Sametime business card configuration secrets, Part 1

Architecture and Configuration

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Lotus Notes and Domino administrators and developers who work with IBM Lotus Sametime are happy to know that release 7.5 introduced a brand-new Sametime Connect client sporting an updated look and feel. The client is an extensible platform that provides a host of new features, including rich-text editing, smilies (or emoticons), and a screen capture tool. While much information is available regarding the extensible nature of the new Sametime Connect client, not much attention has been paid to one of the other great features — support for business card information for Contacts.

By default, the business card system gathers information from the directory that controls the Sametime community. That directory can be the Domino Directory or a directory on a separate Lightweight Directory Access Protocol (LDAP) server. While it is convenient and easy to set up the business card system to access this one directory, the directory often doesn't maintain all the information you want your Sametime business cards to display. You might already maintain business card data in a separate application, such as a custom phone book database, and would like the Sametime business card system to use it instead.

In this first of two articles, I show you how to configure a business card system that allows you to extract business card data (e.g., contact information and pictures) from custom Notes sources, such as an existing phonebook database. I discuss the requirements to be aware of, give you an overview of the business card system, and introduce the system's Extensible Markup Language (XML) configuration file. Then I show you how to configure the system's components based on the information you want to retrieve. I wrap up with two examples of how to combine the IBM-provided components to cater to specific situations.

Don't forget to check out Part 2, in the next upcoming issue, which shows you how to write Java code to access business card data from

non-Notes applications. For example, you can get business card information from an SAP ERP Human Capital Management system (HCM, popularly referred to as HR for human resources) or a Lotus Connections profile database, with very little Java coding.

Requirements

All the features discussed in this article are applicable to the Sametime client embedded in the Notes 8 Standard client, as well as the standalone Sametime 7.5 Connect client and the standalone Sametime 8.0 Connect client. These clients are based on the IBM Lotus Expeditor platform, so the underlying code is the same. Throughout this article, you won't modify the Sametime client at all; you'll simply configure the Sametime server and the business card system that resides on it.

> ### *Note!*
>
> Throughout the article, when I refer to a Sametime client, I mean a Sametime Connect 7.5 client, a Sametime Connect 8 client, or the Sametime client embedded in the Notes 8 Standard client.

To get business card information from the Domino Directory, an LDAP directory, or a custom Notes database, you need to be comfortable with editing XML files. You'll also need access to a Sametime server and be allowed to edit the server configuration files.

To begin, I'll provide some background information on the business card system.

The Sametime business card system

A business card is what you see when you hover a mouse over a contact name in a Sametime buddy list (see **Figure 1**). Besides showing the online status of the contact, the business card holds typical business card information, such as the contact's name, title, phone number, and company name. The business card also supports showing a picture of the contact, but this capability is not configured out-of-the-box. You'll see how to do this configuration in the section "Configuring the blackboxes."

The business card system, or *UserInfo* as it is called in the Sametime documentation, is made up of three main components:

- The Sametime client, which displays the business card information

- A Java servlet called "UserInfoServlet," running on the Sametime server(s)

- One or more so-called "blackbox"[1] implementations

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[1] "Blackbox" is a term used when you know the programming interface of a certain piece of functionality but you do not know the inner workings. You simply know that when you supply argument X, result Y is returned. The key is that you don't know how it's done.
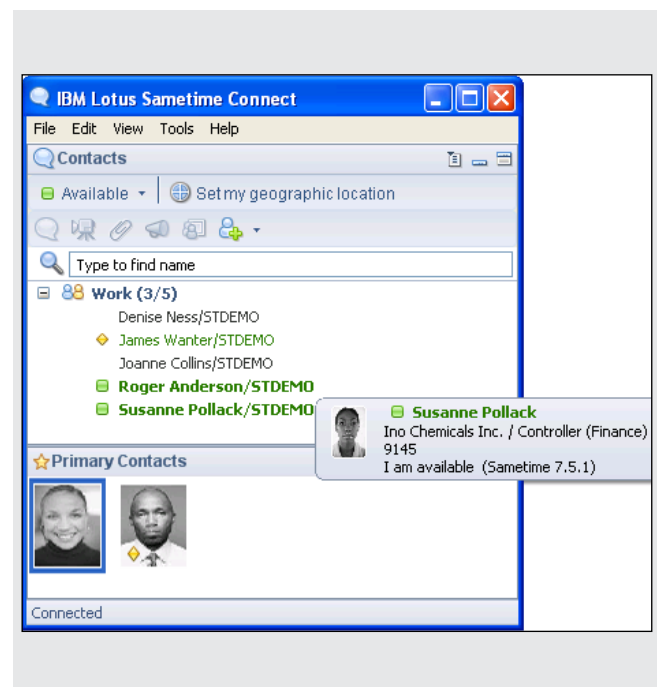

Figure 1   A Sametime client showing a contact's business card information

In the business card system, a blackbox is the component that actually obtains business card information (from the UserInfoServlet servlet's point of view). The servlet only knows how to ask the blackbox for information and how to parse the result; how it retrieves the information is up to the blackbox (whether that is from a Notes, LDAP, or SAP HR source).

The Sametime server comes with the following IBM-supplied blackboxes packaged as .class files that you can use and/or combine as you wish:

- **UserInfoNotesBB** (included with Sametime 7.5 servers and higher). The full class name for the UserInfoNotesBB blackbox is "com.ibm.sametime.userinfo.userinfobb.UserInfoNotesBB". This black-box is automatically configured as part of the setup of the Sametime server when you use the Domino Directory as the Sametime directory. This blackbox implementation retrieves business card data from Person documents in the Domino Directory, and it considers Directory Assistance, which is nice for those who have multiple Domino Directories due to many Domino mail domains.

- **UserInfoLdapBB** (included with Sametime 7.5 servers and higher). The full class name for the UserInfoLdapBB blackbox is "com.ibm.sametime. userinfo.userinfobb.UserInfoLdapBB". This blackbox is automatically configured as part of the setup of the Sametime server when you use an LDAP directory as the Sametime directory. This blackbox implementation reads information from records in an LDAP directory.

- **UserInfoNotesCustomBB** (included with Sametime 7.5.1 servers and higher). The full class name for the UserInfoNotesCustomBB blackbox is "com.ibm.sametime.userinfo.userinfobb. UserInfoNotesCustomBB". This blackbox implementation extends UserInfoNotesBB and allows you to configure the name of the database and the view to use for getting the business card data.

If you want to find the actual .class files, the easiest way is to search your Sametime installation directory for a file called "userinfo.jar." The section "Configuring the blackboxes" describes each of these blackboxes in detail.

Figure 2 shows a diagram of the Sametime business card architecture. When a Sametime client needs to display a contact's business card, the business card system performs the following steps:

1. When a Sametime user hovers his or her mouse over a contact name in a Sametime client, a request is sent to the Sametime server asking for that contact's business card. The Sametime client always uses a proprietary binary protocol over an internal communication channel.

   Note that you, as a developer, may contact the UserInfoServlet over HTTP (a text-based protocol), which produces XML responses that allow for easy debugging. Part 2 of this article (in the next issue of *THE VIEW*) explains this debugging procedure.

2. The servlet reads a configuration file called "UserInfoConfig.xml" in the Domino program directory of the Sametime server to determine which blackboxes to query.

3. The servlet queries each blackbox in turn, based on the sequence listed in the configuration file.

4. The blackbox uses some kind of data store (e.g., UserInfoNotesBB uses the Domino Directory) to retrieve the user information.

5. The blackbox returns the data to the servlet in an IBM-defined object hierarchy.

6. The servlet combines the responses from all the configured blackboxes.

7. The servlet task returns the XML to the Sametime client, which parses and renders the information.

While the system's architecture sounds and looks complex, most of the work is taken care of for you. You only need to configure the system and supply the blackbox implementation to use.

Understanding the architectural procedure is most important when you troubleshoot problems, because this knowledge can help you pinpoint where problems occur and where bad data is injected into the system.

Please note that when you install a Sametime server, the business card system is installed and configured automatically, and the system works just fine out of the box. The business card system installation reads from the default directory that controls the Sametime community so it will surface any information that directory contains. For example, if you're using the Domino Directory as the default Sametime directory, the Sametime business cards should automatically show certain information, such a user's name and e-mail address. However, understanding the business card system and knowing how to customize it is very important if you maintain business card data outside the Domino Directory (as most organizations do).

In order to configure the system to fit your needs, you need to understand how the system is automatically configured out of the box. The next section explains that configuration.

Configuring the business card system using UserInfoConfig.xml

To configure the business card system, you use an XML configuration file called "UserInfoConfig.xml,"
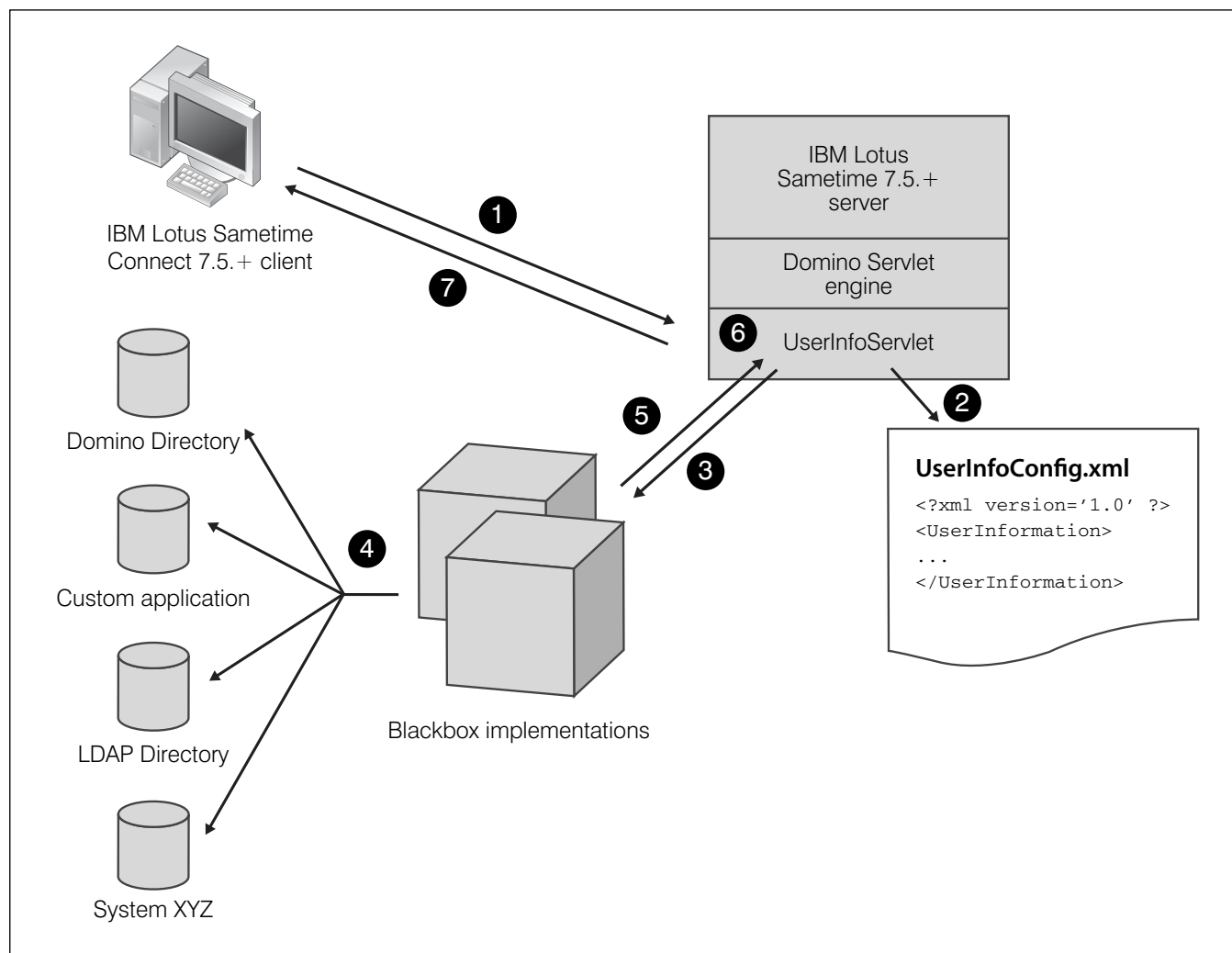

Figure 2   Schematic overview of the Sametime business card architecture

which resides on your Sametime server in the Domino program directory (see **Figure 3**). You may configure this file using the Web Administration interface on the Sametime server, but I find it much faster and easier to edit the configuration file directly with a text editor such as Notepad.

Figure 4 shows an example default configuration for the UserInfoConfig.xml file where the Sametime business card system uses the Domino Directory to retrieve business card information.

Note!

The UserInfoServlet servlet only reads the UserInfoConfig.xml file at startup so if you change the file's configuration, you need to restart the HTTP task on your Sametime server(s).

The UserInfoConfig.xml file contains these three main elements:

- <Resources>

- <ParamsSets>

- <BlackboxConfiguration>

The following sections detail each of these elements.

The <Resources> element

The <Resources> element specifies the storage types for the different blackboxes configured in the file. The <Storage> element indicates the storage type for a specific blackbox, and a UserInfoCong.xml file can have multiple <Storage> elements. When the business card system uses the Domino Directory as the default directory, the storage type is NOTES. When it uses an LDAP directory, the storage type is LDAP.
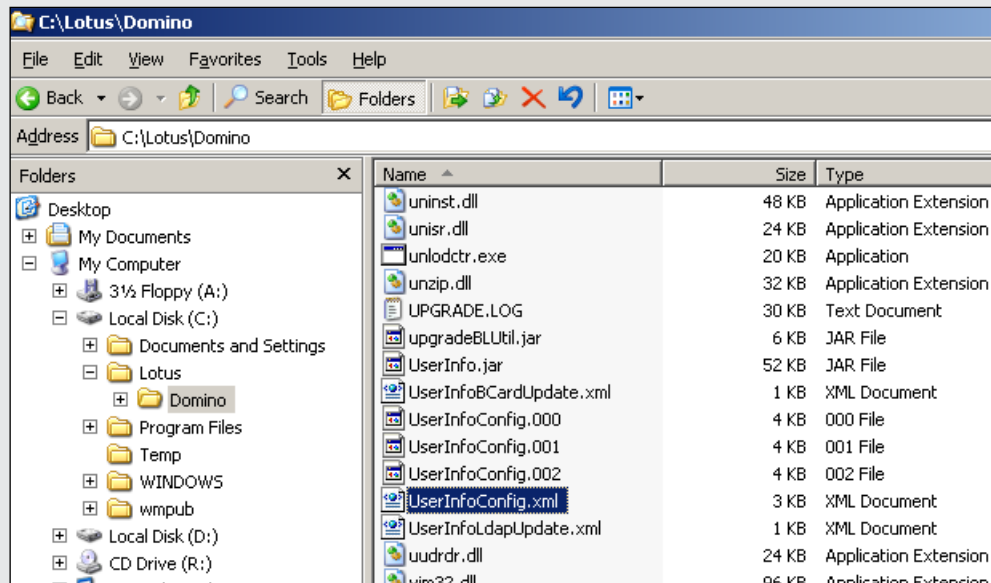

Figure 3   The UserInfoConfig.xml configuration file on the Sametime server

Each <Storage> element has a <Details> element containing any number of <Detail> subelements. The <Detail> subelements each contain three attributes:

• **Id** represents the information that the business card system knows of (the user's location, title, etc.). The attribute values are hardcoded constants — that is, you shouldn't invent your own values that require the elements to come in a specific sequence.

• **FieldName** represents the actual field name the blackbox uses to obtain the information. The field name has to be valid for the blackbox that uses it — that is, if you use the UserInfoNotesBB blackbox, the field name should be valid for Person documents.

• **Type** represents the Multipurpose Internet Mail Extensions (MIME) type.[2] The business card system recognizes two different MIME types: **text/plain**, which indicates that a field contains text, and **image/[file format]**, which indicates that a field contains an image (binary data) and also indicates what format the image is in (JPEG or GIF, etc.).

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[2] MIME is a World Wide Web Consortium (W3C) standardized way of specifying a data type.

```xml
<?xml version ="1.0" encoding="UTF-8" ?>
<UserInformation>
 <ReadStConfigUpdates value="true"/>
 <Resources>
  <Storage type="NOTES">
   <CommonField  CommonFieldName="MailAddress"/>
   <Details>
    <Detail Id="Location" FieldName="Location" Type="text/plain"/>
    <Detail Id="Title" FieldName="JobTitle" Type="text/plain"/>
    <Detail Id="MailAddress"  FieldName="InternetAddress" Type="text/plain"/>
    <Detail Id="Telephone"  FieldName="OfficePhoneNumber" Type="text/plain"/>
    <Detail Id="Company" FieldName="CompanyName" Type="text/plain"  />
    <Detail Id="Name"  FieldName="FirstName,MiddleInitial,LastName" Type="text/plain"/>
   </Details>
  </Storage>
 </Resources>
 <ParamsSets>
  <Set SetId="0" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
  <Set SetId="1" params="MailAddress,Name,Title,Location,Telephone,Company"/>
 </ParamsSets>
 <BlackBoxConfiguration>
  <BlackBox type="NOTES"
   name="com.ibm.sametime.userinfo.userinfobb.UserInfoNotesBB"
   MaxInstances="4" />
 </BlackBoxConfiguration>
</UserInformation>
```

Figure 4   A standard installation of UserInfoConfig.xml for a Sametime server using the Domino Directory

Please note that the blackboxes ignore any <Detail> element where the MIME type doesn't start with "text/" or "image/". Due to how IBM wrote the code, the UserInfoLdapBB blackbox actually treats any <Detail> element where the MIME type doesn't start with "text/" as a binary value. This limitation is something that you can't change without resorting to custom blackboxes.

UserInfoServlet can send a request for business card information to more than one blackbox, and you use the <CommonField> element to synchronize information from all queried blackboxes. This element tells the business card system which attribute is the same across all configured blackboxes. In order for you to use multiple blackboxes, you need to have one common attribute across all the data sources for the blackboxes. It's not important whether this is the e-mail address or an employee number, but you need to have a common value. The default configuration maps the CommonFieldName attribute to the field that holds the e-mail address (i.e., MailAddress). Obviously, this setting is only important when multiple blackboxes are configured simultaneously.

For example, say Roger Anderson from Ino Chemicals, Inc. logs into the Sametime server and hovers his mouse over the name of Susanne Pollack in his buddy list (refer to **Figure 1**). The Sametime client contacts the UserInfoServlet servlet and requests the business card information for Susanne using her Sametime user ID (normally, a fully qualified Notes name), which is CN=Susanne Pollack/O=STDEMO. However, subsequent blackboxes may not necessarily store Susanne's Notes name from the first blackbox. A second blackbox might be for an application that doesn't list Notes user IDs, such as a phone book database. You can use the <CommonField> element to specify a different attribute in subsequent blackboxes and ensure the servlet queries the second blackbox using Susanne's Internet address (susanne.pollack@example.com) instead of her Notes name.

In this example, the MailAddress attribute should point to the InternetAddress field in the Domino Directory. If you have another blackbox configured, the UserInfoServlet servlet would query the second blackbox using the value from the InternetAddress field and hence Susanne's e-mail address.

The <ParamsSets> element

The <ParamsSets> element holds modifiable sets that specify which contact attributes the servlet UserInfoServlet returns when asked for business card information. These sets each have an id (0, 1, 2, etc.). When the Sametime client requests information for a business card, it always asks the server for the attributes in set 1. If you don't want the Sametime server to return titles to a Sametime client, for example, you would leave the title attribute out of set 1.

In my opinion, you can ignore <ParamSets> because the value that the Sametime client requests is fixed by IBM (i.e., the Sametime client always asks for set 1). The element was probably included to allow for future enhancements. For now, all you need to remember is that the Sametime client asks for the attributes configured in set 1. Set 0 is special in that it is computed to contain all the attributes configured using the <Detail> element attributes; I always make set 0 and set 1 identical, as I have yet to find a reason to omit contact attributes.

The <BlackboxConfiguration> element

The <BlackboxConfiguration> element specifies the Java class names of the blackbox implementations to query. The name attribute indicates the class that contains the configuration for the blackbox. The default configuration uses the UserInfoNotesBB class if the Sametime server uses the Domino Directory as its directory, and it uses the UserInfoLdapBB class if the server uses an LDAP directory. If you use the UserInfoCustomNotesBB blackbox, you need to enter the com.ibm.sametime.userinfo.userinfobb.UserInfo NotesCustomBB class in this element.

The MaxInstances attribute of the <Blackbox Configuration> element tells UserInfoServlet how many instances to create, which determines the number of simultaneous requests it can serve. If the servlet receives too many simultaneous requests, it simply queues up the requests. You can change this attribute as needed for you environment. By default, the attribute value is set to 4; I have not come across a situation where I needed to change this value.

Configuring the blackboxes

Now that you have an orientation of the UserInfoConfig.xml file and know a little about the three blackboxes you can configure, I'll explain how each blackbox works and how to configure them.

The UserInfoNotesBB blackbox

Besides reading data from the Domino Directory, the UserInfoNotesBB blackbox can actually get business card data from any Notes database that looks like the Domino Directory. This means that the database needs to have a view called "$Users" with the first sorted column listing the user name.

When a Sametime user hovers his or her mouse over a user name in the Sametime client, the UserInfoNotesBB blackbox does the following:

1. If the incoming user name is from an LDAP directory, the blackbox converts the name from LDAP format to Domino format by replacing commas with slashes (e.g., cn=Susanne Pollack,O=STDEMO becomes CN=Susanne Pollack/O=STDEMO). If the name is already in Domino format, the blackbox doesn't perform any action in this step.

2. The blackbox uses the Session.getAddressBooks() method to retrieve configured address books on the Sametime server, and it processes the address books one by one.

3. For each retrieved address book, the blackbox opens the $Users view and tries to find a document with the resulting user name from step 1.

4. If it finds a document, the blackbox uses the field names in the <Detail> subelements configured in the UserInfoConfig.xml file's <Storage> element called "NOTES" to get the information for the user.

5. The blackbox returns the data to the UserInfoServlet servlet.

You can configure the UserInfoNotesBB blackbox to get specific data from the Domino Directory. For example, you can choose to get the phone number from another field than the default one. You can also configure the blackbox to retrieve a photo of a contact from the Domino Directory, which I'll explain next.

Configuring the UserInfoNotesBB blackbox to retrieve a picture

Remember that the UserInfoNotesBB blackbox is not automatically configured to get a user's picture from the Domino Directory even though you may have it available there. You can easily configure this capability.

For example, say the Person documents in your the Domino Directory have a field called "UserPhoto" that contains an embedded photo of the user. To get the UserInfoNotesBB blackbox to pick up and return the picture to Sametime clients, you must do the following:

1. Open the UserInfoConfig.xml file using a text editor.

2. In the <Details> element for the resource, add a <Detail> subelement pointing to the photo field by inserting values for the Id, FieldName, and Type attributes (e.g., Photo, UserPhoto, and image/jpeg, respectively).

3. Update the <ParamsSets> element to contain Photo as a value for the params attribute.

4. Save and close the file.

5. Restart the HTTP task on the Sametime server.

Figure 5 shows the changes in bold that you would make to update the UserInfoConfig.xml file from the standard installation of Sametime to retrieve a contact's photo from the Domino Directory.

The UserInfoLdapBB blackbox

The UserInfoLdapBB blackbox requires you to include some more setup information to allow the blackbox to locate the LDAP server. The storage type for the UserInforLdapBB blackbox is set to LDAP in the UserInfoConfig.xml file's <Storage> element.

When a Sametime user hovers his or her mouse over a user name in the Sametime client, the UserInfoLdapBB blackbox contacts the configured LDAP server, searches for the requested user record using the supplied search filter, and retrieves the information configured in the Detail element. As you can probably gather from this, UserInfoLdapBB takes somewhat more setting up than UserInfoNotesBB, as you can see in the next section.

```xml
<?xml version ="1.0" encoding="UTF-8" ?>
<UserInformation>
 <ReadStConfigUpdates value="true"/>
 <Resources>
  <Storage type="NOTES">
   <CommonField  CommonFieldName="MailAddress"/>
   <Details>
    <Detail Id="Location"  FieldName="Location" Type="text/plain"/>
    <Detail Id="Title"  FieldName="JobTitle" Type="text/plain"/>
    <Detail Id="MailAddress"  FieldName="InternetAddress" Type="text/plain"/>
    <Detail Id="Telephone"  FieldName="OfficePhoneNumber" Type="text/plain"/>
    <Detail Id="Company"  FieldName="CompanyName" Type="text/plain"  />
    <Detail Id="Name"  FieldName="FirstName,MiddleInitial,LastName" Type="text/plain"/>
    <Detail Id="Photo"  FieldName="UserPhoto" Type="image/jpeg"/>
   </Details>
  </Storage>
 </Resources>
 <ParamsSets>
  <Set SetId="0" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
  <Set SetId="1" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
 </ParamsSets>
 <BlackBoxConfiguration>
  <BlackBox type="NOTES"
   name="com.ibm.sametime.userinfo.userinfobb.UserInfoNotesBB"
   MaxInstances="4" />
 </BlackBoxConfiguration>
</UserInformation>
```

Figure 5   Configuring UserInfoNotesBB to return a user image from the Domino Directory

Configuring UserInfoLdapBB to locate an LDAP server

In order to configure UserInfoLdapBB to locate an LDAP server, you must specify all the information needed to contact and log in to the LDAP server in the UserInfoConfig.xml file's <StorageDetails> element. This element pertains only to the LDAP storage type. UserInfoLdapBB uses this element to actually locate the LDAP server. This element doesn't exist inside the <Storage> element of the UserInfoNotesBB blackbox because no such extra info is required for Notes access.

A typical LDAP <Storage> element would look like **Figure 6** by default. You'll see a full example of an LDAP configuration in the section "Combining the Domino Directory with an LDAP directory."

An important setting you must specify is the Scope attribute. This attribute specifies the scope of search in the LDAP directory. UserInfoLdapBB supports three values for the Scope attribute:

- **0** searches the named object.

- **1** searches one level of the named context.

- **2** searches the entire subtree rooted at the named object.

You also must specify the search filter (i.e., the query) the blackbox uses when searching for users. You enter "%s" to indicate where the blackbox should insert the supplied user name.

After the blackbox locates a record in the LDAP directory, it uses the values specified in the FieldName attributes in the <Detail> subelements to retrieve data from the directory. Again, the MIME type specified in the <Detail> subelement is used to specify the data type. Remember that the UserInfoLdapBB blackbox treats all fields with a type not starting with text/ as a binary field, so watch out for typing errors.

Note!

To successfully retrieve photos from a Domino LDAP directory, the directory should be upgraded to Domino 6.5.4 or higher.

```
<Storage type="LDAP">
 <StorageDetails
  HostName="ldap.example.com" Port="389"
  UserName="username" Password="password"
  SslEnabled="false" SslPort="636"
  BaseDN="o=STDEMO" Scope="2"
  SearchFilter="(&amp;(objectclass=organizationalPerson)(|(cn=%s)(givenname=%s)(sn=%s)(mail=
%s)))" />
 <SslProperties KeyStorePath=""  KeyStorePassword=""/>
 <Details>
  <!-- Detail elements - omitted for brevity -->
 </Details>
</Storage>
```

Figure 6   An example of a <Storage> element (default) for the UserInfoLdapBB blackbox

The UserInfoNotesCustomBB blackbox

Due to customer demand for getting business card information from custom, non Directory-style, Notes databases (such as a custom phonebook application), IBM supplied the UserInfoNotesCustomBB blackbox implementation with Sametime 7.5.1. If you need to get business card data from an existing custom Notes database, this is the simplest approach because it only requires editing the UserInfoConfig.xml file. You could also make minor changes to the database design using Domino Designer, such as adding a view, in the unlikely case that it's necessary. The only requirement is that the database contains a view listing the user names in the first sorted column. Creating the view itself is outside the scope of the article, but should be straightforward to do for any Notes developer.

Configuring UserInfoNotesCustomBB to look in a custom photobook.nsf database

This blackbox configuration is similar to the UserInfoNotesBB and UserInfoLdapBB blackboxes. It is a mix between the two blackboxes in that it requires additional configuration in the <StorageDetails> element, but it uses Notes field names. To use this blackbox, you should set the storage type to NOTES_CUSTOM_DB in the UserInfoConfig.xml file's <Storage> element. Similarly to UserInfoLdapBB, you need to configure a <StorageDetails> element in order to find the source database.

Figure 7 shows an example <Storage> element of the UserInfoConfig.xml file configured for the UserInfoNotesCustomBB blackbox. The <StorageDetails> element is configured to instruct the blackbox to use the photobook.nsf database in the dbs-directory on the Sametime server and use the lookupUsers view for user lookup (see the DbName and View attributes). Remember, to actually configure the blackbox, you also need to enter the "com.ibm. sametime.userinfo.userinfobb.UserInfoNotesCustomBB" class as the value for the name attribute in the <BlackboxConfiguration> element.

Please note that the required DbName and View attributes are case sensitive. So if you configure this custom blackbox and it doesn't work, i.e., you see errors on the server console, you should check that the attributes have the correct case in the XML configuration document.

Combining multiple blackbox implementations

You can use multiple blackboxes to get the business card data you need. This way, you can mix and match data from the Domino Directory with data from an LDAP directory, or you can get business card data from the Domino Directory while retrieving the user photo from a custom application like a phone book database.

To use multiple blackboxes, you have to configure each blackbox using the <BlackboxConfiguration>

```
<Storage type="NOTES_CUSTOM_DB">
 <StorageDetails
  DbName="dbs/photobook.nsf"
  View="lookupUsers" />
 <CommonField  CommonFieldName="MailAddress"/>
 <Details>
  <!-- Detail elements -->
 </Details>
</Storage>
```

Figure 7   An example <Storage> element for the UserInfoNotesCustomBB blackbox

element and add a <Storage> element per blackbox as appropriate for that particular blackbox. You may combine as many blackboxes as you need. Just remember that the servlet queries the blackboxes in the order listed in the UserInfoConfig.xml file.

Tip!

You should always list blackboxes in a prioritized order because if the UserInfoServlet servlet finds multiple values for the same attribute (e.g., phone number), it returns the value from the blackbox listed first.

Combining the Domino Directory with a custom Notes database

Consider a case where you have a the Domino Directory that contains all of users' contact information except for their phone numbers and pictures, and you would like to get this information from a custom database. You can accomplish this by combining the UserInfoNotesBB and the UserInfoNotesCustomBB blackboxes. A typical configuration for this case would look like **Figure 8**.

Note how I have configured two blackboxes: two <BlackBox> elements of type NOTES under the <BlackBoxConfiguration> element. I also configured two <Storage> elements under the <Resources> element (one for each blackbox). The first blackbox has a storage type of NOTES, and the second blackbox has a storage type of NOTES_CUSTOM_ DB. To make sure the servlet will retrieve the phone number and the picture from the second blackbox, I omitted a <Detail> element for both pieces of information from the <Storage> element for the UserInfoNotesBB blackbox.

Combining the Domino Directory with an LDAP directory

Consider a case where you have a the Domino Directory that is the basis for your Sametime community, but it contains only the core user information such as the name and the e-mail address (along with the rest of the Notes configuration, of course). A separate corporate LDAP directory maintains the rest of the user information, such as phone number, location, company name, etc., and you would like to use this LDAP directory to obtain this information. To accomplish this, you would combine the UserInfoNotesBB and the UserInfoLdapBB blackboxes. A configuration for this case would look like **Figure 9**.

```
<?xml version ="1.0" encoding="UTF-8" ?>
<UserInformation>
  <ReadStConfigUpdates value="true"/>
  <Resources>
   <Storage type="NOTES">
    <CommonField  CommonFieldName="MailAddress"/>
    <Details>
     <Detail Id="Location" FieldName="Location" Type="text/plain"/>
     <Detail Id="Title" FieldName="JobTitle" Type="text/plain"/>
     <Detail Id="MailAddress" FieldName="InternetAddress" Type="text/plain"/>
     <Detail Id="Company" FieldName="CompanyName" Type="text/plain"  />
     <Detail Id="Name" FieldName="FirstName,MiddleInitial,LastName" Type="text/plain"/>
```
Continues on next page

Figure 8   Combining UserInfoNotesBB and UserInfoNotesCustomBB to get information from multiple blackboxes

```
      </Details>
    </Storage>
    <Storage type="NOTES_CUSTOM_DB">
     <StorageDetails DbName="databases/photobook.nsf" View="lookupUsers" />
     <Details>
       <Detail Id="Telephone" FieldName="PhoneNumber" Type="text/plain"/>
       <Detail Id="Photo" FieldName="UserPhoto" Type="image/jpeg"/>
     </Details>
    </Storage>
   </Resources>
   <ParamsSets>
    <Set SetId="0" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
    <Set SetId="1" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
   </ParamsSets>
   <BlackBoxConfiguration>
    <BlackBox type="NOTES"
     name="com.ibm.sametime.userinfo.userinfobb.UserInfoNotesBB"
     MaxInstances="4" />
    <BlackBox type="NOTES"
     name="com.ibm.sametime.userinfo.userinfobb.UserInfoNotesCustomBB"
     MaxInstances="4" />
   </BlackBoxConfiguration>
  </UserInformation>
```

Figure 8 (continued)

```
<?xml version ="1.0" encoding="UTF-8" ?>
<UserInformation>
 <ReadStConfigUpdates value="true"/>
 <Resources>
  <Storage type="NOTES">
   <CommonField  CommonFieldName="MailAddress"/>
   <Details>
     <Detail Id="MailAddress" FieldName="InternetAddress" Type="text/plain"/>
     <Detail Id="Name" FieldName="FirstName,MiddleInitial,LastName" Type="text/plain"/>
   </Details>
  </Storage>
  <Storage type="LDAP">
   <StorageDetails  HostName="ldap.example.com" Port="389"
    UserName="ldapuser" Password="abc123" SslEnabled="false"
    SslPort="636" BaseDN="o=STDEMO"  Scope="2"
```

Continues on next page

Figure 9   Combining UserInfoNotesBB and UserInfoLdapBB to get information from multiple blackboxes

```
    SearchFilter="(&amp;(objectclass=organizationalPerson)
      (|(cn=%s)(givenname=%s)(sn=%s)(mail=%s)))"/>
   <SslProperties KeyStorePath=""  KeyStorePassword=""/>
   <Details>
    <Detail Id="Company" FieldName="ou" Type="text/plain"  />
    <Detail Id="Telephone" FieldName="telephoneNumber" Type="text/plain"/>
    <Detail Id="Location" FieldName="postalAddress" Type="text/plain"/>
    <Detail Id="Title" FieldName="title" Type="text/plain"/>
    <Detail Id="Photo" FieldName="jpegPhoto" Type="image/jpeg"/>
   </Details>
  </Storage>
 </Resources>
 <ParamsSets>
  <Set SetId="0" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
  <Set SetId="1" params="MailAddress,Name,Title,Location,Telephone,Photo,Company"/>
 </ParamsSets>
 <BlackBoxConfiguration>
  <BlackBox type="NOTES"
   name="com.ibm.sametime.userinfo.userinfobb.UserInfoNotesBB"
   MaxInstances="4" />
  <BlackBox type="LDAP"
   name="com.ibm.sametime.userinfo.userinfobb.UserInfoLdapBB"
   MaxInstances="4" />
 </BlackBoxConfiguration>
</UserInformation>
```

Figure 9 (continued)

Note how I configured two <BlackBox> elements and two <Storage elements>, one for each blackbox. Again, I also only specify two <Detail> elements in the first <Storage> element to make sure the first blackbox retrieves the correct data (i.e., the Internet address and contact name). Configuring the second blackbox to get the rest of the personal information is a good practice, as it avoids accidentally returning outdated information (such as a contact's title, postal address, phone number, etc.) that a Domino administrator may have put into the Domino Directory.

Remember that the directory should be upgraded to Domino 6.5.4 or higher to successfully retrieve photos from a Domino LDAP directory.

Conclusion

In this article, I provided a thorough tour of the Sametime business card system (UserInfo) and its underlying blackboxes. I showed you how to configure, mix, and match the IBM-supplied black-boxes to retrieve information from Notes directory style and custom databases in ways that best fit your needs and environment. As mentioned in the beginning of this article, a blackbox is nothing more than a Java class. To see how to write your own blackbox implementations, e.g., one that retrieves Sametime contact information from a Lotus Connections profile database, read Part 2 of this article in the next issue of *THE VIEW*.