



FUNAMBOL

***Administration Guide
for the DS Server***





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CHAPTER 1

Introduction

The contents of this guide detail the major Funambol DS Server administration tasks. The following table lists the principal categories of setup and maintenance tasks. You can see the three occasions when you would need to do a particular task: for example, you would regularly change your admin password, but you would only configure and customize the Email Connector if your Funambol services incorporated an external mail server (POP or IMAP).

COMPONENT	SETUP TASK?	ON-GOING?	AS NEEDED?
Change the Admin account password	Y	Y	---
Additional “admin” user accounts	Y		Y
Initial server configurations	Y		
Custom server configurations	Y		
Server settings: Capabilities	Y	---	---
Server settings: Engine	Y	---	---
User accounts	---	Y	---
Device records	---	Y	---
Principals	---	Y	---
Set up Email Connector	Y*	---	Y
Configure Inbox Listener	Y*	---	Y
Add new server modules	---	---	Y
[---room for more---]			

As this table shows, certain tasks must be completed as part of the initial server setup. Some tasks need to be done in an “on-going” basis, as part of normal system upkeep. And some tasks would be done only on a “as-needed” basis, such as the addition of server modules or Inbox Listener activation.



CHAPTER 2

Starting the Funambol Server Administration Tool

The Funambol Administration Tool is the administrative interface to the Funambol DS Server. You can use the Funambol Administration Tool to perform the following tasks:

- Enter or revise Funambol DS Server settings
- Add, edit, and delete users, devices, and principals
- Display installed modules, connectors, and SyncSource types
- Create, edit, and delete SyncSources

Alert: Before logging into the server with the Administration Tool, verify that the server has been started and is in operation.

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- “Logging into the DS Server” page 3
- “Changing the Admin User Login Password” page 3
- “Logging in through a Proxy” page 4
- “Creating Additional Administrator User Accounts” page 5
- “A Tour of the Administration Tool Window” page 6



Opening the Administration Tool window

To open the Administration Tool window, follow these steps:

- 1** To start the Funambol Administration Tool if you installed the “PIM & Email Bundle”, do one of the following:
 - WINDOWS: Click **Start**, and choose **Programs|Funambol|Administration Tool**.
 - LINUX: At the prompt, change to /opt /funambol/ and run this command:
`admin/bin/funamboladmin`
- 2** To start the Administration Tool if you installed the DS server by itself, do one of the following:
 - WINDOWS: Click **Start**, and choose **Programs|Funambol|Administration Tool|Funambol Administration Tool**.
 - LINUX: At the prompt, change to the DS server installation directory and run this command:
`admin/bin/funamboladmin`
- 3** The Funambol Administration Tool window appears.
No information is displayed until you log in with an administrative user ID and password—as detailed in the next section.

Logging into the DS Server

- 1** In the Administration Tool window, choose **File | Login**.
 - Or, double-click the Funambol Admin Tool icon in the Navigation pane.The Login dialog box appears.
- 2** If this is your first time logging in, make no changes to the default settings and click **Login**.
 - The Administration Tool “remembers” your entries for use in future logins.After a successful login, the Admin Tool window **Navigation** pane lists your server as the root of an explorer-like tree that sorts your tasks into server settings, users, devices, principals, modules and more.
- 3** Your first post-login task is to replace the password for the main “admin” user account—as detailed in the next section.

Changing the Admin User Login Password

You should regularly change the “admin” password to add more security to your system, when you first log in and at regular intervals thereafter. Note that when you apply the change, you’ll need to immediately exit the Funambol Admin Tool, then restart it and log back in to the server, using the new password.



- 1** In the Admin Tool window, expand the server tree in the Navigation pane, and double-click **Users**.
- 2** When the Search Users features appears, click in the **Username** field and type “admin”.
- 3** Click **Search**.
The admin account should appear in the results table.
- 4** Select the admin account and click **Edit**.
The User Details options appear, with key information displayed in editable fields.
- 5** Type a new password in both **Password** and **Confirm Password** fields.
- 6** Click **OK** to save and apply the new password.

• **IMPORTANT!**

- 1** Exit the Admin Tool.
- 2** Restart the tool and log in again as “admin”—using your new password.
(If you don’t, the server automatically logs you out within a minute or two.)

For information on creating additional admin user accounts, see “Creating Additional Administrator User Accounts” on page 5.

Logging in through a Proxy

After you’ve configured and activated your DS server, you or other admin-role users may need to log in for administrative purposes through a proxy server, depending on your location and network connection. This requires a slight adjustment of the login procedure, as detailed in this section:

- 1** In the Admin Tool window, choose **File/Login**.
 - Or, double-click the Funambol Admin Tool icon in the Navigation pane.
The Login dialog box appears.
- 2** Verify your user entries in the active fields.
- 3** Check the **Use Proxy** checkbox.
Additional features appear in the Login dialog box.
- 4** Enter the relevant proxy server information. (Once you’ve logged in with proxy settings, the Login dialog box retains your entries for future use.)
- 5** Click **Login**.

After a successful login, the Admin Tool window **Navigation** pane lists your server as the root of a tree that incorporates server settings, users, devices, principals and modules.



Creating Additional Administrator User Accounts

If your Funambol server workload justifies the use of more than one system administrator, you can add the needed accounts by following these steps:

- 1 After expanding the server tree in the Navigation pane, right-click **Users** in the navigation pane and choose **Add User**.

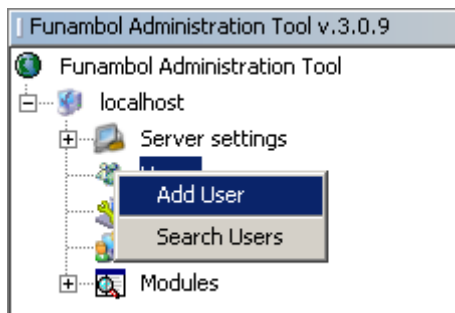


FIGURE 2-1

The Add User options appear in the Data Entry pane.

The 'Add User' dialog box contains the following fields and controls:

- Username :** Text input field
- Password :** Text input field
- Confirm password :** Text input field
- First Name :** Text input field
- Last Name :** Text input field
- E-mail :** Text input field
- Roles :** A list box containing 'User' and 'Administrator'.
- Buttons:** 'Add' and 'Cancel' buttons at the bottom.

FIGURE 2-2

- 2 Enter the relevant information in the following fields.

Username	Enter a name up to 255 characters in length, using any characters. This name is case-sensitive.
Password	Enter a unique, secure password.
Confirm password	Re-type the same password.



- First Name** [-optional-] Enter the user's first name (not including any middle initials).
- Last Name** [-optional-] Enter the user's last name.
- Email** [-optional-] The email address the user wants to link to the Funambol server.
- Roles** Choose **Administrator**.

- 3 Click **Add** to save the settings.
A confirmation message appears in the Output-Messages pane.
- 4 Repeat this procedure to create any needed administrator accounts.
- 5 You can now communicate this admin-user account information to relevant would-be users.

A Tour of the Administration Tool Window

The Funambol Administration Tool window is divided into three panes, as shown here

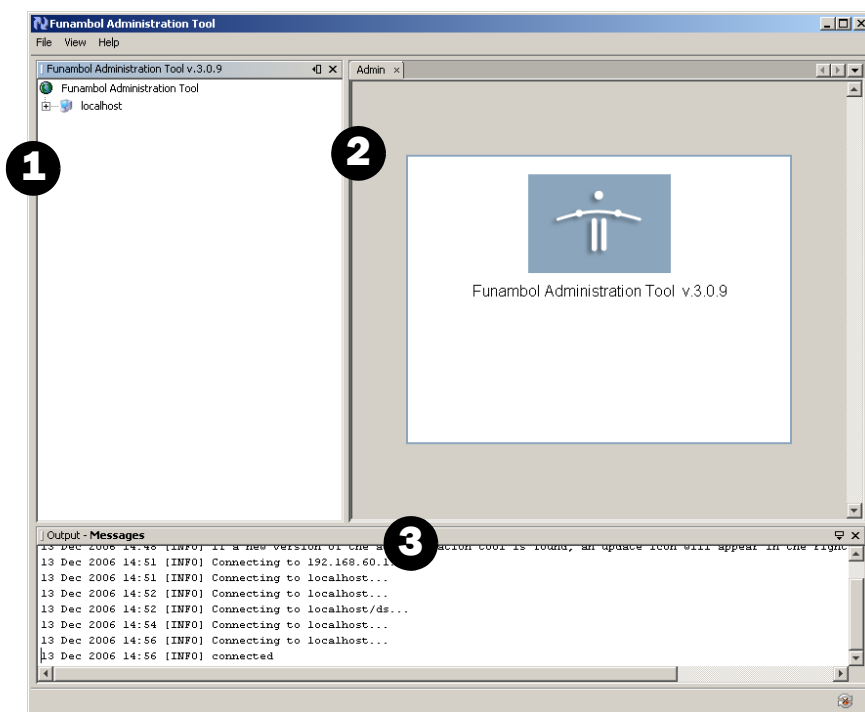


FIGURE 2-3

[-1-] — Navigation Lists all the primary workspaces, in which you can monitor and maintain the server, users, devices, principals or modules.

[-2-] — Data entry Use the features in this pane to add, edit, delete or search for the item selected in the navigation pane.



[-3-] – Output Messages This pane displays in-progress status messages relevant to your current task.

In addition, you can temporarily hide one or two of the three principal panes, as needed. With some Data Entry displays being rather full of options, you can hide both Navigation and Output panes in order to see all the options and work more efficiently.

- **Hiding the Navigation pane**

To hide the Navigation pane, click the **Hide** button once.

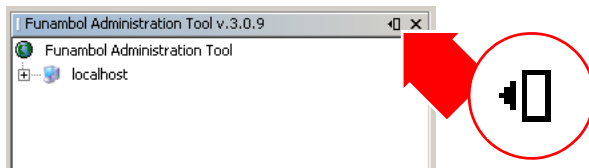


FIGURE 2-4

The Navigation pane collapses into the left window frame, visible as a sideways label.

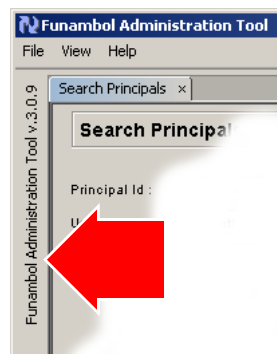


FIGURE 2-5

To reopen the Navigation pane, (1) float the cursor over the label, then (2) when the pane temporarily reappears, (2) click the **Show** button.

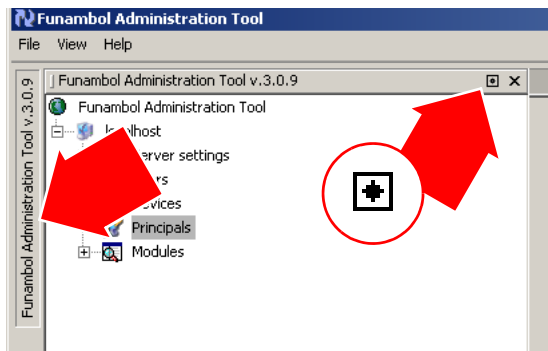


FIGURE 2-6



- **Hiding the Output pane**

To hide the Output-Messages pane, click the **Hide** button once.

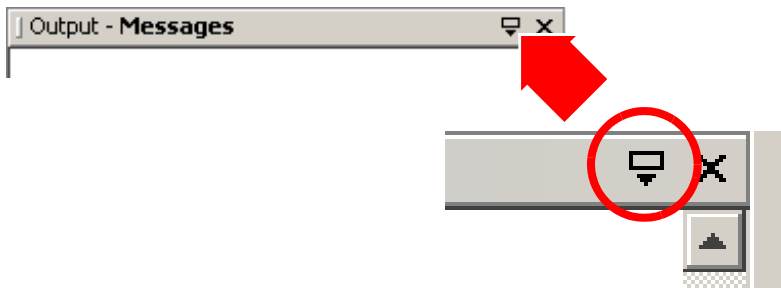


FIGURE 2-7

The Navigation pane collapses into the window frame, visible as a tab label.

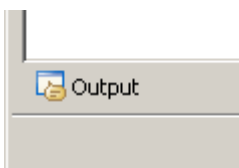


FIGURE 2-8

To reopen the Output-Messages pane, (1) float the cursor over the tab label, then (2) when the pane temporarily reappears, (2) click the **Show** button.

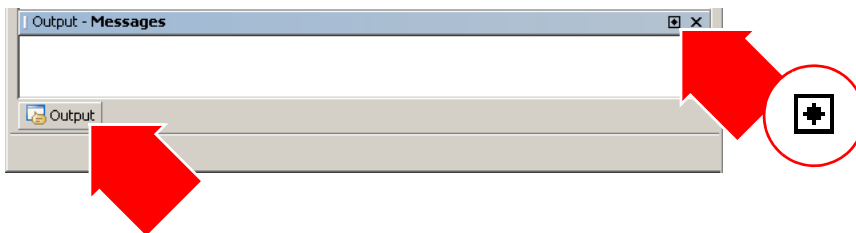


FIGURE 2-9

Note: You cannot hide the Data Entry pane, only the Navigation and Output-Messages panes (singly or both at once).



CHAPTER 3

Reviewing DS Server Settings

You can review and modify the server settings via the Administration Tool (as detailed in this chapter). The contents include the following server administrative options:

- “Getting Started” page 9
- “Reviewing the Capabilities Options” page 10
- “Reviewing the Engine Options” page 11
- “Configuring the DataTransformer Manager” page 12
- “Configuring Strategy” page 14

Getting Started

To open the DS server file containing the principal settings, follow these steps:

- 1 In the Administration Tool window, expand the server tree in the Navigation pane.
- 2 Double-click **Server Settings**.

The Server Setting options appear in the Data Entry pane (shown in part).

Server Settings	
Capabilities	
Manufacturer :	Funambol
Model :	DS Server
Software version :	6.0
Hardware version :	-
Firmware version :	-
OEM :	-
Device id :	funambol
Device type :	server
DTD version :	1.2
Engine	
Server URI :	
Officer :	com.funambol/server/security/UserProvisioningOfficer.xml
Handler :	com.funambol.server.session.SyncSessionHandler
Device inventory :	com.funambol/server/inventory/PSDeviceInventory.xml

FIGURE 3-1



You can review and change server setting as organized into the following key categories:

- Capabilities (detailed in “Reviewing the Capabilities Options” on page 10)
- Engine (detailed in “Reviewing the Engine Options” on page 11)

Under “Engine”, you’ll find additional options for the following:

- Data Transformer Manager Configuration (detailed in “Configuring the DataTransformer Manager” on page 12)
- Strategy Configuration (detailed in “Configuring Strategy” on page 14)

This chapter guides you through the options for each category, as incorporated into the Administration Tool.

Reviewing the Capabilities Options

These options include all the settings that determine what is initially sent to the SyncML device or client/plugin, to describe important server characteristics..

- 1 Open the **Server Settings** in the Data Entry pane if you haven’t already done so.

The Server Settings options appear in the data Entry pane, including the **Capabilities** options as shown here

The screenshot shows a window titled "Server Settings" with a sub-section "Capabilities". The following fields are visible:

Manufacturer :	Funambol
Model :	DS Server
Software version :	6.0
Hardware version :	.
Firmware version :	.
OEM :	.
Device id :	funambol
Device type :	server

FIGURE 3-2

- 2 Review the following options (under “Capabilities”):

Manufacturer	Text to come.
Model	Text to come.
Software Version	Read only; cannot be edited
Hardware Version	Text to come.
Firmware Version	Text to come.
OEM	Text to come.
Device ID	Text to come.
Device Type	Text to come.



DTD Version Text to come.

- 3 Make any needed changes.
- 4 When you are finished, click **Apply** to save any changes.
- 5 Look for a confirmation message in the Output-Messages pane.

You can now review the DS server *Engine* options, detailed in the next section.

Reviewing the Engine Options

These options include all the settings that control the behavior of the DS server. In most server installations, you'll need to attend to the engine settings for Handler, Data transformer and Strategy.

- 1 Open the **Server Settings** in the Data Entry pane if you haven't already done so.

The Server Settings options appear in the data Entry pane, including the **Engine** options as shown here.

Field	Value	Action
Server URI :		
Officer :	com/funambol/server/security/UserProvisioningOfficer.xml	
Handler :	com.funambol.server.session.SyncSessionHandler	
Device inventory :	com/funambol/server/inventory/PSDeviceInventory.xml	
Data transformer manager :	com/funambol/server/engine/transformer/DataTransformerManager.xml	Configure
Strategy :	com/funambol/server/engine/Strategy.xml	Configure
User manager :	com/funambol/server/admin/DBUserManager.xml	
Min. value for max. msg size :	2500	

FIGURE 3-3

- 2 Review the following options.

Server URI Text to come.

Officer Controls how users are authenticated and granted access to the system. (See “Assigning the Officer for the Email Connector” on page 34 for more details.)

Handler This option (utilizing the contents of an XML-format file) manages the synchronization sessions. You can pick another file, if you have one.

Device Inventory This option manages all the device records.

Data Transformer Manager This option involves a separate dialog box that allows you to customize the encryption applied to incoming



and outgoing messages. (See “Configuring the DataTransformer Manager” on page 12 for more details.)

Strategy

This option involves a separate dialog box in which you can fine-tune the prioritization of data, when duplication is detected. (See “Configuring Strategy” on page 14 for more details.)

User Manager

This option manages all the user records. If you plan to store user records on a LDAP server, you’ll need to create a new user manager and select the resulting XML file in this field.

Min. Value for Max. Msg Size **Text** to come.

- 3** Make any needed changes.
- 4** When you are finished, click **Apply** to save any changes.
- 5** Look for a confirmation message in the Output-Messages pane.

You can now review the Engine options, detailed in the following sections.

Configuring the DataTransformer Manager

These options, part of the *Engine* settings, control which encryption algorithms are applied to data traffic. Transformations are applied to data in both directions, usually encrypting outgoing data, and decrypting incoming data.

You can specify the name and class of transformers for both incoming and outgoing items, with the source URI of items to be transformed along with the name of the transformer to be used.

- 1** In the **Engine** options of the Server Settings, review the information noted in the **DataTransform Manager**.
- 2** To edit or replace this entry, click **Configure**.



The DataTransform Manager options appear in the Data Entry pane.

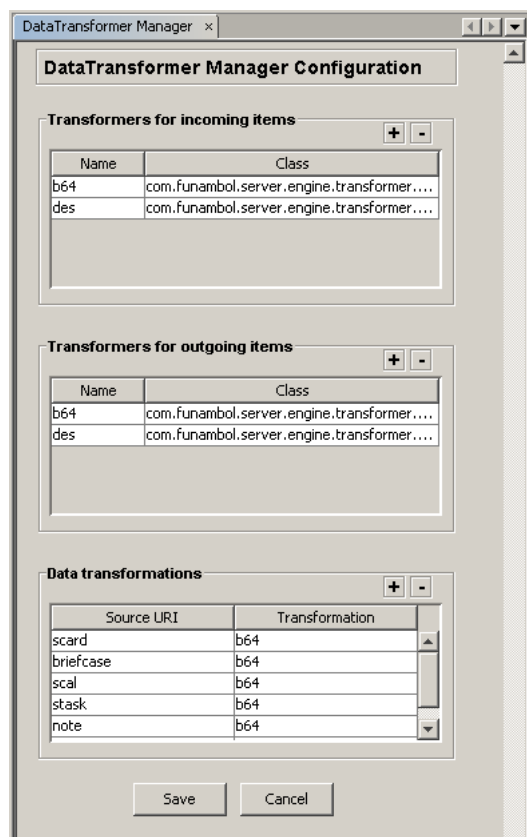


FIGURE 3-4

This collection of features includes default transformation encryption components, and pre-set combinations that are applied to incoming and outgoing messages.

- 3 Review the following options, and make the needed changes.
This includes (1) adding new rows/entries, (2) editing the existing rows/entries, and (3) deleting existing rows/entries.
- 4 Under **Transformers for incoming items**—click the “+” icon in the upper right corner of this table.
- 5 When a new row appears at the bottom of the table, make the needed entries to guide the server in decrypting information from a specific item (scard) that may have a combination of encryption applied. This allows the server to decrypt the data received from a client and synch it.
- 6 Under **Transformers for outgoing items**—click the “+” icon in the upper right corner of this table.
- 7 When a new row appears at the bottom of the table, make the needed entries to guide the server in encrypting information extracted from a specific item (scard) that may require a specific combination of encryption applied. This allows the server to encrypt the data and transmit it to the client.
- 8 Under **Data Transformations**—click the “+” icon in the upper right corner of this table.



When a new row appears at the bottom of the table, make the following entries in each column of the new row:

- Source URI** Enter the value of the source (e.g., scard, mail)
- Transformation** Enter the needed encoding parameters, separated by a semi-colon.

- 9 When you are finished, click **Save**.
- 10 A confirmation message appears in the Output-Messages pane.
- 11 To return to Server Settings, click **Cancel**.

Configuring Strategy

These options, part of the *Engine* settings, enact the preferred conflict resolution applied by the Funambol DS Server to SyncSources. In other words, if the DS server tries to synchronize two copies of similar records, you can use this feature to specify how the server handles any potential duplications (that may conflict).

- 1 In the **Engine** options of the Server Settings, review the information noted in the **Strategy** field and verify [-WHAT?-]
- 2 To edit or replace this entry, click **Configure**.

The Strategy Configuration options appear in the Data Entry pane

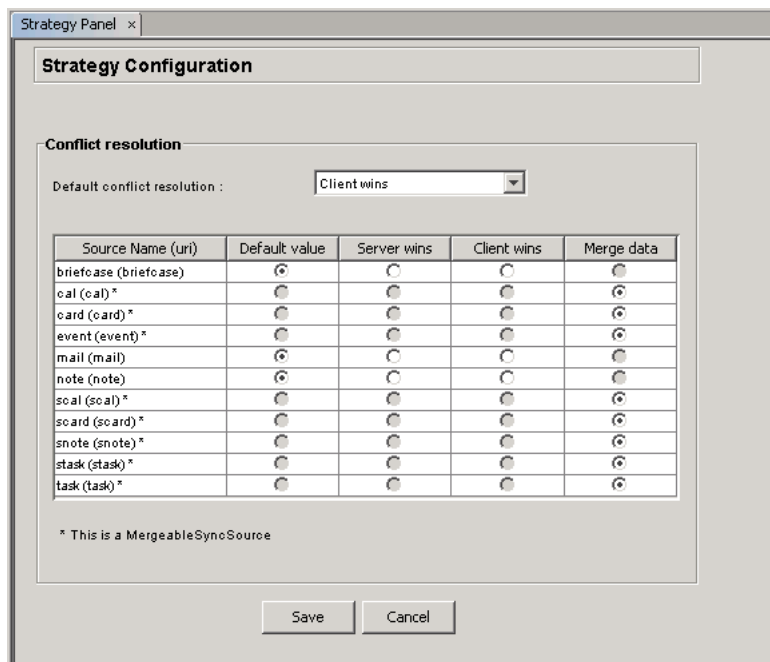


FIGURE 3-5

- 3 Open the **Default Conflict Resolution** menu and choose an option.
 - Your options are Client wins, Server wins, and Merge data.



This setting is applied to those SyncSources that do not need to be configured individually, and can be used to quickly switch the conflict resolution for all such SyncSources to “client wins” or “server wins”.

- 4 Review the table and select the preferred conflict resolution for each URI source name (where the option is active).

NOTE: Data source with only one active resolution option reflect their base sync-source. Other sources with two or more resolution options reflect different sync-sources. [**Can these syncsources be edited, if...?**]

- 5 When you are finished, click **Save**.
- 6 A confirmation message appears in the Output-Messages pane.
- 7 To return to Server Settings, click **Cancel**.



CHAPTER 4

Adding and Managing DS User Accounts

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- Adding a New User Record/Account page 17
- Editing existing User accounts..... page 19
- Deleting User accounts page 20

Important Notice

You do not need to add new user records (as detailed in this chapter) if your Funambol server is linked to an external data source that authenticates all users.

How does this work? Each user configures their mobile devices with their username and password, along with the Funambol server URL. During the initial connection, this information triggers the DS server to [1] verify the user's identity then [2] auto-generate a new user record, and a new device record. Finally the DS server links them together automatically in a principal record. This is particularly handy if you have a large number of users.

[True?] When are you required to manually create new user and device records? If your network [1] has very few users and [2] no external source of authentication, you will need to create all the required records. The needed records enable Funambol to authenticate each user. Otherwise, the users will experience connection failures even though they've configured their devices correctly.

Summary: If your DS server has a connection to an external source of user authentication, you do not need to use the procedures detailed in the user, device, and principal chapters. If not, proceed with the instructions detailed in this chapter. **[-Wrong-]**

Introduction

It is critically important to understand how “User” records fit in with *Device* and *Principal* records, as they are linked in the DS process.

User records

You must create a separate user record for every person who will be syncing data between a wireless device and the DS server. It doesn't matter how many devices each person will be syncing, there must be a single record for that person.



Device records	Each wireless device—laptop, smartphone, PDA, etc.—must have a record in the DS server database, whether used solely by one person, or shared among several users
Principal records	<p>This set of records allows you to mix individual users and devices, so that you can account for all usage patterns. This includes the following:</p> <ul style="list-style-type: none">Exclusive use of one device by one person.Shared use of one device by several people. <p>This enables the DS server to specifically sort out data synchronized from Marcel, Laura and Giovanni, all of who share the same work-use cell phone. Their specific data will be available only to them, once they've been identified in a “principal” record.</p>

Adding a New User Record/Account

To add a new user record to the DS server database, follow these steps:

- 1 After expanding the server tree in the Navigation pane, right-click **Users** in the navigation pane and choose **Add User**.

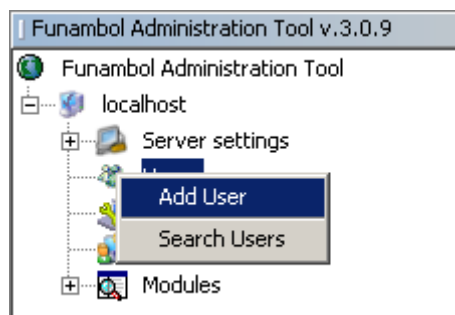


FIGURE 4-1



The Add User options appear in the Data Entry pane.

FIGURE 4-2

- 2 Enter the relevant information in the following fields.

Username	Enter a short name (remembering the space and typing limitations of mobile devices), up to 255 characters in length, using any combination. User names are case-sensitive.
Password	Enter the user's password. (Passwords, too, are case-sensitive.)
Confirm password	Re-enter the same password.
First Name	Enter the user's first name (not including any middle initials).
Last Name	Enter the user's last name.
Email	Enter the email address the user wants to link to the Funambol server.
Roles	Select a role for the user from the following: Choose User , who can perform synchronizations with the server. If you choose Administrator , this user will be able to perform administrative tasks but not synchronizations.

- 3 Click **Add** to save the settings, or click **Cancel** to quit without saving the settings.
A confirmation message appears in the Output-Messages pane.
- 4 Repeat this procedure to create all other user accounts.
- 5 You can now communicate the account information to would-be users.



Editing Existing User Accounts

To review and change the information for an existing user account, follow these steps:

- 1 After expanding the server tree in the Navigation pane, double-click **Users**.
The Search User options appear in the Data Entry pane.

Username	First Name	Last Name	E-mail	Roles
----------	------------	-----------	--------	-------

FIGURE 4-3

- 2 Click in one or more relevant search fields (e.g., just **Last Name**, or both **First Name** and **Last Name**) and type the search text.
- 3 Click **Search**.
The resulting matches, if any, appear in the table.
- 4 Click the likely record and then click the now-active **Edit** button
The Edit User options appear in the Data Entry pane, displaying the current user's information.
- 5 Review the following fields, and make the needed changes.

Username	The user's system ID.
Password	The user's password.
Confirm password	Confirmation of the user's password.
First Name	The user's first name (not including any middle initials).
Last Name	The user's last name.
Email	The email address the user wants to link to the Funambol server.



Roles

The choices include **User**, who can perform synchronizations with the server, or **Administrator**, who can perform administrative tasks in addition to synchronizations.

- 6** Click **Add** to save the changes, or click **Cancel** to quit without saving the settings.

Deleting Existing User Accounts

- 1** After expanding the server tree in the Navigation pane, double-click **Users**.
The Search User options appear in the Data Entry pane.
- 2** Click in one or more relevant search fields (e.g., just **Last Name**, or both **First Name** and **Last Name**) and type the search text.
- 3** Click **Search**.
The resulting matches, if any, appear in the table.
- 4** To verify the account is the one that is to be deleted, select the likely record and click the now-active **Edit** button.
- 5** Review the User Details options, then click **Cancel** to reopen the Search Users pane.
- 6** Select the record and click the now-active **Delete** button.



CHAPTER 5

Managing Device Records

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Important Notice

[-SEE “USER” CHANGES -]You do not need to add new device records (as detailed in this chapter) if your Funambol server is linked to an external data source that authenticates all users.

How does this work? Each user configures their mobile devices with their e-mail username and password, and the Funambol server URL. During the initial connection, this information triggers the DS server to [1] verify the user's identity then [2] auto-generate a new user record, and a new device record. Finally the DS server links them together automatically in a principal record. This is particularly handy if you have a large number of users.

When are you required to manually create new user and device records? If your network [1] has very few users and [2] no external source of authentication, you will need to create all the required records. The needed records enable Funambol to authenticate each user. Otherwise, the users will experience connection failures even though they've configured their devices correctly.

Summary: If your DS server has a connection to an external source of user authentication, you do not need to use the procedures detailed in the user, device, and principal chapters. If not, proceed with the instructions detailed in this chapter.

Introduction

As with user records, if you are using the “internal” database (either Hypersonic or another local JDBC-compliant database) for all your device data, this chapter guides you through the creation and management of the needed records. Each wireless device—laptop, smartphone, PDA, etc.—must have a record in the DS server database, whether used solely by one person, or shared among several users. As noted previously, this permits you to set up synchronization for each user on any relevant device.



Adding a New Device Record

To add a new device record to the DS server, follow these steps:

- 1 In the Navigation pane, right-click **Devices** in the navigation pane and choose **Add Device**.)

The Add Device window appears.

The screenshot shows a dialog box titled "Add Device" with a close button (x). The dialog contains the following fields and controls:

- ID :** A text input field.
- Type :** A text input field.
- Timezone :** A dropdown menu currently showing "Not specified". Below it is a checkbox labeled "Convert dates to this timezone".
- Charset :** A dropdown menu currently showing "UTF-8".
- Address :** A text input field.
- Msisdn :** A text input field.
- Notification Builder :** A text input field.
- Notification Sender :** A text input field.
- Description :** A larger text area for entering a description.
- At the bottom, there are two buttons: "Add" and "Cancel".

FIGURE 5-1

- 2 Enter the relevant information in the following fields.

ID	The device ID, e.g., the phone IMEI for SyncML phones.
Type	The device type.
Timezone	The timezone associated with the device.
Charset	The character set used for communication with the device. Valid values: UTF-8, UTF-16, ISO-8859-1, US-ASCII.
Address	IP address of the device (if applicable).
Msisdn	Msisdn of the device (i.e., the phone number)
Notification Type	Choose the correct type from the options in this menu.
Description	[-Optional-] Informational or descriptive text, e.g., "John Smith's phone".

- 3 Click **Add** to save the settings.

A confirmation message appears in the Output-Messages pane.



Editing Existing Device Records

To review and revise the settings for an existing device record, follow these steps:

- 1 In the Navigation pane, double-click **Devices** in the Navigation pane.
The Search Devices options appear in the Data Entry pane.

The screenshot shows a window titled "Search Devices" with a search form and a table. The search form includes three rows: "ID :", "Type :", and "Description :". Each row has a "Start with" dropdown menu and a text input field. Below the search fields are "Reset" and "Search" buttons. The table below has columns for "ID", "Type", "Address", and "Description". To the right of the table are four buttons: "Add", "Delete", "Edit", and "Capabilities".

FIGURE 5-2

- 2 Click in one or more relevant search fields and type the search text. (Or, to view a complete list of all existing device records, make no entries in the search fields.)
- 3 Click **Search**.
The resulting matches appear in the table.
- 4 Click the likely record and then click the now-active **Edit** button



The Edit Device options appear in the Data Entry pane.

FIGURE 5-3

- 5 Review the information in the following fields and make any needed changes.

ID	[-Read only-] The device ID, e.g., the phone IMEI for SyncML phones.
Type	The device type.
Timezone	The timezone associated with the device.
Charset	The character set used for communication with the device. Valid values: UTF-8, UTF-16, ISO-8859-1, US-ASCII.
Address	IP address of the device (if applicable).
Msisdn	Msisdn of the device (i.e., the phone number)
Notification Builder	The builder (server component) used to create notification messages for this device.
Notification Sender	The sender (server component) used to send notification messages to this device.
Description	Informational text, e.g., “John Smith’s phone.”
- 6 Click **Save** to save any changes.

A confirmation message appears in the Output-Messages pane.



Deleting Device Records

To delete an existing device record from the DS server database, follow these steps:

- 1** After expanding the server tree in the Navigation pane, double-click **Devices**.
The Search User options appear in the Data Entry pane.
- 2** Click in one or more relevant search fields and type the search text.
- 3** Click **Search**.
The resulting matches, if any, appear in the table.
- 4** To verify the account is the one that is to be deleted, select the likely record and click the now-active **Edit** button.
- 5** Review the Device Details options, then click **Cancel** to reopen the Search Users pane.
- 6** Select the record and click the now-active **Delete** button.
A confirmation message appears in the Output-Messages pane.



CHAPTER 6

Managing Principals

Chapter Contents

- Creating a New Principal
- Editing Principals
- Deleting Principals

Important Notice

[-SYNC CHANGES WITH USER AND DEVICE -]You do not need to add new principal records (as detailed in this chapter) if your Funambol server is linked to an external data source that authenticates all users.

How does this work? Each user configures their mobile devices with their e-mail username and password, and the Funambol server URL. During the initial connection, this information triggers the DS server to [1] verify the user's identity then [2] auto-generate a new user record, and a new device record. Finally the DS server links them together automatically in a principal record. This is particularly handy if you have a large number of users.

When are you required to manually create new user and device records? If your network [1] has very few users and [2] no external source of authentication, you will need to create all the required records. The needed records enable Funambol to authenticate each user. Otherwise, the users will experience connection failures even though they've configured their devices correctly.

Summary: If your DS server has a connection to an external source of user authentication, you do not need to use the procedures detailed in this chapter. If not, proceed with the instructions detailed in this chapter.

Introduction

In the wireless mobile universe, there are two overlapping combinations of user and device that pose a potential quandary for centralized data synchronization services.

- A single Funambol user using more than one device or client for data synchronization. For example, one person might have an at-work SyncML phone, a personal-use smart-phone, a copy of Microsoft Outlook on their laptop, and a PocketPC PDA.



- Or, that same individual may be one of several users who would want to synchronize data from a single device that they take turns sharing.

With these two associations in mind, the Funambol DS Server incorporates the concept of a *principal*, that associates a single user with a specific device. This allows one device to be shared by multiple users, or one user to utilize any number of devices—all synchronizing with Funambol, but without the wrong data going to the wrong client. Each of these associations is uniquely identifiable in the system as a *principal*.

(Engineering Trivia: Each principal is a *tuple* (user,device).

Creating a New Principal

To create a new principal in Funambol, you use the Administration Tool to search for [1] the desired user, then [2] for a device match. After selecting a matching user and device from the search results tables, you link them as an individual principal.

NOTE: Remember that you can pair more than one user with the same device, each as a unique principal. If a single phone has five users, you would create five principals to represent the associations.

- 1 In the Navigation pane, right-click **Principals** and choose **Add Principal**.

The Add Principal options appear in the Data Entry pane.

Username	Name	E-mail	ID	Type	Description
----------	------	--------	----	------	-------------

FIGURE 6-1

- 2 TIP: You may want to make more room for the Data Entry pane, by reducing both Output and Navigation panes, as described in “A Tour of the Administration Tool Window” on page 6.
- 3 Enter the relevant information in one or more of the **Users** search fields, and click **Search**. (Some portion of the user’s last name is a good starting point.)

The results (if any) appear in the table below.



- 4 Enter the relevant information in one or more of the **Devices** search fields, and click **Search**.

The table below the search form lists the results of your query.

When you've identified a user and a matching device, the tables should look like this example.

Username	Name	E-mail	ID	Type	Description
prosework	Giovanni Funambolo	mudhen@funambol...	Nokia 880	Phone	Bogus

FIGURE 6-2

- 5 If your search turned up one match for each category, make sure each record is selected.
- 6 If your search turned up multiple matches for user or device, select the correct record for each category.
- 7 Click the now-active **Add Principal** button to save the user/device pairing.
Look in the Output-Messages area for confirmation of the new principal.

Editing Existing Principals

As there is no way to directly edit a principal record, you have the option in the Funambol Administration Tool to (1) delete the existing record and (2) create a new, replacement principal record.

Deleting Existing Principal Records

- 1 Right-click the **Principals** icon in the Navigation pane and choose **Search Principals**.
The Search Principals options appear in the Data Entry pane.
- 2 Search for a specific principal, using any of the data fields.
 - Or, to view the complete catalog of principals, leave the search fields empty and click **Search**.
- 3 Select the appropriate result in the table below the search form.
- 4 Click **Delete**.
- 5 When the deletion confirmation dialog box appears, click **OK**.
The selected record is deleted. A confirmation message appears in the Output-Messages pane.



Reviewing Last Synchronization TimeStamps

To find and display the details about the most recent (“last”) synchronization of a specific principal, follow these steps:

- 1 Right-click the **Principals** icon in the Navigation pane and choose **Search Principals**. The Search Principals options appear in the Data Entry pane.
- 2 Search for a specific principal, using any of the data fields.
 - Or, to view the current catalog of principals, leave the search fields empty and click **Search**.
- 3 Select the appropriate result in the table below the search form.
- 4 Click **Details**.

The Last Synchronization TimeStamps options appear in the Data Entry pane.

The screenshot shows a window titled 'Last Synchronization TimeStamps'. It displays the following details for a principal:

- Principal Id : 2
- Username : jmilligan
- Device Id : sc-pim-outlook

Database	Sync Type	Status	Client anchor	Server anchor	Start	End
soal	TWO-WAY	200	1165020255406	1165020255	2006-12-01 16:44:15.39	2006-12-01 16:44:15...
scard	TWO-WAY	200	1165020254906	1165020254	2006-12-01 16:44:14....	2006-12-01 16:44:15....

- 5 The table provides the following information about the most recent synchronizations of the selected principal:
 - Database** Identifies the syncsource used by the principal.
 - Sync Type** Notes the type of synchronization.
 - Status** Reports the sync status code
 - Client anchor** Displays the client anchor last used
 - Server anchor** Displays the server anchor last used
 - Start** Notes the start time of the most recent synchronization
 - End** Notes the end time of synchronization
- 6 IF you want to verify that this is indeed the most recent synchronization, click **Refresh**.
- 7 When you are finished, you must either double-click another icon in the server tree, or exit the Administration Tool.

■ Extra Options

You can delete the records about the most recent synchronizations, but this not only erases the records, but will force the DS server to perform a “deep” comparison of client and server data. This will be automatically initiated the next time the client device or service attempts to



synch with the DS server. You may want to perform this task if there are problems arising from previous synchronizatoins.

- 1** To start the process, click the **Reset** button.
- 2** If you do delete the most recent synchronization information, the server automatically performs a slow synchronization the next time. Note that this synchronization may take some time.



CHAPTER 7

Installing and Using the Email Connector and Inbox Listener

Chapter Contents

- “About the Funambol Email Connector” page 31
- “Installing the Email Connector” page 32
- “Configuring the Email Connector” page 34
- “Manually Enabling Encryption/Encoding” page 43
- “Customizing Email Connector Log Settings” page 44
- “About the Inbox Listener” page 49
- “Managing the User Account Database” page 52
- “Starting and Stopping the Inbox Listener” page 53

About the Funambol Email Connector

The Email Connector, a key Funambol server *module*, allows a user to synch their computers and mobile devices to external mail servers through their Funambol DS connection. The Connector module incorporates two Funambol server entities, called *SyncSources*, one for POP and one for IMAP. When these are set up and active, mail can be synchronized, but with important protocol-specific differences:

- POP users can synch their client Inbox folder (but no subfolders), and can send mail through their client Outbox
- IMAP users enjoy full synchronization of all folders and subfolders with the mail server

Note that (as detailed in this chapter) user authentication with the email server can be configured to rely on the user’s own mail authentication settings—which means a simpler setup for you, the administrator.

■ Installation/Operation Requirements

If you have previously installed the Funambol *PIM & Email* Bundle, the Email Connector is present, ready for setup and use (as detailed in this chapter.) If you’ve installed only the DS



server on an existing host (that meets the requirements), you should install the Email Connector—as detailed in this chapter.

As with the Funambol DS server, the Email Connector (and Inbox Listener) need to be installed on an application server running JDK/JRE, as well as hosting a JDBC-compliant database. More specifically, the Email Connector requires the JavaMail API JAR file (`mail.jar`) and the JavaBeans Activation Framework JAR file (`activation.jar`) be accessible by your application server. If you are using JBoss or Tomcat, no action is required. If you are using a different application server, you may need to copy these files to the library folder of your application server. The files are available in the Funambol email archive file in the `funambol-email-3.0.x\Funambol\inbox-listener\lib` directory.

Issue/Alert: If you've already set up a working DS server, there are cautions noted in this chapter that reduce the risk of your erasing existing Funambol data during Email Connector installation.

Installing the Email Connector

Before you begin, review the following information:

- If you installed the Funambol PIM & Email Bundle, the Email Connector is ready for use. Turn to “Configuring the Email Connector” on page 34 to proceed.
- If you installed the DS server only on an existing host (that meets the requirements), you can install the Email Connector (as a standard Funambol *module*) as detailed in the rest of this section.
- If you are upgrading Email Connector on an existing and operational system, see the Release Notes for IMPORTANT information about the following procedure. Version numbers of both existing and new Email Connectors may affect key tasks, esp. involving rebuilding an existing database. (If the existing version is old enough, the database schema will have been altered enough to warrant a rebuilding, though the database is in use.

To install the Email Connector on an operational application server (already running an installation of the Funambol server), follow these steps:

- 1** Download a copy (if you have not already done so) of the latest Email Connector zip archive:
`funambol-email-(version_number).zip`
- 2** Verify that the following directory is present in your master Funambol DS directory:
For Email Connector . . . `/funambol/connectors/email`
- 3** Unzip the archive (named **funambol-email-<x.x.x.>s4j**) to this location:
`/funambol/ds-server/modules`
- 4** Using a text editor, open the `/funambol/ds-server/install.properties` file.
- 5** Find the line that begins **modules-to-install=** (in the Module definitions section.)



This line specifies, in a comma-separated list, the modules that will be installed during installation.

- 6 Add this item to the list: **funambol-email-<x.x.x>** [-or make this the only item?-]

ALERT: Leave off the .s4j filename extension.

- 7 Save your changes and close install.properties.

- 8 Open a terminal window and type one of the following commands at the prompt:

WINDOWS: cd <DS_SERVER_HOME>
 bin\install-modules <application_server>

LINUX: cd <DS_SERVER_HOME>
 sh bin/install-modules.sh <application_server>

- 9 As the installation proceeds, you are prompted to create (rebuild) the database for the DS server. You have the following options:

- If you are upgrading an existing DS server, check the compatibility of the existing DS server/Email Connector version number with the version number of this upgrade. Depending on the comparison, you may or may not be rebuilding the database.
- If this is an upgrade—Type **n** (no) if you are installing the Email Connector on a working DS server that is storing user data in an existing database that you do not want to lose.
- If this is a first-time installation—Type **y** (yes) if you are installing a Email Connector module on a yet-unused DS server. This initializes the database, creates the Connector-specific tables, and registers the Connector with the server. The EmailOfficer.xml file is also copied to the <DS_SERVER_HOME>\config\com\funambol\server\security directory.

- 10 As the installation script processes each module, you are prompted to rebuild each module's database. Type Yes (**y**) if this is a first-time installation, or No (**n**) if you are upgrading, and an operational database already exists.

When installation is complete, a “build successful” message appears.

You can now configure the Email Connector as detailed in the next major task section.

■ Important [-COPY TO IBL Section?-]

The Email Connector requires that the JavaMail API JAR file (mail.jar) and the JavaBeans Activation Framework JAR file (activation.jar) be accessible by your application server. If you are using JBoss or Tomcat, no action is required. If you are using a different application server, you may need to copy these files to the library folder of your application server. The files can be found in the Funambol email archive file in this directory:

funambol-email-3.0.x/Funambol/inbox-listener/lib

–OOPS. Assuming [1] that you've installed E-C and [2] IBL, right?–



Configuring the Email Connector

To configure the Email Connector for external mail server communications and synchronizations, you use the Funambol Administration Tool to perform the following actions:

- Assigning the Officer for the Email Connector (to enable user authentication)
- Configuring the Email Connector
- Setting Up the Email SyncSources (POP and IMAP)

Each of these tasks is detailed in a separate sub-section.

■ Assigning the Officer for the Email Connector

NOTE: The Officer is one of two alternate Server JavaBeans that authenticate users for access to DS server resources. See the separate publication, “Installing and Configuring a DS Server” for complete details, as this option is part of the original server setup.

- 1 After opening the Administration Tool, log into the server.
- 2 Expand the server tree in the Navigation pane.
- 3 Double-click **Server settings**.
- 4 The Server Settings options appear in the Data Entry pane (as highlighted below)

Engine	
Server URI :	
Officer :	com/funambol/server/security/UserProvisioningOfficer.xml
Logging configuration :	com/funambol/server/logging/Logging.xml

FIGURE 7-1

- 5 In the **Officer** field (included in the *Engine* options), the default entry is “UserProvisioningOfficer.xml”. Edit the entry as follows (with edits shown in bold):

com/funambol/server/security/**EmailOfficer.xml**

- 6 Click **Save** to save and apply the configuration settings.
You can now proceed with Email Connector configuration.

■ Configuring the Email Connector

- 1 Expand the Navigation pane tree as follows:
Modules > email > FunambolEmailConnector
- 2 Double-click **FunambolEmailConnector**

The Email Connector options appear in the workpane, divided into two collections of options:

- Public Mail Servers



- Accounts

Description	Outgoing server	port	Incoming server	port
-------------	-----------------	------	-----------------	------

Username	Login	Address	Activation	Max email	Soft-Del...	Descript...	Protocol
----------	-------	---------	------------	-----------	-------------	-------------	----------

FIGURE 7-2

At this time you have a sequence of two setup tasks:

- Create records for those mail servers your Funambol users would synchronize with
- Link the existing user records to relevant servers

Each of the two tasks is detailed in the following sections.

■ [1] Creating Public Mail Server records

- 1 Click **Add**.



The Mail Server Details dialog box appears.

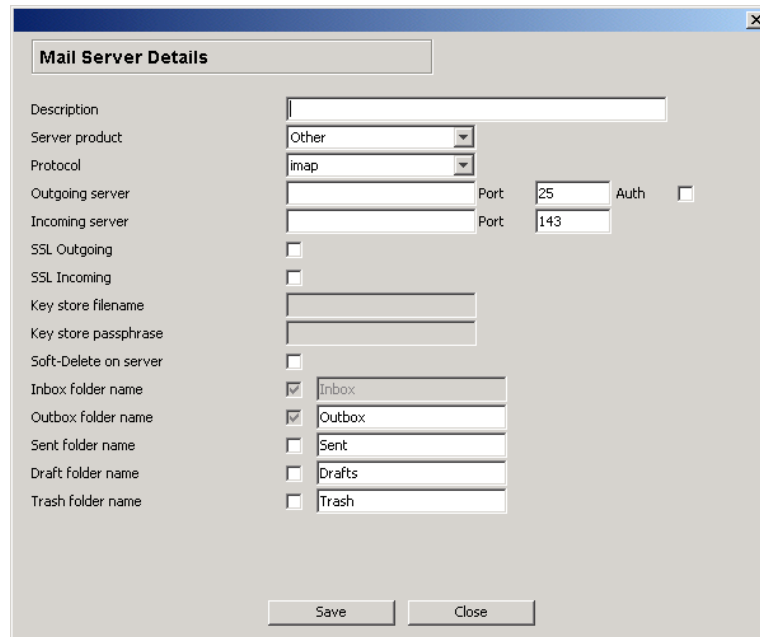


FIGURE 7-3

- 2 Review the following options and make needed entries and selections:
- 3 **[THE FOLLOWING IS WRONG. IT WILL BE UPDATED SOON...]**

Option	Description/Action
Source URI	The URI of this syncsource—for example, “imap” for IMAP synchronization or “pmail” for POP synchronization.
Name	A plain-language descriptive name for the syncsource., usually incorporating the URI text.
Outgoing Server	The URL of the outgoing email server.
Port	Outgoing email server port. Default = 25 (SMTP).
Auth	if checked, the user credentials (mail login and password) are sent to the email server to authenticate the outgoing mail.
Incoming Server	The URL of the incoming email server.
Port	Incoming mail server port. Default entries are = 110 (POP), 143 (IMAP).
SSL	If checked, this option activates SSL.
Keystore Path	The path to the Java keystore (If SSL is checked).
Keystore Passphrase	The password phrase for the Java keystore (If SSL is checked)



Option	Description/Action
Complete Mailbox Activation	(-Inactive option-) TBD
Inbox Folder	Displays the name server label assigned to the Inbox folder. (Active by default)
Outbox Folder	Displays the name server label for the Outbox folder. (Active by default.)
Sent Folder	Displays the name server label for the Sent folder. (Active by default.)
Drafts Folder	Enter the name server label for the Drafts folder. Check this option to activate synchronization. (Optional).
Trash Folder	Enter the name server label for the Trash folder. Check this option to activate synchronization. (Optional).
Type	Displays the Email object type information (read-only)
Supported Types	Displays the email object supported types information (read-only).
Supported Versions	Displays the email object supported versions, as a comma-separated series (1.2,2.0,2.3).
Encryption/Encoding	Specifies whether to encrypt/encode email. If you check this option, an entry for this SyncSource is automatically added to the Data transformations table (see “Enabling Encryption/Encoding” on page 9) with DES 64-bit transformation. If you uncheck this option, the SyncSource is removed from the Data transformations table.

- 4 Click **Save**.
- 5 When a (confirmation) dialog box appears, click **OK**.
- 6 Repeat the previous steps as needed until you have records for all relevant mail servers.

■ [2] Creating User Accounts (if needed-???)

(Search features don't work at top level.)

- 1 Click **Add**.



The Search Users dialog box appears.

FIGURE 7-4

- 2 Use the search features to find matching user records (from your Funambol database of already-active users).

Username	First Name	Last Name	E-mail
jmilligan	John	Milligan	prosew@funambol.com

FIGURE 7-5

- 3 Double-click the exact user match.

This same dialog box now displays a set of User Account Details options related to the user record.

FIGURE 7-6

- 4 Review the following options, and make any needed changes:



5 [THIS TOO IS WRONG. TO BE REPAIRED SOON...]

Option	Description/Action
Source URI	The URI of this syncsource—for example, “imap” for IMAP synchronization or “pop” for POP synchronization.
Name	A plain-language descriptive name for the syncsource., usually incorporating the URI text.
Outgoing Server	The URL of the outgoing email server.
Port	Outgoing email server port. Default = 25 (SMTP).
Auth	if checked, the user credentials (mail login and password) are sent to the email server to authenticate the outgoing mail.
Incoming Server	The URL of the incoming email server.
Port	Incoming mail server port. Default entries are = 110 (POP), 143 (IMAP).
SSL	If checked, this option activates SSL.
Keystore Path	The path to the Java keystore (If SSL is checked).
Keystore Passphrase	The password phrase for the Java keystore (If SSL is checked)
Complete Mailbox Activation	(-Inactive option-) TBD
Inbox Folder	Displays the name server label assigned to the Inbox folder. (Active by default)
Outbox Folder	Displays the name server label for the Outbox folder. (Active by default.)
Sent Folder	Displays the name server label for the Sent folder. (Active by default.)
Drafts Folder	Enter the name server label for the Drafts folder. Check this option to activate synchronization. (Optional).
Trash Folder	Enter the name server label for the Trash folder. Check this option to activate synchronization. (Optional).
Type	Displays the Email object type information (read-only)
Supported Types	Displays the email object supported types information (read-only).



Option	Description/Action
Supported Versions	Displays the email object supported versions, as a comma-separated series (1.2,2.0,2.3).
Encryption/Encoding	Specifies whether to encrypt/encode email. If you check this option, an entry for this SyncSource is automatically added to the Data transformations table (see “Enabling Encryption/Encoding” on page 9) with DES 64-bit transformation. If you uncheck this option, the SyncSource is removed from the Data transformations table.
Port	Enter the port of the mail server used by the Officer.
SSL	Check (or uncheck) this option to control whether SSL protocol is used.
Keystore Path	If SSL is checked, enter the path to the Java keystore.
Keystore Passphrase	If SSL is checked, enter the password phrase for the Java key-store.
Funambol DataSource	Specify the data source name (example: jdbc/fnblids) used by both Email Connector and Inbox Listener for a caching system.
Filter Activation	Check (or uncheck) this option according to your filter usage preferences.
Save only Header	[-Option found only in POP email SyncSource-] If this option is checked, only the message header will be saved in the local Sent Mail folder

- 6 Click **Save**.
- 7 When a (confirmation) dialog box appears, click OK. Both DBs close.
- 8 Repeat as needed.

■ **Task: -???**

- 1 The FEC options appear in the workpane, divided into two collections of options:
 - Public Mail Servers
 - Accounts
- 2 Search for and find a server.
- 3 Search for and find a user account--?
- 4 DO STUFF with the user account row.
- 5 Note the Account-specific buttons -- Add, Delete, Edit and Cache. "Cache"-???
- 6 Then what?

OLD

Mail Server Enter the URL of the outgoing mail server.



Protocol	Choose POP or IMAP.
Port	Enter the port of the mail server used by the Officer.
SSL	Check (or uncheck) this option to control whether SSL protocol is used.
Keystore Path	If SSL is checked, enter the path to the Java keystore.
Keystore Passphrase	If SSL is checked, enter the password phrase for the Java keystore.
Funambol DataSource	Specify the data source name (example: jdbc/fnblids) used by both Email Connector and Inbox Listener for a caching system.
Filter Activation	Check (or uncheck) this option according to your filter usage preferences.
Save only Header	[-Option found only in POP email SyncSource-] If this option is checked, only the message header will be saved in the local Sent Mail folder

- 7 Click **Save** to save and apply the settings.
A confirmation message appears in the Output-Messages pane.

■ Setting up Email SyncSources (POP and IMAP)

[OLD VERSION-3 SPECIFICS...] The Email Connector comes with two default syncsources that you must customize for your system's use:

POP	Enables both email download [INBOX folder synchronization] and sending of email from the client [OUTBOX/SENT folders synchronization] -- The pop-based syncsource can synchronize only the Inbox folder and only send the email from the device.
IMAP	Provides limited bidirectional client-server mailbox synchronization, including INBOX, OUTBOX, SENT, DRAFTS and TRASH. Sub-folders, including INBOX-specific, are not synced. [-??-]

To customize the Email SyncSources (POP or IMAP), follow these steps:

- 1 In the Administration Tool Navigation pane, expand the server tree as noted here:
[server] > Modules > email > FunambolEmailConnector
- 2 Right-click the [-icon-] and choose either **Email Imap SyncSource** or **Email Pop3 SyncSource**. (The following options can be customized for both.)



- 3** When the appropriate SyncSource options appear in the Data Entry pane, make the needed entries. (The options are similar for both IMAP and POP3, but in each case, certain options are unavailable or are read-only.)

Option	Protocol	Description/Action
Source URI	POP/IMAP	The URI of this syncsource—for example, “imail” for IMAP synchronization or “pmail” for POP synchronization.
Name	POP/IMAP	A plain-language descriptive name for the syncsource., usually incorporating the URI text.
Outgoing Server	POP/IMAP	The URL of the outgoing email server.
Port	POP/IMAP	Outgoing email server port. Default = 25 (SMTP).
Auth	POP/IMAP	if checked, the user credentials (mail login and password) are sent to the email server to authenticate the outgoing mail.
Incoming Server	POP/IMAP	The URL of the incoming email server.
Port	POP/IMAP	Incoming mail server port. Default entries are = 110 (POP), 143 (IMAP).
SSL	POP/IMAP	If checked, this option activates SSL.
Keystore Path	POP/IMAP	The path to the Java keystore (If SSL is checked).
Keystore Passphrase	POP/IMAP	The password phrase for the Java keystore (If SSL is checked)
Complete Mailbox Activation	Not available	(-Inactive option-) TBD
Inbox Folder	[-Read-only-]	Displays the name server label assigned to the Inbox folder. (Active by default)
Outbox Folder	IMAP	Displays the name server label for the Outbox folder. (Active by default.)
Sent Folder	IMAP	Displays the name server label for the Sent folder. (Active by default.)
Drafts Folder	IMAP	Enter the name server label for the Drafts folder. Check this option to activate synchronization. (Optional).
Trash Folder	IMAP	Enter the name server label for the Trash folder. Check this option to activate synchronization. (Optional).
Type	[-Read-only-]	Displays the Email object type information (read-only)



Option	Protocol	Description/Action
Supported Types	[-Read-only-]	Displays the email object supported types information (read-only).
Supported Versions	[-Read-only-]	Displays the email object supported versions, as a comma-separated series (1.2,2.0,2.3).
Encryption/Encoding	POP/IMAP	Specifies whether to encrypt/encode email. If you check this option, an entry for this SyncSource is automatically added to the Data transformations table (see “Enabling Encryption/Encoding” on page 9) with DES 64-bit transformation. If you uncheck this option, the SyncSource is removed from the Data transformations table.

- 4 **Make the recommended settings** for both POP and IMAP syncsources.
- 5 When you are finished, click **Add** to save and apply your changes.

■ Restarting the DS Server

To activate your Email Connector configurations, restart the DS server at this point:

Windows: Stop the Funambol server, then restart it, using the Services control panel.

Linux: Change to the Funambol directory and run these commands:
`/funambol/tools/bin/funambol.sh stop`
`/funambol/tools/bin/funambol.sh start`

Your configuration should be in effect. You can now test the service, or install InBox Listener as an adjunct service, as detailed in “Installing the InBox Listener” on page 49

Manually Enabling Encryption/Encoding

[-OPTIONAL FEATURE-] All communication between the Email Connector and any SyncML client is automatically encoded with base64. If you prefer, those communications can be encoded with both DES and base64. To do so, follow the procedure described below.

Note that you can also activate custom email encryption/encoding when you add or modify a SyncSource; for details, see “Creating a SyncSource” on page 7.

- 1 In the Navigation pane, expand the server tree and double-click **Server Settings**.
The Server Settings options appear in the Data Entry pane.
- 2 Locate the **Data transformer manager** option (under *Engine*) and click the **Configure** button (to the right of the field).



- 3 When the Data Transformer Manager Configuration options appears as shown here, click the “+” icon in the upper right corner of the **Data Transformations** table.

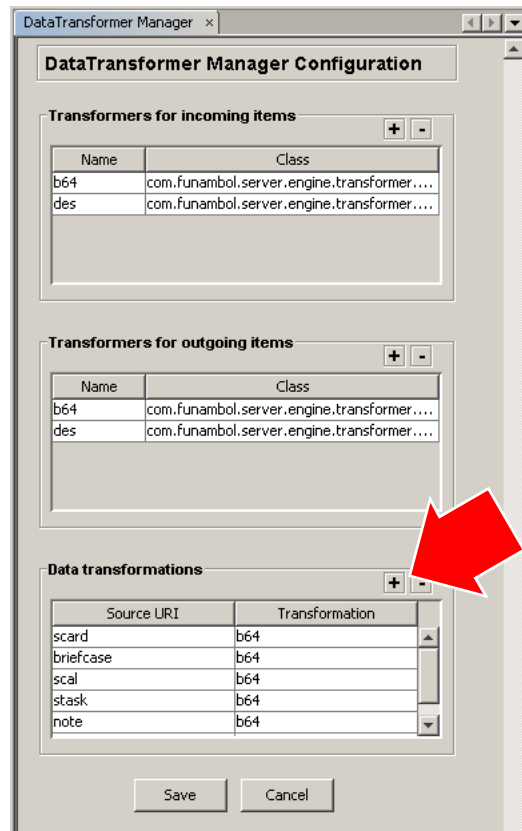


FIGURE 7-7

This creates a new row at the bottom of the table.

- 4 Make the following entries in each column of the new row:
 - Source URI** Enter the value of the Source URI (e.g., the string “mail”) of the SyncSource instance you created in the previous section.
 - Transformation** Enter this text: “des;b64” to apply the DES cipher and Base64 encoding.
- 5 Click **Save** to save and apply this encryption transformation.

Customizing Email Connector Log Settings

[**OPTIONAL FEATURE-**] You have the option to customize the level of information recorded in the Email Connector log files, including selecting one of several output types. To do so, follow these steps:

- 1 In the Navigation pane, expand the server tree and double-click **Server Settings**.
- 2 Expand **Server Settings** and click funambol.email.



The **Logger settings** for “funambol.email” appear in the Data Entry pane.

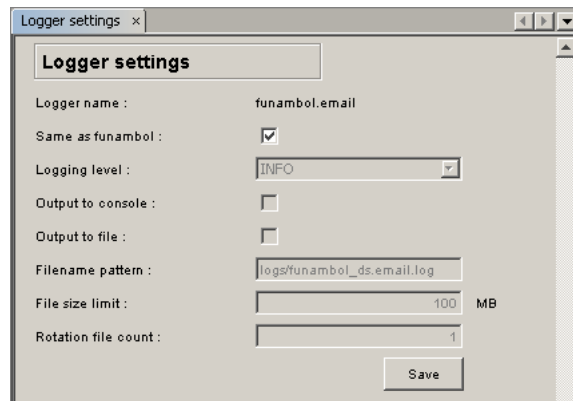


FIGURE 7-8

This pane shows how (by default) the log settings for “email” are based on the Funambol master log settings; they are “locked” (read-only) until you uncheck Same as Funambol.

- 3 Review the current settings.
- 4 Though the defaults may be adequate, if you need to customize this log option, uncheck **Same as funambol** and edit the now-active options as noted here:

Logger name Notes the name of the logger. (Read only)

Logging Level Open this menu and choose the level of information to be logged.

Valid values:

NONE = no information logged

ERROR = only errors are logged

INFO = basic info and errors are logged

ALL = info, errors and debug information are logged.

The default menu choice: INFO.

To record all server problems when debugging the server or a syncsource, choose ALL. This level provides the most information. You should also use ALL if you wish to submit a log file for consideration by participants in any Funambol mailing lists.

Output to console Check this checkbox if the log is to be viewed in the standard console (terminal window).

Default: inactive.

Output to file Specifies if the log should be stored in a file (defined in the Filename pattern field). Default: selected.



Filename pattern Defines the name of the file where the log is stored when the Output to file field is checked. It consists of a string that includes the following:

"/" – the local pathname separator

"%t" – the system temporary directory

"%h" – the value of the "user.home" system property

"%g" – an automatically generated number to distinguish rotated logs

"%u" – a unique number to resolve conflicts

"%%" – translates to a single percent sign "%"

File size limit Specifies the maximum size of the log file in megabytes (MB). Default level: 100.

Rotation file count Logging can either be written to a specified file, or written to a rotating set of files. If you activate a rotating set of files, the following happens: when each file reaches a preset file size limit, it is closed, rotated out, and a new file opened. Successively older files are sequentially auto-numbered by replacing the %g placeholder in the filename pattern with "0", "1", "2", etc. Default file count: 1.

- 5 Click **Save** to save and apply your changes.

A confirmation message appears in the Output-Messages pane.

■ Saving your custom log file entries from accidental loss

The first time the Email Connector is installed, a range of log settings (all stored in *Logging.xml*) are automatically configured to a set of default values. You can open, review and edit the settings by means of the Administration Tool—as previously described.

Unfortunately, these custom entries will be erased and overwritten whenever a new server module or component is installed—or re-installed. To maintain your custom logging settings for the Email Connector, follow these step:

- 1 Change to this directory:

```
<DS_SERVER_HOME>\default\config\common\beans\com\funambol\server\logging
```

- 2 Using a text editor, open this file:

```
Logging.xml
```

- 3 Enter the following text (shown in bold) to the existing settings:

```
<void method="add">
```

```
    <object class="com.funambol.framework.config.LoggerConfiguration">
```

```
        <void property="append">
```



```
        <boolean>true</boolean>
    </void>
    <void property="count">
        <int>1</int>
    </void>
    <void property="inherit">
        <boolean>true</boolean>
    </void>
    <void property="level">
        <string>INFO</string>
    </void>
    <void property="limit">
        <int>100</int>
    </void>
    <void property="name">
        <string>funambol.email</string>
    </void>
    <void property="pattern">
        <string>logs/funambol_ds.email.log</string>
    </void>
</object>
</void>
```

- 4 Save this change and exit the text editor.

Customizing New SyncSources for Specific Mail Services

[**OPTIONAL FEATURE**-] At this edition date, Funambol DS “push” technology (utilizing the Email Connector and Inbox Listener) works with a growing range of client devices. For a list, go to this web page:

www.funambol.com/pageURL

Synchronizing push-ready devices with compatible mail servers requires some customization, as detailed in server-specific documentation available at this web page:

www.funambol.com/support/server-setup



This includes all recently certified push-compatible systems such as Microsoft Exchange, Lotus Domino/Notes, Google GMail, Yahoo and Courier (Horde).



About the Inbox Listener

In conjunction with the Email Connector (Email Connector), the Inbox Listener makes it possible for the DS server to monitor other, external mail servers, and when new in-bound messages are detected in a user’s mailbox, to do the following:

- (1) send an alert to the user
- (2) automatically synch (“push”) the new messages to the user’s Funambol archives, then

When a new message is detected by the Inbox Listener, the Funambol engine notifies the user’s device about the new mail. The device then initiates the email synchronization process with the email server via the Funambol engine and Funambol Email Connector.

NOTE: There is no access to the Inbox Listener with the Administration Tool. You must use CLI (as noted here) to configure and maintain the Inbox Listener.

IMPORTANT! One installation of the Inbox Listener serves a single Email Connector Sync-Source—POP or IMAP—both not both. If there are separate POP and IMAP-based SyncSources, you **MUST** install separate Inbox Listener instances and customize each with individualized “listnerid” and “wsSyncSource” values—as detailed in the rest of this chapter.

Installing the Inbox Listener

If you installed the PIM & Email Bundle, both Inbox Listener and Email Connector are present, ready for configuration and use. But, if you installed the DS server only, on an existing host (that meets the requirements), you can install the Inbox Listener at this point. (This requires a previous installation of Email Connector.)

Requirements

- An operational Funambol DS Server
- An application server
- JDK/JRE
- A JDBC-compliant database on your system.
- Plus, an active installation of Email Connector.

■ Getting started

To install the Inbox Listener, follow these steps:

- 1** Download a copy (if you have not already done so) of the latest Inbox Listener zip archive:
`funambol-inbox-listener-(version_number).zip [-??-]`
- 2** Verify that the following directory is present in your master Funambol DS directory:
`inbox-listener/funambol/inbox-listener`
- 3** Unzip the archive (named **funambol-email-<x.x.x.>s4j**) to this location:



/funambol/ds-server/modules

- 4** Using a text editor, open the /funambol/ds-server/install.properties file.
 - 5** Find the line that begins **modules-to-install=** (in the Module definitions section.)
This line specifies, in a comma-separated list, the modules that will be installed during installation.
 - 6** Add this item to the list: **funambol-email-<x.x.x>** [-or make this the only item?-]
ALERT: Leave off the .s4j filename extension.
 - 7** Save your changes and close install.properties.
 - 8** Open a terminal window and type one of the following commands at the prompt:
WINDOWS: cd <DS_SERVER_HOME>
 bin\install-modules <application_server>
LINUX: cd <DS_SERVER_HOME>
 sh bin/install-modules.sh <application_server>
[-MISSING POST-INSTALL INFO-]
 - 9** Using a text editor, change to the /funambol/inbox-listener/bin directory
 - 10** Open the startlistener file.
 - 11** Edit the values of the following parameters to reflect your Funambol server environment:
 JAVA_HOME=
 JDBC_JAR=
12 Save your changes and close startlistener.
 - 13** Open the console file (in the inbox-listener directory).
 - 14** Revise these parameters to reflect your Funambol server environment:
 JAVA_HOME=
 JDBC_JAR=
15 Save your changes and close the console file.
 - NOTE: On UNIX/Linux systems, assign the execution permission for the startlistener and console scripts using the dos2unix and chmod commands.
- [-After restart?-] You can now configure your IBL installation.

Configuring the Inbox Listener

To customize the Inbox Listener to match your system, you'll follow the procedure detailed in this section, but you'll need to do this twice—once for POP mail and once for IMAP mail. The following cannot be done with the Administration Tool; you must use a terminal window, as described here.



- 1** Change to this directory:
`<FUNAMBOL_HOME>\inbox-listener\config\email\email`
- 2** Use your text editor to open the InboxListener.xml file.
- 3** Review and change any of the following properties:

listenerid	Enter the ID of the inbox listener.
startupNotification	If “true, this sends a notification to all registered users when the inbox listener module starts
host	Email server URL
protocol	Email protocol (POP or IMAP)
port	Email server port
isSSL	Specifies whether SSL protocol is used: True or False)
keystorePath	Path to the Java keystore for SSL (if isSSL is true).
keystorePassphrase	Password phrase for the Java keystore (if isSSL is true).
interval	Notes the interval at which the user mailbox is polled. Noted as an integer, representing the interval in milliseconds.
jdbcDriver	Database driver (and pathway)
jdbcUrl	The Database URL
jdbcUser	The User ID with access the database
jdbcPassword	The password with access the database
reloadingTime	Interval at which the inbox listener checks the list of accounts in the database; specified in milliseconds. (“3” is a safe value.)
wsEndPoint	Funambol Administration URL (complete path)
wsUsername	Funambol Administrator username
wsPassword	Funambol Administrator password
wsSyncSourceType	Type (protocol); POP or IMAP
wsSyncSource	The name of the email syncsource.
- 4** For IMAP server connections, customize these IMAP IBL file values:
 - reloading time
 - interval
 - wsEndPoint (verify the port number)
 - wsSyncSourceType (“imap”)
 - wsSyncSource (“imap”)
- 5** For POP server connections, customize these **POP IBL** file values
 - reloading time
 - interval
 - wsEndPoint (verify the port number)
 - wsSyncSourceType (“pop”)



- wsSyncSource (“pop”)
- 6 Save your changes and close the file.
[-OOPS-] How to distinguish between POP nad IMAP?
XREF to “starting IBL”-??

■ Configuring the Log Level

[-OPTIONAL TASK-] To customize the log level of the Inbox Listener to your preferences, follow these steps:

- 1 Open a terminal window.
- 2 Change to this directory:
`<FUNAMBOL_HOME>/inbox-listener/bin`
- 3 Use your text editor to open `inboxlistenerlog.properties`
- 4 Edit the `./level=` property to one of these valid values:
NONE = no information logged;
ERROR = only errors are logged;
INFO = basic info and errors are logged; **[-Default-]**
ALL = info, errors and debug information are logged.
- 5 Save your changes (if any) and close `inboxlistenerlog.properties`.

Managing the User Account Database

[-???-] Before running the Inbox Listener, you must enter records for all user email accounts that would take advantage of this service. **[-???-]** To do so, follow these steps:

- 1 Open a terminal window.
- 2 At the prompt, type the following:
For Windows:
`> cd <FUNAMBOL_HOME>\inbox-listener\bin`
`> console`
For UNIX/Linux:
`> cd <FUNAMBOL_HOME>/inbox-listener/bin`
`> sh console.sh`
- 3 When the Inbox Listener Account Console appears **[-???-]**, use the following commands:
0 – quit Enter this command at the prompt to exit the Console.
1 – list accounts Enter this to display a list of existing user accounts, with the username and ID.



- 2 – insert account** Enter this to record new user account data.
You'll be given the following prompts:
 - **username** – name of the user account
 - **password** – password for the user account
 - **listener id (number)** – this can be obtained from the listener.xml file
- 3 – delete account** Deletes a user account by specifying the username.
(include other commands-???)
- 4** Save your changes and close the file.
- 5** Restart?

■ Reviewing Current IMAP Folder Names

If you need to verify the exact IMAP folder names for a specific account, you can use the Inbox Listener “IMAP Folder Subscriber” utility, as detailed here. It may prove helpful when you edit the IMAP syncsource.

- 1** Open a terminal window.
- 2** At the prompt, type the following:
For Windows:
> cd <FUNAMBOL_HOME>\inbox-listener\bin
> subscribe
For UNIX/Linux:
> cd <FUNAMBOL_HOME>/inbox-listener/bin
> sh subscribe.sh
- 3** When the Folder Subscriber appears [-???-], use the following commands:
0 – quit Enter this command at the prompt to exit the Console.
1 – select account Enter the IMAP mail server user ID for a mailbox.
- 4** When the IMAP folder names appear, note them down for future reference. (Or...)
- 5** Exit the Folder Subscriber when you are finished.

Starting and Stopping the Inbox Listener

To start the inbox listener, follow these steps:

- 1** Open a terminal window (Windows or Linux).
- 2** At the prompt, type the following:
Windows:
> cd <FUNAMBOL_HOME>\inbox-listener\bin



```
> startlistener.cmd
```

Unix/Linux: (do the following as root)

```
> cd <FUNAMBOL_HOME>/inbox-listener/bin
```

```
> ./startlistener.sh [-??-]
```

■ Stopping the Inbox Listener (Windows)

To stop the Inbox Listener if it's a foreground process (which it shouldn't be except for testing purposes), follow these steps:

- 1 Open a terminal window.
- 2 At the prompt, type the following:

```
cd <FUNAMBOL_HOME>\inbox-listener\bin
```
- 3 Press Ctrl + C

■ Stopping the Inbox Listener (Linux)

To stop the Inbox Listener if it's a background process (as it should be in an operational DS server environment), follow these steps:

- 1 Open a terminal window.
- 2 Search for the inbox-listener process.
- 3 At the prompt, type the following:

```
kill <process ID>
```

For more information...

You may find the following resources helpful in setting up your DS Server for “push” operations with the Email Connector and Inbox Listener:

- Sync4j Modules Development Guide
- Sync4j SyncServer 5.0.x Administration Guide



CHAPTER 8

Managing Server Modules

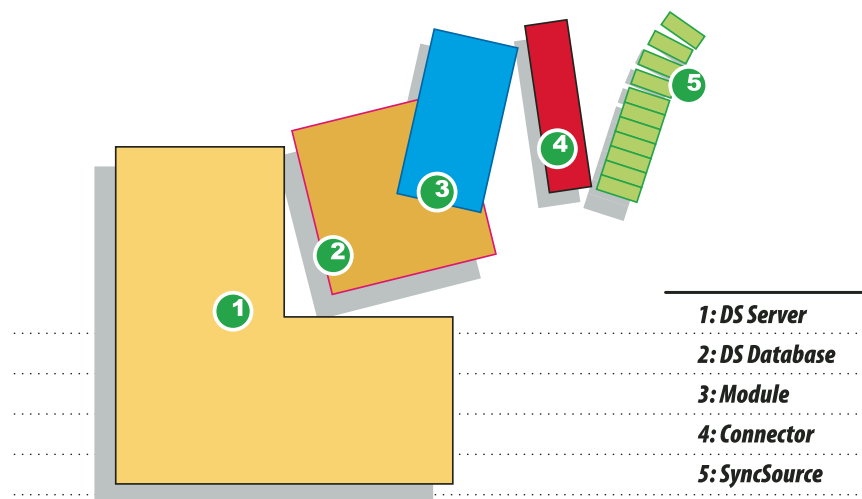
Chapter Contents

- “Introducing Server Modules” page 55
- “How to build a module” page 57
- “Modules, SyncConnectors and SyncSource Types” page 59

Introducing Server Modules

Text to come.

FIGURE 8-1



Modules, as part of the core components of a DS server, define and control all server extensions, external data connectivity, and data synchronization. As the means by which third party developers can extend the way Funambol works, modules comprise a packaged set of files containing classes, configuration files, initialization SQL scripts and so on. These files are used by the installation procedure to embed the extensions into the Funambol Enterprise Archives (the J2EE ear).



Modules are part of an interlocking hierarchy of components including the following:

- **Module** – a server extension that adds new functionality or modifies the existing behavior of a Funambol DS Server component. [Like what?]
- **Connector** – a server extension that integrates the Funambol DS Server with an external source of data, providing support for data synchronization with that source. It contains everything required for the configuration and runtime execution of the integration module, including configuration files, code, software interfaces, and graphical user interfaces for SyncSource configuration. In addition, a connector defines SyncSource types.
- **SyncSource Type** – a template from which an instance of a SyncSource is created. It represents a specific kind of SyncSource, such as a FileSystem SyncSource that defines how data stored in directories in a file system can be accessed by the Funambol DS Server. Since the SyncSource type does not represent a specific instance, in the case of the FileSystem SyncSource, it does not identify a directory to be used for synchronization. To specify such a directory, you create an instance of the FileSystem SyncSource and configure it with the desired directory. Another example of a SyncSource type is an Exchange Server SyncSource for accessing a Microsoft Exchange account.
- **SyncSource** – This is the basic synchronization unit. Each individual syncsource defines the way a set of data is made accessible to the Funambol DS Server for synchronization. All client requesting synchronization make use of a particular syncsource. A SyncSource is uniquely identified by the server by a source URI, which the client uses to address it.

You view the modules installed in the server in the navigation pane, as shown below:

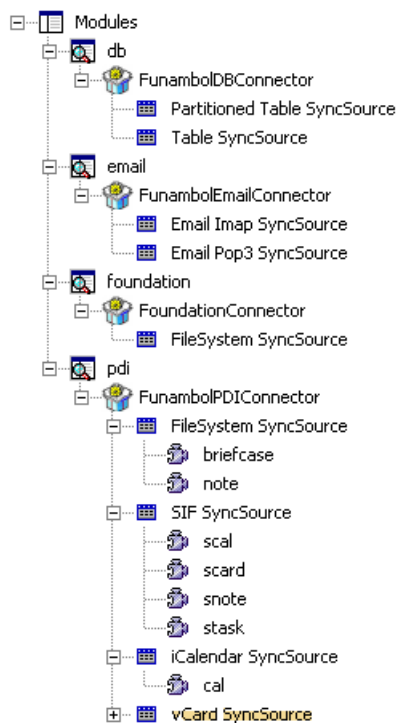


FIGURE 8-2



What's in a Module?

At the top level of the Modules tree, the following categories appear:

- **Email** module—Lists user-customizable resources for synchronizing email between client and server databases. Two syncsources are included by default: “Table” and “Partitioned Table”.

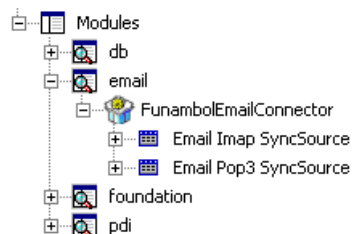


FIGURE 8-3

REPLACE

See “Activating the DB Connector” on page 57 for more information on the features of this module.

- **Foundation** module – A “FileSystem” syncsource is included by default. Use the FoundationConnector to define additional SyncSources.

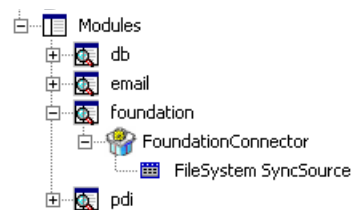


FIGURE 8-4

REPLACE

How to build a module

[-HELP-] Text to come.

[-HELP-] A Funambol module is a jar package named following this convention:

`<module-name>-<major-version>.<minor-version>.s4j`

[-HELP-] Where `<module-name>` is the name of the module without spaces and with small caps only and `<major/minor-version>` are the major and minor version numbers. Changes in the minor version number must be backward-compatible, while changes in the major version number may require migration efforts.

[-HELP-] The package must reflect this structure:

Name	Column2	Column3
lib/	<i>modulename.jar</i>	
	<i>dependent1.jar</i>	
	<i>dependent2.jar</i>	



Name	Column2	Column3
config/	<i>config.properties</i>	
	<i>MySyncSource.xml</i>	
	<i>SomeOtherBean.xml</i>	
admin.war		
meta-inf/	manifest.mf	
exclude/		
install/	install.xml	
sql/	oracle	create_schema.ddl
		drop_schema.ddl
		init_schema.sql
postgresql		

[-HELP-] In the previous table, those entries ending with a '/' represent directories and filenames in italic are given just as examples (in a real package they will be replaced with real filenames).

[-HELP-] The module classes are packaged in a main jar file called *<modulename>.jar*. If this package requires additional libraries, it must use the java extension mechanism to make them available (in particular, depended libraries must be included in the *Class-path* manifest entry).

[-HELP-] Configuration properties files and bean configuration files are stored under the package directory *config*, creating subdirectories as needed.

[-HELP-] The directory *install* contains *install.xml*, which is an Ant script, called when the module is being installed; this is the hook where a module developer can insert module specific installation tasks. Installation specific files can be organized in subdirectories under *install*. If the module requires a custom database schema, the scripts to create, drop and initialize the database are stored under the *sql/<database>* directory, where *<database>* is the name of the DBMS as listed in the *install.properties* file. Finally, the *exclude* directory is used to store files that will be used by the installation procedure, but that will not be included in final server ear.

How to install a Module

text to come.



Modules, SyncConnectors and SyncSource Types

[-HELP-] As previously stated, a *module* is a container for anything related to one or more server *extensions*. Those extensions may include one or more *SyncConnectors*. A *SyncConnector* is an extension to the server intended to support the synchronization of a particular data source. The Funambol's *SyncConnector DB*, for example, provides a GUI and runtime classes for the synchronization of generic data stored into a RDMS. The *Funambol Foundation* module provides a *SyncConnector FileSystem* that allows to synchronize data stored in a directory of the file system.

[-HELP-] A key piece of software grouped under the umbrella of the *SyncConnector* is the *SyncSource type*. A *SyncSource type* represents the template from which a real *SyncSource* can be created. For example, the *FileSystemSyncSource* type is the means the *SyncServer* can synchronize data stored in the file system. However, it does not represent a particular *instance* of the *SyncSource*, therefore it does not identify a particular directory to synchronize.

[-HELP-] To synchronize a specific directory (for instance */data/contacts*) a real *SyncSource* must be created and configured with the wanted directory. Since this is a guide for developers, you can think of a *SyncSource type* as a class and of a *SyncSource* as an instance.

Customizing SyncSources

In addition to the default syncsources that are stored on the server at installation, you have the ability to add any needed syncsources or edit any of the existing syncsources according to the system's needs.

• Reviewing the current SyncSources

- 1** To review the existing collection of modular syncsources, expand the **Modules** branches.
- 2** To inspect the specific settings of any of the listed syncsources, double-click a listed item.



The **Edit** (*SyncSource name*) options appear in the Data Entry pane—as shown in this example of the Email Connector IMAP SyncSource options.

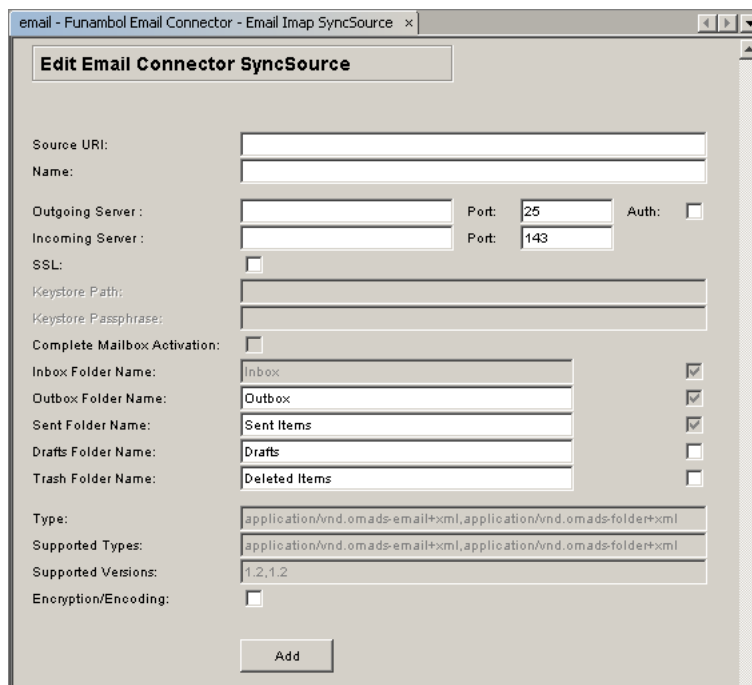


FIGURE 8-5

- 3 Make any needed changes, and then click **Add** to save your entries. A confirmation message appears in the Output-Messages pane.

• Creating new SyncSources

To add a new syncsource to the DS server modules, follow these steps:

- 1 Right-click any of the four main syncsource Connectors—DB, Email, Foundation or PIM.
- 2 When the shortcut menu appears, click **Add SyncSource**.

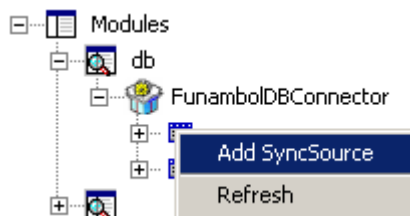


FIGURE 8-6



The relevant Edit (SyncSource) options appear in the Data Entry pane—as shown in this illustration of PIM Connector iCalendar options.

FIGURE 8-7

- 3** Make the needed entries in the active syncsource options—like those listed below:

Source URI	Enter a case-sensitive identifier of the SyncSource.
Name	Enter a descriptive name of the SyncSource.
Type	MIME type of the file's content, e.g., text/x-vcard.
Source Directory	Directory where files are stored and read.
Supported types	Comma-separated list of supported MIME types, sent in the server capabilities packet. Example: text/x-vcard,text/vcard (see Supported versions)
Supported versions	Enter a comma-separated list of MIME type versions. For each MIME type, a separate version number must be specified. Example: 2.1,3.0 means support for vCard 2.1 and 3.0.
Encoded	Specifies whether the file's content is to be Base64 encoded. This feature is useful if you are building a SyncClient that processes binary files. If the SyncSource is meant to synchronize with phones, leave this option unchecked.
Multiuser	[Available only with SIF and FileSystem SyncSources] Click the checkbox to keep each record distinct, and avoid a single, merged database
- 4** When you are finished, click **Add**.
A confirmation message appears in the Output-Messages pane.



Installing and Uninstalling Server Modules

A core set of modules is integrated into the server resources when you initially install the DS server package. Individual Funambol modules can be installed at any time thereafter.

Server modules are usually distributed as a package of files (including the installer) stored in a .zip or .jar archive. After you have unpacked the archive, the resulting directory might contain two or more files. Look for a file labeled in the following filename syntax:

`{modulename}-{versionnumber}.s4j`

For example, this is how a Email Connector Module would be labeled:

`funambol-email-3.0.2.s4j`

After you identify the .s4j module file, copy it to the `<DS_SERVER_HOME>\modules` directory. The installation procedure can proceed.

Each .s4j module file contains the part of the module that becomes part of the Funambol DS Server archive. It contains classes, configuration files, and initialization files that are processed by the installation procedure.

If you are using the bundled installation, the server must be running before performing the installation procedure below.

• Installing a DS server module

- 1** Unpack the module archive file, if the module was delivered in a .ZIP archive (also including instructions, etc.).
- 2** Extract and copy the `funambol-{modulename}-{versionnumber}.s4j` file to this directory:
`<DS_SERVER_HOME>\modules`
- 3** Using a text editor, open the `<DS_SERVER_HOME>\install.properties` file.
- 4** Find the line that begins `modules-to-install=` (in the Module definitions section.)
This line specifies, in a comma-separated list, the modules to install during installation.
- 5** Add `funambol-{modulename}-{versionnumber}` to the comma-separated list, but omitting the .s4j filename extension.
- 6** Save your change to `install.properties`, and then close the file.
- 7** Start both the server and the database, if not already running.
- 8** Open a terminal window.
- 9** At the prompt, type the following:

Windows

```
> cd <DS_SERVER_HOME>
> install-modules.cmd <application_server>
```

Unix / Linux



```
> cd <DS_SERVER_HOME>  
> install-modules.sh <application_server>
```

During the installation you are prompted one or more times to “create” (rebuild) the server database.

- 10** Type **n** (no) if you have data in the database that you do not want to lose.
- 11** In addition, as the installation procedure installs each module, you are prompted to rebuild that module’s database. Accept or decline as appropriate, but for the module that is being installed for the first time, you must type **y** (yes).



CHAPTER 9

Funambol Reference Guide

Text.

- Items and contents/topics

Transition text

Default Tables

The Funambol DS Server provides the following default databases to which you can synchronize user data. Note that all noted URI entries are case-sensitive.

• Calendar

Usage: synchronizing calendar data.

URLI	MIME-TYPE	Clients
scal	text/x-s4j-sife	All Funambol-developed clients
cal	text/x-vcalendar text/calendar	Most of the common and known clients that are already built into a mobile device.

• Contacts

Usage: synchronizing contact data.

URLI	MIME-TYPE	Clients
scard	text/x-s4j-sifc	All Funambol-developed clients
card	text/x-vcard text/vcard	Most of the common and known clients that are already built into a mobile device.



• Notes

Usage: synchronizing text-based notes.

URLI	MIME-TYPE	Clients
snote	text/x-s4j-sifn	All Funambol-developed clients
note	text/plain	Most of the common and known clients that are already built into a mobile device.

• Tasks

Usage: synchronizing task data.

URLI	MIME-TYPE	Clients
stask	text/x-s4j-sift	All Funambol-developed clients

• Briefcase

Usage: synchronizing briefcase data.

URLI	MIME-TYPE	Clients
briefcase	Application/*	All Funambol-developed clients

Install Properties

The <DS_SERVER_HOME>\install.properties file is the central repository of configuration information that is used by the installation procedure to set up the Funambol DS Server. A standard Java properties file, it contains the following parameters:

context-path	The context path to be used to configure the web container for the Funambol DS Server module. The DS Server will respond to URLs starting with this context path.
dbms	Name of the database where Funambol DS Server tables are created.
jdbc.classpath	Classpath including the JDBC driver for the database, if not included in the system classpath.
jdbc.driver	JDBC driver class.
jdbc.password	Database user password
jdbc.url	JDBC connection URL



modules-to-install

Comma-separated list of Funambol DS Server modules to install. If a module has already been installed, the installation procedure reinstalls it again.

server-name

The server URI that will be specified in SyncML messages. The server will only respond to messages addressed to this URI.