source and restart the CES service. The same principle applies when you want to reset the users cache for the security provider; delete its DAT file.

- The refresh interval of the users cache (*UsersCacheLifeSpan* parameter) in the security provider is greater than the delay of security cache updates. As a result, the users cache may end up being updated only every 48 hours or so. Solution: decrease the refresh interval of the users cache so that it is less than the delay of security cache updates.

Appendix G – Notes Security - Recommendations

The Notes connector indexes security permissions following the Domino security model. However, for these to be properly reflected in CES, consider the following:

- The -Default- permission is handled as *everyone* in CES. Therefore, when it is given at least the Reader access level on the database ACL, whoever has access to the Search Interface can find his documents, except for users and groups that are denied explicitly either on the database or the documents. The bottom line is that you have to be very careful with this permission.
- If the Domino Address Book is modified frequently (i.e. users are created or deleted), make sure that security cache updates occur regularly - at least daily. See the *Update Windows Users and Groups Cache* schedule in the CES Administration Tool. Additionally, consider decreasing the value of the *UsersCacheLifeSpan* parameter both in your source and your security provider. As a general rule, make sure that *UsersCacheLifeSpan* ≤ *Update Windows Users and Groups Cache* delay.
- If a source indexes content for which security permissions are modified frequently (i.e. users and groups are added/removed, access levels are modified, etc.), you can add the *LiveIndexingDelay* parameter to the source and assign it a smaller value - the default value being 900 seconds (15 minutes), it should normally meet most needs. However, if groups themselves are modified frequently (members are added/removed), consider refreshing your source more frequently. See the *Source Refresh* schedules in the CES Administration Tool.

Appendix H - Technical / Performance Considerations

- Indexing the body of a document from its metadata field (%[Body]) is much faster than indexing it directly from its RTF format ([Automatic]). However, the RTF format of the body is much more complete, as it is a direct copy of the original document's body.
- There can be an important overhead when crawling large databases, especially when security permissions on views/folders are indexed (*IndexSecurityOnViews* set to *True*). For this reason, a delay is to be expected before any item is indexed.
- OLE embedded objects generally take more time to index than standard attachments. Items with several OLE embedded objects incur an important overhead before any one of them is indexed. Note that AVI video files embedded as OLE objects are not indexed by the connector.
- Starting addresses that must be expanded take more time to process than starting addresses that point directly to a database. Expect some delay before any item is indexed.
- When using multiple resolution methods in your security mapping file, the security provider will execute each resolution method until one of them resolves a valid NT security. Internally, a lookup in Active Directory is made to verify the validity of the resolved security. Therefore, expect some delay when updating the security cache of CES. If performance is critical, define a single resolution method in your security mapping file and set the parameter *AllowMultipleResolutionMethods* to *False* in your security provider.

- The folder hierarchy of a search result contains a view/folder only when one was used in the corresponding starting address.
- When a corrupted note/view/database is encountered while indexing, the *Notes API* can crash. In order to continue indexing, all programs that use this API (*nnotes.dll*) will be automatically terminated by the Notes connector, including *eclipse.exe*, *nlnotes.exe*, all their child processes, as well as *nnotesmm.exe*. This operation resets the API to a proper state. Use the *EnableSafeMode* parameter to index corrupted databases (source and security provider).
- Releases preceding *Lotus Notes/Domino 7.03* contain several bugs that could prevent the connector from running correctly and securely. It is strongly advised to use *Lotus Notes/Domino 7.03* and later (8.5 recommended).
- OLE embedded objects, as well as attachments with the identical filenames, are indexed with a randomly-generated filename (*extxxxxxx.ole* and *extxxxxxx*).

Appendix I - Troubleshooting

Error message (CES console)	Cause	Resolution
NameLookups are limited on this server to a size smaller than what would be returned. See your Domino Administrator for more information.	The global address book on the server contains too many entries to be returned in a single batch. The server is not configured to handle this.	Add the variable <code>NAMELOOKUP_MAX_MB</code> variable in <code>notes.ini</code> on the server. Assign it a value of 2 (MB), then increase it gradually until you no longer see the error message. Otherwise, it is possible to add the custom source parameter <code>TreatLookupErrorsAsWarnings</code> and set it to True. However, expect the metadata fields to have incorrect email addresses.
Unable to instantiate the Lotus Notes classes: Failed to read from an IPC port: The pipe has been ended.	Here are the possible causes: <ol style="list-style-type: none"> 1) The timeout value is not large enough when initializing the Notes API. 2) The <code>notes.ini</code> file being used by the connector is invalid. 3) More than one Notes source is running and one of them is currently crawling a corrupted database. Thus, one of the sources stopped. 	<ol style="list-style-type: none"> 1) Increase the value of the source parameter <code>Server Query Timeout</code>. 2) Configure the <code>notes.ini</code> file properly by opening at least one database on the targeted Domino server using the Notes client installed on the CES server. 3) Add the parameter <code>EnableSafeMode</code> on all Notes sources and on the Notes security provider.
Mapping (FormType) not found in the metadata mappings.	There is no mapping defined for the specified form type.	Define the mapping for the specified form type through the Fields section of your source. Otherwise, ignore this form by adding it to the Ignored Forms source parameter.
Closing the Notes processes and resetting the API. Additionally, if CES is running in standalone mode (<code>CESService6.exe -standalone</code>), you may see empty command prompt windows popping up intermittently.	The connector tried to retrieve a corrupted document but the Notes API crashed by doing so.	There is no required user action; the connector handles this situation automatically by resetting the API to a proper state and resuming the crawling where it stopped. Note that any other process using the Notes API will be aborted (Lotus Notes client, Domino Administrator, Domino Designer, etc.). If other Notes sources may run at the same time, refer to the Configuration section of this documentation, specifically for

		the <i>EnableSafeMode</i> parameter.
Cannot load security provider: [error/warning message]	An invalid parameter prevents the security provider from loading.	Read the error message carefully as it describes the cause of the error. In case no error/warning message is displayed, either the DLL Path or the AssemblyPath parameter is incorrect,
Only one Resolution Method is allowed for the Notes Security Provider. To use several resolution methods, use the <i>AllowMultipleResolutionMethods</i> parameter.	The security mapping file contains either no resolution method or several resolution methods although the <i>AllowMultipleResolutionMethods</i> parameter was not enabled.	<ol style="list-style-type: none"> 1) Define at least one resolution method in the security mapping file if it does not contain any. 2) In case several resolution methods are used, add the following parameter in the security provider parameters list: <i>AllowMultipleResolutionMethods=True</i>
<p>class Notes::DatabaseOpenFailedException: Unable to find path to server. Check that your network connection is working.</p> <p>If you have a working connection, go to Preferences - Notes Ports and click Trace to discover where it breaks down. (2051)</p>	Either the notes.ini file or the user.id file used by the connector or the security provider is invalid for the targeted Domino server.	Make sure that the notes.ini file is properly configured to connect to the targeted Domino Server. Otherwise, verify that the user.id file has proper access to the Domino server.
<p>Getting a blank page when accessing the <i>Fields</i> section of a Notes source.</p> <p>There are two possible symptoms:</p> <ol style="list-style-type: none"> 1) As soon as you try to access the section, you get a blank page. 2) You try to access the section but it takes a while before you get the blank page (~1min 30secs) 	<ol style="list-style-type: none"> 1) The credentials you use in your source are incorrect (user identity), or there is some network problem (server unreachable). 2) Retrieving the fields and forms from the database(s) in the starting address(es) takes too much time, either because the design complexity of these database(s) is high or because the network connection is slow. 	<ol style="list-style-type: none"> 1) Fix the user identity used by your source. The password is most likely incorrect. Also, make sure that you can ping the servers pointed to by your starting addresses. 2) Add the <i>GetFormsTimeout</i> parameter to your source. The default value is 30 seconds. Increase its value until you no longer get the blank page.