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The Open Source Enterprise Billing System

# User Guide

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# ***Chapter 1***

## ***Items***

*Your catalog of goods and services*



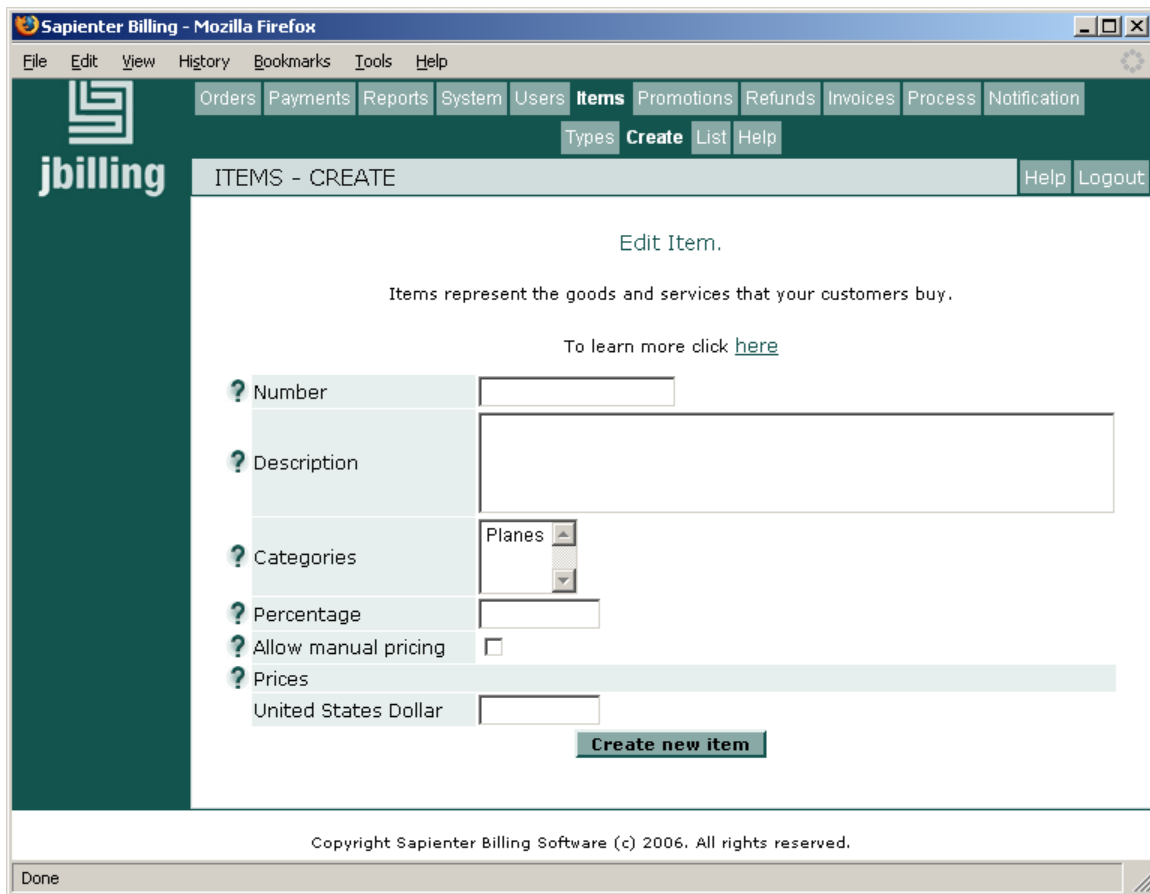
## Item management

Items represent the catalog of services or goods sold by your company. Here is where you detail the description and price of an item. An item can be also be a promotion, interest, late fees, a tax or anything else that you might want an invoice to contain.

Creating items and item categories is the very first task that you have to do to get jBilling set-up. Here you have to answer the question: what is that my company sells and how can categorize these items?

### Create an Item

As illustrated below, to create an item, click on '**Items**' and then on '**Create**'.



The screenshot shows a web browser window titled 'Sapienter Billing - Mozilla Firefox'. The browser's address bar and menu bar are visible. The page content is for the 'ITEMS - CREATE' form. The form has a dark green header with the 'jBilling' logo and navigation tabs for 'Orders', 'Payments', 'Reports', 'System', 'Users', 'Items', 'Promotions', 'Refunds', 'Invoices', 'Process', and 'Notification'. Below the header, there are sub-tabs for 'Types', 'Create', 'List', and 'Help'. The main content area is titled 'ITEMS - CREATE' and includes a 'Help' and 'Logout' link. The form itself is titled 'Edit Item.' and contains the following fields and options:

- Number:** A text input field.
- Description:** A large text area.
- Categories:** A dropdown menu with 'Planes' selected.
- Percentage:** A text input field.
- Allow manual pricing:** A checkbox.
- Prices:** A text input field with 'United States Dollar' selected.

At the bottom of the form is a 'Create new item' button. The footer of the page reads 'Copyright Sapienter Billing Software (c) 2006. All rights reserved.' and the browser status bar shows 'Done'.

### Number

This field is optional. It is the identification you will use internally to distinguish your item. It is deceiving to call it "number", as you could assign to your item any letter, number, symbol or a combination of all three. It is possible to assign the same 'number' to more than one item. The numbers and letters you assign to your item will affect the order in which it will appear among other items, once listed on an invoice. This is actually

the most important effect that the item number has: **it determines how items will be ordered in an invoice.**

If item's order in an invoice is important to you, you should think of a 'number strategy' to follow. Let's say that you want all your normal items to show up first, followed by any discounts and last the taxes. That how you want the invoices to display the lines. In that case, you might want to start the item numbers with a letter that follows these three groups. 'A' for normal items, 'B' for discounts, and 'C' for taxes. This is just a prefix, then you can follow with a number. For example:

- A-1 Monthly front page banner
- A-2 Featured article
- B-1 One year subscription discount
- C-1 State taxes.

It is important not to confuse the Number with the ID the system will automatically assign to an item which cannot be edited. The ID is just a sequential number that helps jBilling to internally identify items.

### Description

Here is where an item is named and perhaps described briefly. These name and description will eventually be displayed on the invoice. It can be edited when creating a purchase order (see documentation relating to purchase orders). Here, the default language of your company should be used, which was configured during sign-up.

If you need to enter the description in more than one language, you can do so later by editing the item. Initially, you just need to enter the description in your company's default language.

### Category

Select what category the item is to belong to. Each item needs to be assigned to at least one category and may belong to more than one.

### Percentage

Filling out this field indicates that you wish for the value of this item to be calculated as a percentage of the total of the purchase order. A common example is a tax, such as the VAT (Value Added Tax) or GST (Goods and Services Tax), which is a fixed percentage of the total value of the purchase. If this field is filled out, the 'price' field(s) has (have) to be left blank.

### Allow Manual Pricing

Flagging an item as 'manual price', allows for its price to be modified when creating a purchase order. Its price becomes in fact a 'suggested price'. For example, *Trend's* price for a top banner is 300\$, but this item is flagged as 'manual price'. A sales representative can then give a one time special price to a customer. When the purchase order is being created the price will be an editable field, allowing the sales representative to enter any number. If the item is not flagged as 'manual price', the price will not be editable.

## Price

If you have filled out the 'percentage' field, this section should be left blank. You will see listed here as many currencies as you have previously chosen to work with in 'System Currencies'. You have to fill out at least one field. It is possible to fill out more than one field while leaving some blank. Any field you fill out will prevail and the ones left blank will be automatically converted by the system.

## Edit

Click on '**Items**', then on '**List**' at the top of the screen. Click on a radio button to edit and update the information of an item.

### Edit Item.

Items represent the goods and services that your customers buy.

To learn more click [here](#)

[Delete](#)

ID	1
? Number	<input type="text" value="A1"/>
? Language	<input type="text" value="English"/> <input type="button" value="Reload"/>
? Description	<input type="text" value="glider"/>
? Categories	<input type="text" value="Planes"/>
? Percentage	<input type="text"/>
? Allow manual pricing	<input type="checkbox"/>
? Prices	
United States Dollar	<input type="text" value="10.00"/>

## Language

By default, the description of an item will appear on an invoice in the language your company chose during sign-up. If you have clients who understand a different language, you might want to have the possibility of listing items in that other language. You can provide this translated description as follow: Click on 'Items' and on 'List' at the top of the screen, then click on a radio button which will lead to the page where you can edit the information of an item. Select the language of your choice, enter the translated description in the correct field and click on 'Submit' at the bottom of the screen. Click on 'Reload' to either see or edit the description in this other language.



## Delete

To delete an item, click on **'Items'**, and on **'List'** at the top of the screen, then click on a radio button which will lead to the page where you can edit the information of an item. Click on 'Delete' at the top of the page.

## Special pricing

### Description

This feature is useful to allocate an ongoing special price to a customer in particular. It can only be edited by the billing administrator and it will be the price showing up on a purchase order every time one is created for this customer. Once created, the system will then automatically use this special price, for this item, for this customer only. The pricing for any other customer is not affected by this. For example, *Trend* sells advertisement banners on the Internet. They normally sell their Package "A" for \$100, but would like to offer it to one customer in particular for \$90 per month instead.

### Creating a special price

Click on **Users**, then on the radio button beside the name of the chosen customer. Click on 'Edit this user's pricing' button, located in the menu to the left of the screen. Then, click on the radio button of the item you wish to price. Once at the 'Item Pricing' screen, type in the price at which you will be selling this item to this specific customer. Click on 'Submit'

### Editing a special price

Click on **Users**, then on the radio button beside the name of the chosen customer. Click on 'Edit this user's pricing' button, located in the menu to the left of the screen. Then, click on the radio button of the item you wish to edit. Once at the 'Item Pricing' screen, type in the new price. Click on 'Submit'

Any new purchase orders, created from then on, will feature this item with the new special price. Please note, though, that any purchase orders created during the period of time for which the item had the old special price, the price before it was edited, will remain with the old special price.

### Deleting a special price

Click on **Users**, then on the radio button beside the name of the chosen customer. Click on 'Edit this user's pricing' button, located in the menu to the left of the screen. Then, click on the radio button of the item for which you wish to eliminate the special price feature. Once at the 'Item Pricing' screen, click on 'Delete'.

The price for this item will automatically go back to normal, in other words, to the price it is for all customers. Any new purchase orders created from then on will feature this item at its normal price. Please note, though, that any purchase orders created after the introduction of a special price, and before it was deleted, will remain with the special price for the item in question.

# Categories

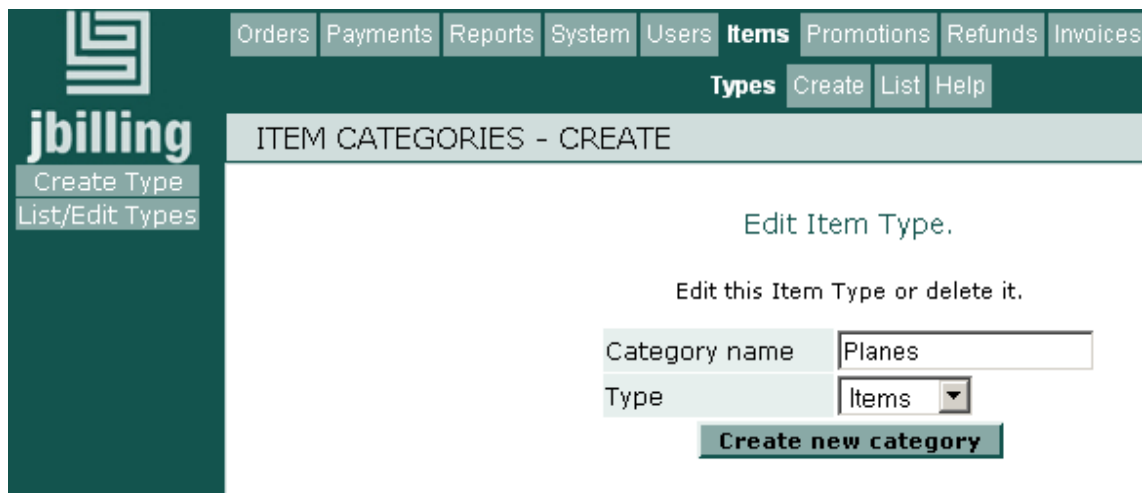
## Overview

An item needs to belong to at least one category. Categories will help when running reports as they make easier the identification of certain items distorting the result of a report. For example, in a report rendering the revenue for a given year, it is important to exclude taxes. Therefore, placing all the items relating to taxes into a single category facilitates this.

Categories have a types associated. This type can be 'Items', 'Tax' or 'Penalties'. The type affects how the invoices are calculated and how the items are presented in the invoice. For example, an item that belongs to a category type 'Tax' will not be included as the base when calculating another tax. For PDF versions of invoices, where the total 'tax' amount is segregated, jbilling knows which item is a tax by checking to which category it belongs.

## Creating a category

To create a category, click on '**Items**', then on '**Types**' and finally on 'Create Type' on the top left side of the screen. A field will appear where you enter the name you wish to give to a new category. Then click on 'Create new category'.



The screenshot shows the jBilling web interface for creating a new item category. The top navigation bar includes 'Orders', 'Payments', 'Reports', 'System', 'Users', 'Items', 'Promotions', 'Refunds', and 'Invoices'. Below this, a secondary bar contains 'Types', 'Create', 'List', and 'Help'. The main content area is titled 'ITEM CATEGORIES - CREATE'. On the left sidebar, there are buttons for 'Create Type' and 'List/Edit Types'. The main form area contains the following elements:

- Section title: 'Edit Item Type.'
- Instruction: 'Edit this Item Type or delete it.'
- Form fields:
  - 'Category name' with the text 'Planes' entered.
  - 'Type' with a dropdown menu currently set to 'Items'.
- A 'Create new category' button.

## List

To display a list of the existing categories, click on 'List/Edit Types' at the left of the screen.

## Edit

To Edit the name of a category, click on 'List/Edit Categories' at the left of the screen. Click on a radio button to edit and update the information of a particular category.

## Delete

To Delete a category, click on 'List/Edit Categories' at the left of the screen. Click on the radio button beside the category you would like to delete. Click on 'Delete' located just above the field.

# ***Chapter 2***

## ***Users***

## Customers and other types of users

Your customers are the base of all the information stored and generated by jBilling. They buy your goods and services, thus, they are the recipients of the invoices that jBilling generates. They will login to jBilling to view their invoices, update their contact information (address, phone number, etc.), edit their credit card information, submit payments, etc.

The data about your customers must be entered in the system before you can start placing purchase orders. Entering your customers information is typically the second step on getting jBilling set-up, right after the items are entered.

There are other types of users that also interact with the billing system. Your staff, for example, will also need to login to fulfill roles such as customer service (telling a customer about a late invoice, or that a cheque arrived, etc), billing administrator (configure the billing process, approve the process review, etc), among others.

### The customers list

The list of customers is the most important list in the system. From here, you can then navigate to a particular invoice, payment or order. Since you usually know the customer that you want to work on, it is common to start from the customers list.

Click on **Users**, then on **Customers**. A list of all your customers will appear. As in any list in jBilling, you can search for a particular record using filters. By clicking on the right side button of any of the records, you will get a detail screen loaded with information:

Sapienter Billing - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Orders Payments Reports System Users Items Promotions Refunds Invoices Process Notification

Compose Parameters Emails list Preferences Help

**jbilling** CUSTOMERS - VIEW Help Logout

Customer Order List  
Customer Invoice List  
Customer Payment List  
Customer Refund List

### Customer Details

This is a snapshot of this customer, including contact and credit card information and their latest invoice.

User	
Number	2
Login name	customer
Type	Customer
Language	English
Status	Active
Currency	United States Dollar
Last Login	

[Click here to edit this user](#)

Notes	
<p><a href="#">Click here to edit this note</a></p>	

Contact	
Organization Name	
First Name	
Last Name	
Phone Number	-
Email	no@thanks.com
Address	
Address 2	
City	
State/Province	
Zip/Postal Code	
Country	CA

[Click here to edit this contact](#)

Credit Card	
No credit card found.	

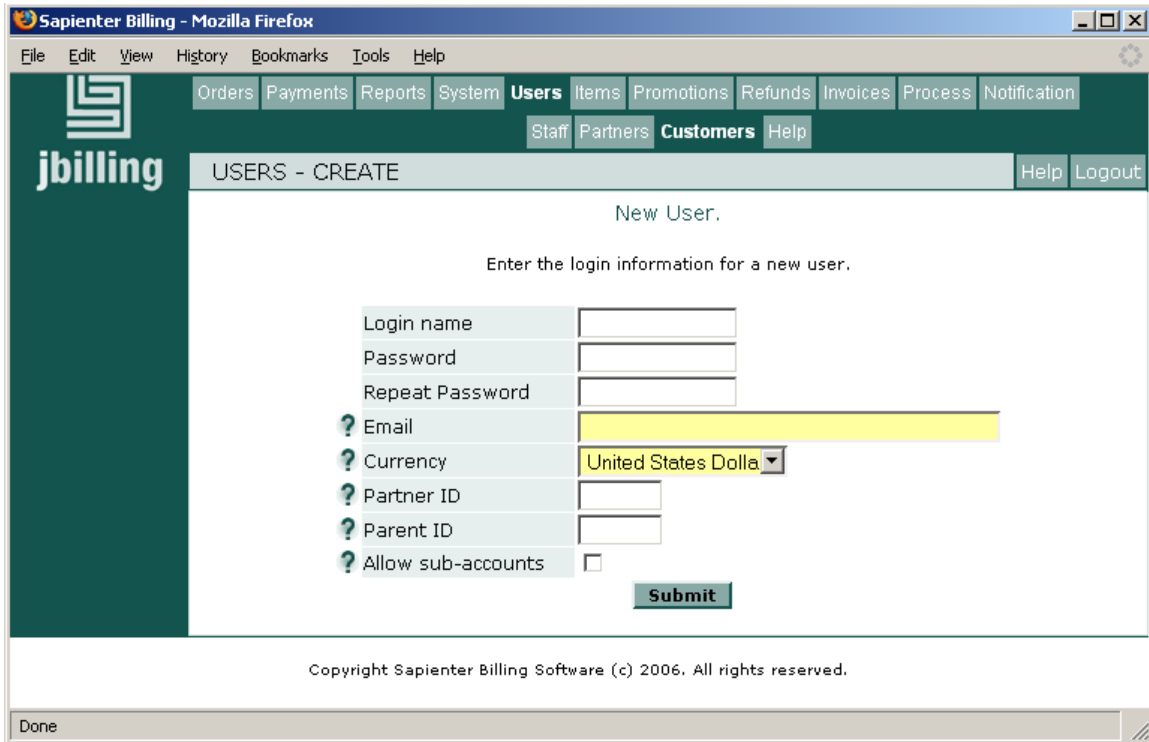
Invoice	
Number	2
ID	2
Date	21-Nov-2006
Due date	21-Dec-2006
Total	20.00
Status	Not paid
Balance	20.00
Carried Balance	0.00
Payment attempts	0
User Id	2
Currency	United States Dollar
Payments	
Orders included	

Done

## New users

### Creating a customer

To create a customer, go to **Users**, then **Customers** and click on **New**, in the left menu option. This first screen will query for your customer's basic login information.



The screenshot shows a web browser window titled "Sapienter Billing - Mozilla Firefox". The browser's address bar and menu bar are visible. The application interface has a dark green header with the "jbilling" logo on the left and a navigation menu on the right containing "Orders", "Payments", "Reports", "System", "Users", "Items", "Promotions", "Refunds", "Invoices", "Process", and "Notification". Below this, a secondary menu highlights "Staff", "Partners", "Customers", and "Help". The main content area is titled "USERS - CREATE" and contains a "New User" form. The form prompts the user to "Enter the login information for a new user." and includes the following fields: "Login name" (text input), "Password" (text input), "Repeat Password" (text input), "Email" (text input with a question mark icon), "Currency" (dropdown menu set to "United States Dolla"), "Partner ID" (text input with a question mark icon), "Parent ID" (text input with a question mark icon), and "Allow sub-accounts" (checkbox). A "Submit" button is located at the bottom of the form. The footer of the page reads "Copyright Sapienter Billing Software (c) 2006. All rights reserved." and the browser status bar shows "Done".

Once this basic information has been submitted, you can start creating purchase orders for this customer. To continue entering information for this customer, such as contact information, credit card information, etc, click on the various options appearing on the left menu once you have submitted the initial data.

### Contact Types

This feature allows you to organize the multiple types of contacts you might have for each customer. For example, you might have the main contact information for a customer as well as its accounting contact information. This way, you could be submitting all the email notifications (invoices, payments, reminders, etc), to both your customer and his/her accountant.

Like 'custom contact fields', this is not yet doable through the user interface so you would need to enter some configuration data directly in the database. Make sure to select a name for each type. Each of these types can be included in the email notifications. Please note that one type has to be the primary contact, which will be used for the address on the printed invoice. The primary contact will always be included in the email notifications, whether the box has been checked or not.

Let's configure the system with a new contact type called "Technical". First, insert a row in the `contact_type` table:

```
jbilling_test=> select * from contact_type;
  id | entity_id | is_primary
-----+-----+-----
   1 |          |
   2 |         1 |         1
   3 |         2 |         1
(3 rows)

jbilling_test=> insert into contact_type (id, entity_id, is_primary)
values (4, 1, 0);
```

Note that the id has to be unique and consecutive. That number will identify our new contact type from now on.

Now we need to name the contact type, that is done in the `international_description` table:

```
insert into international_description (table_id, foreign_id,
pseudo_column, language_id, content) values (28, 4, 'description', 1,
'Technical');
```

Note the '4' that is referring to our contact type, and the name Technical, which could be any string you want.

That's it, now all you customers can have two contacts, the primary contact and the technical contact we just added.

### [Login Name / Password](#)

The login name and password will allow your customer to access her billing information. This information could be included on the invoices sent to them. This is done by using 'notification variables'. Consult the notifications documentation to learn more about this.

### [Email](#)

The electronic address where all email notifications for this customer will be sent. This email address will be assigned to the customer's primary contact.

This field is required, so you would need to enter a fake email address if you do not have it or are not interested in email notifications. The reason why this field is so important in jBilling is because the system is much more effective when customers can be easily (and cheaply) contacted to notify them of billing events: a new invoice, an invoice reminder, the result of a payment, etc. See the notifications documentation for more information.



## Currency

Select the preferred currency this customer will operate with.

## preference Partner ID

If this customer has been referred to you by a partner, enter the partner's number here.

## Parent ID

If this customer belongs to a 'Parent Customer', enter the 'Parent Customer's ID here. This is related to the 'Sub-accounts' feature. You can find more about sub-accounts in its own documentation.

## Allow Sub accounts

Check this box if this customer will have 'children' accounts. This is related to the 'Sub-accounts' feature. You can find more about sub-accounts in its own documentation.

## Submit Basic Login Information

Once you have entered this customer's information, click on 'Submit'. This will create the new customer, and display the User Edit screen. At this stage, it is possible for you to start creating purchase orders for this customer. Click on the various options in the left menu to keep entering information for this customer.

## Contact Information

Once you have submitted the basic login information, click on 'Edit this user's contact information' in the left menu. The Organization Name, Last Name and First Name are especially important because the list of your customers will display these fields. This list is used in many features: purchase order, payment, etc. The address will be displayed on the PDF format of the invoices

Sapienter Billing - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Orders Payments Reports System **Users** Items Promotions Refunds Invoices Process Notification

Staff Partners **Customers** Help

**jbilling**

USERS - CONTACT EDIT Help Logout

Reports  
List  
New

Edit.

Update the contact information, then click 'Submit'.

Type	Primary	<b>Reload</b>
Organization Name	The purple dragon	
First Name	John	
Last Name	Smith	
Phone Number	251 - 223-1201	
Email	no@thanks.com	
Address	1234 Main St.	
Address 2		
City	Gotham	
State/Province		
Zip/Postal Code		
Country	Canada	
Include this contact in notifications	<input checked="" type="checkbox"/>	

**Submit**

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Done

## Credit Card Information

To enter you customer's credit card information, click on 'Edit this user's credit card information' in the left menu, once you have submitted the basic login information.

## ACH Information

To enter you customer's ACH information, click on 'Edit this user's ACH information' in the left menu, once you have submitted the basic login information.

## Pricing

You have already allocated prices to items, company wide, when you were creating your items. Should you wish to offer a special price on an item for this customer in particular click on 'Edit this users pricing' in the left menu once you have submitted the basic login information.

## Include this contact in Notifications

You have the option of sending email notifications to your customers (reminders, announcements, warnings, etc.) Check this box if you want to include this contact's email on the list of recipients. Note that this is only relevant if you are working with more

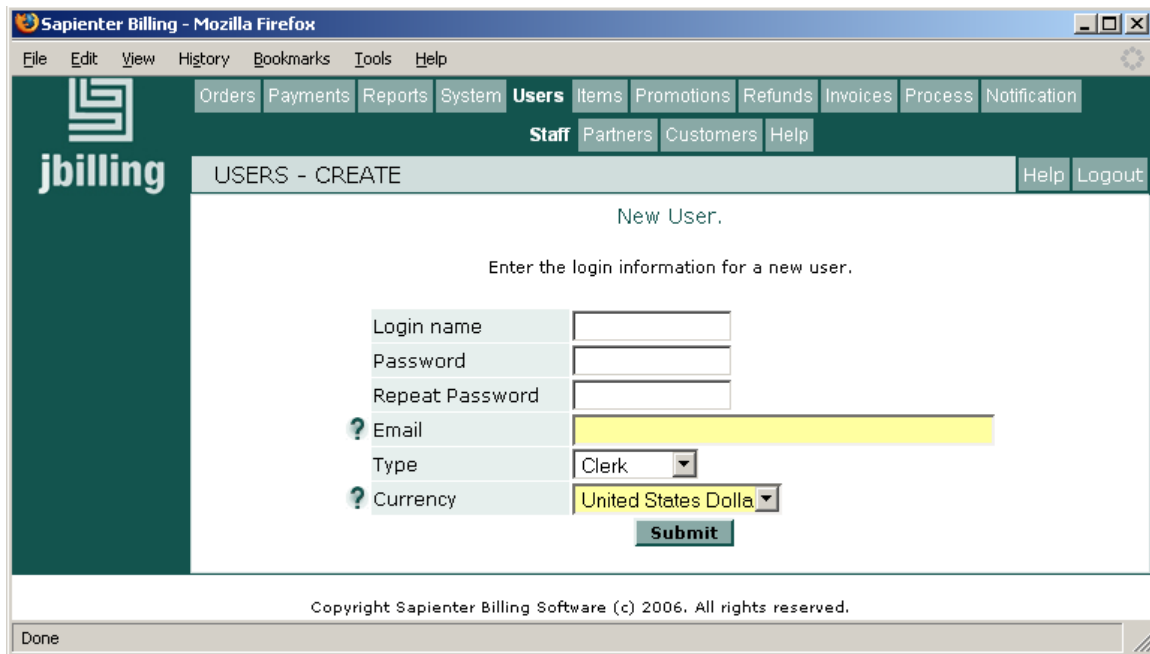
than one contact type (see 'Contact Types' above), and will only take affect on those types that are not the primary one. The contact type considered 'primary' is always preference included in the email notifications. If you want a customer to never get any notifications, simply remove the email address for his/her contacts.

## Create Staff Users

To create a new staff user, simply click on **Users**, then **All** and on 'Create New User' in the left menu. In this screen you can enter the basic information about a new user, just like when creating a new customer (see above).

### Type

Chose the 'type' this staff user will belong to, according to the privileges they will have. For most people within your organization, you might prefer to select the type 'Clerk'. This will allow the new user to see the billing information, without being able to modify important configuration parameters.



The screenshot shows a web browser window titled 'Sapienter Billing - Mozilla Firefox'. The browser's address bar and menu bar are visible. The main content area displays the 'jbilling' logo and a navigation menu with options like 'Orders', 'Payments', 'Reports', 'System', 'Users', 'Items', 'Promotions', 'Refunds', 'Invoices', 'Process', and 'Notification'. Below the navigation menu, there are sub-menus for 'Staff', 'Partners', 'Customers', and 'Help'. The current page is titled 'USERS - CREATE' and includes 'Help' and 'Logout' links. The main form area is titled 'New User.' and contains the instruction 'Enter the login information for a new user.' The form fields include: 'Login name' (text input), 'Password' (text input), 'Repeat Password' (text input), 'Email' (text input with a question mark icon), 'Type' (dropdown menu set to 'Clerk'), and 'Currency' (dropdown menu set to 'United States Dolla'). A 'Submit' button is located below the form fields. At the bottom of the page, there is a copyright notice: 'Copyright Sapienter Billing Software (c) 2006. All rights reserved.' The browser's status bar at the bottom shows 'Done'.

## Updating a customer record

At any time, you can modify a customer's information by going to **Users**, then **Customers** and selecting the customer to modify by clicking on the radio button. Once in the customer's information screen, you will find many links that allow you to edit the customer's various data: login, contact, credit card, etc. For example, click on the link 'Click here to edit this user' to edit the login information.

## Due Date

Click on Users and a list will show up. Click on the radio button beside the chosen customer and the Edit screen will appear. The last field on this screen is 'Due Date'. You have already selected a due date in the Billing Process Configuration section, which will be applied as default, to all your customers, company wide. Here, you can chose to specify a due date for this client in particular, which will overrun the company's default.

## Invoice delivery method

Here you can choose how this customer will receive his/her invoices:

- Email: The system sends the invoices as an email only.
- Paper: The system will not send an email to the customer. Instead, the invoice will be included in a file with all the other paper invoices. This file is in PDF format and will be emailed as an attachment to the billing administrator or to system administrator depending on your choice in **Notification Preferences**. Printing the invoices is simplified by the fact that all of them are in one single file.
- Email + Paper: Both methods are used: an email and a paper invoice as described above.

## Deleting users

To remove a user of any type, click on **Users**, and then click on **All**. Select the user you wish to delete by clicking on the radio button. Then, click on 'Delete this User' in the menu on the left.

## Dynamic Balance

The Dynamic Balance feature allows customers to pay in advance for their usages through either a Pre-Paid Balance, or a Credit Limit.

- Customers with a Pre-Paid Balance pay up front before they receive any product or service. As usage occurs, the cost is deducted from the user's pre-paid balance until none remains.
- Users with a Credit Limit are allowed to accrue 'debt' until a set credit limit is reached. All usage by the customer is paid on credit, and the user is responsible for paying off the credit that they have used.

Note a customer will only be prevented from exceeding their configured limit (going over the credit limit, or spending more than their pre-paid balance allows) when using the '*validatePurchase*' API call. Additional orders may still be created manually through the UI, or through the standard '*createOrder*' API.

Management of dynamic balances is provided by a plug-in, and it must be configured for either 'Pre-Paid Balance' or 'Credit Limit' balance types to be used.

To configure the plug-in, click on **System**, then on **Plug-ins**. Add a new plug-in with no parameters (processing order is not important):

```
com.sapienter.jbilling.server.user.balance.DynamicBalanceManagerTask
```

## Customer Configuration

A customer's dynamic balance configuration can be set or changed by editing an existing customer. To do this, go to **Users**, then **Customers**, and select the user you wish to edit using the radio buttons. From the 'Customer Details' screen, click the '*Click here to edit this user*' link.

### Balance Type

Balance type allows you to change how a user's dynamic balance is to be handled, or if the dynamic balance feature is to be used at all.

- **None:** The user's account will not hold a balance, instead all charges accrued will be included in the next invoice.
- **Credit Limit:** The user's account may accrue charges up to the set credit limit value. Charges will automatically be paid from the user's credit pool until the set limit is reached. User's are responsible for paying their credit debt as well as any overages.
- **Pre-Paid Balance:** The user must pay into their account to offset future charges. Charges will be automatically paid from the user's pre-paid balance until the balance reaches zero. Users are responsible for maintaining their pre-paid balance.

### Credit Limit

Only available when Balance Type is set to 'Credit Limit'. This field contains the user's current credit limit as a dollar amount.

### Automatic Recharge

Only available when Balance Type is set to 'Pre-Paid Balance', and an Automatic Recharge plug-in has been configured. This field contains a dollar amount that will be automatically charged to the user's credit card when their balance drops below the company wide threshold. If this field is set to zero or left blank, no automatic charges will be made for the user.

## Configuring Automatic Recharge

Automatic Recharge is a feature only available to 'Pre-Paid Balance' customers. This feature will create a payment using the customers configured credit card whenever their balance drops below a configured threshold. The payment amount is configured on a per-user basis (see the above **Customer Configuration**), allowing each user to define how much they wish to be charged. The recharge threshold however, is company wide - a setting of \$5.00 will cause any users with a configured automatic recharge amount to be charged when their balance drops below \$5.00. The idea is to allow users to maintain a Pre-Paid Balance with as little effort as possible.

By default, this feature is not enabled; payments must be created manually to top up the Pre-Paid Balance. This feature can be enabled by performing two steps, configuring the plug-in and setting the Automatic Recharge Threshold.

To configure the plug-in, click on **System**, then on **Plug-ins**. Add a new plug-in with no parameters (processing order is not important):

```
com.sapienter.jbilling.server.user.tasks.AutoRechargeTask
```

Preference 49 configures a companies Automatic Recharge Threshold. Since by default this preference is not configured, you'll need to set it. As a quick example, you can set an automatic recharge threshold of \$5.00 by inserting a new row into the preference table:

```
insert into preference (id, type_id, table_id, foreign_id,
float_value) values (22, 49, 5, 1, 5.00);
```

Note that the **id** has to be unique and consecutive. This can easily be established by incrementing the last known id (`select max(id)+1 from preference`). For more information on how to setup a preference, take a look at Appendix A.

## Custom contact fields

It is possible to have the fields of the contact information customized to your needs. These fields can show up on the printed invoice. For example, you might need a tax number to appear on the printed invoices, for legal or accounting purposes. You might wish to have home phone and work phone numbers for your customers.

Custom contact fields (CCF) are also important when using some of jBilling extensions. Many plug-ins require a CCF as part of their configuration. For example, there is a payment processor plug-in that allows you to assign a payment gateway to a customer. The payment gateway that all the customer's payments will be processed through is entered in a CCF. The plug-in then reads that the CCF content before routing the payment request to the appropriate gateway.

## Database configuration

To enable custom contact fields you need to enter some specific configuration data directly to the database that jBilling runs on. Unfortunately, this is not doable directly from the web-based user interface.

You need to insert one row into the table CONTACT\_FIELD\_TYPE per CCF. These are the table's columns:

id: This is a unique numeric value that identifies this CCF. Simply enter the next available number. If this is your first CCF, this would be 1.

entity\_id: Your company's number in jBilling, typically 1 in a system running only one company.

prompt\_key: This is the name of the field, which will be used in the contact screen. Because of jBilling's need to be able to run in multiple languages, you will need to add the name of your CCF to a text file. See below for details.

data\_type: This will be the type of content that this field will be used for. Use 'string' if it is text, or 'integer' for number.

customer\_readonly: Here you will have a 1, if you don't want customers to be able to change the value of the CCF. Otherwise, make this column a 0. Customers can see or change the value of a CCF when (and if) they login to jBilling and go to their contact information screen.

The following is an example of a SQL command that inserts a row into the database to add one new CCF:

```
insert into contact_field_type (id, entity_id, prompt_key,  
    data_type, customer_readonly)  
values (432, 1, 'ccf.web_site', 'string', 1);
```

## Text configuration

Once you've added the CCF to the database, you need to add the CCF's name to a file with the text that is displayed in jBilling's GUI. This file is called `ApplicationResources.properties`. This file has a key, then an '=' and the value for that key. What you entered in `contact_field_type.prompt_key` is the key for your CCF. So now you have to add a line to `ApplicationResources.properties` with the key you chose before followed by '=' and the text that will be displayed to the user.

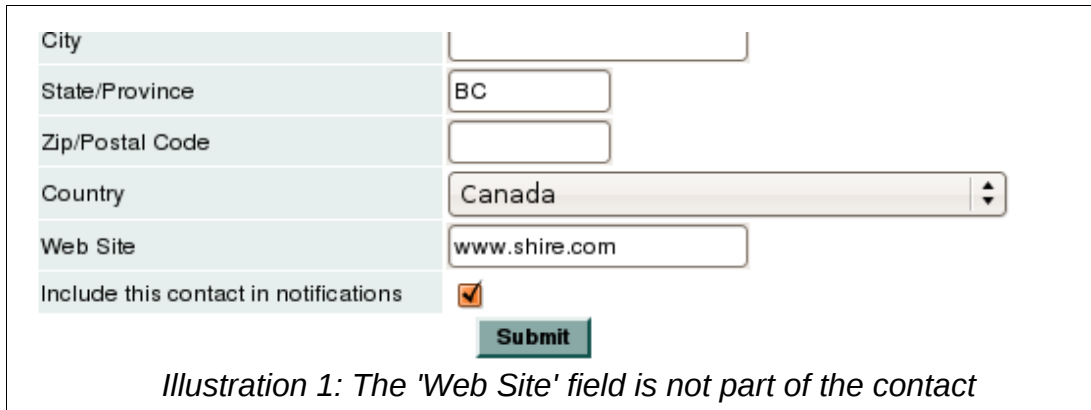
This file is not standing alone in some directory. It is inside the jbilling' jar' file (`billing.war`). There are two way to edit `ApplicationResources.properties`. One is to do so and the repackage `billing.war`. For this you need to have the jBilling source code and make a build. If you are a developer, you will find this very easy, step-by-step instructions are available in jBilling's web site.

The second way to do the edition, is to open `billing.war` with an application that can handle zip files (7zip, for example). Open `billing.war` and go to the directory `/WEB-INF/classes`. There you'll find `ApplicationResources.properties`. You will have to edit the file, and the replace the one that is in `billing.war`.

Following the previous example, we will add the following line to `ApplicationResources.properties`:

```
ccf.web_site=Web Site
```

When we go to the contact screen, we can see now the additional field:



The screenshot shows a contact form with the following fields: City (empty), State/Province (BC), Zip/Postal Code (empty), Country (Canada), Web Site (www.shire.com), and a checkbox for 'Include this contact in notifications' which is checked. A 'Submit' button is located below the checkbox. The caption below the form states: *Illustration 1: The 'Web Site' field is not part of the contact*

## FAQ

- How do I generate a list of all the invoices belonging to one customer in particular?

Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Click on 'Customer Invoice List' on the left menu.

- How do I generate a list of all the purchase orders belonging to one customer in particular?

Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Click on 'Customer Order List' in the left menu.

- How can I view the latest invoice generated for one customer in particular?

Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Scroll down and see the 'Invoice' window.

- How can I change the contact information (address, phone number, etc.) of a customer?

Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Scroll down and see the 'Contact' window; click on 'Click here to edit this contact'.

1. How can I modify the email address we have for a customer?



Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Scroll down and see the 'Contact' window; click on 'Click here to edit this contact'.

1. How can I change a customer's the Credit Card information?

Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Scroll down and see the 'Credit Card' window; click on 'Click here to edit this Credit Card information'.

- How can my staff write comments regarding a customer's file and communicate together without the customer having access to this information?

This is possible only if, in **Notifications Parameters**, the box 'Customer's notes on invoice' was **not** checked.) Click on **User**, then **Customers** at the top of the screen. Click on the radio button beside the chosen Customer. Scroll down and see the 'Notes' window; click on 'Click here to edit this note'.

# ***Chapter 3***

## ***Purchase Orders***

*Keeping subscriptions and other purchases well organized.*

## Overview

In a nutshell, **any charge made to your customers must be backed by a purchase order**. A subscription, a single purchase, a tax or interests on a late payment: they are all represented by a purchase order.

Purchase orders provide the main source of information for the next generation of invoices. A purchase order will generate at least one invoice, and in many cases several invoices across many billing cycles. On the other hand, many purchase orders can be involved in the generation of a single invoice. Let's see examples of both cases.

### One Purchase Order Generating Many Invoices

In this case, a purchase order could be valid for several months and generate one invoice per billing cycle.

#### Example

This would be the case when one of *Trend Inc.*'s customers orders the top banner for four months, paying monthly. This subscription is represented by just one purchase order. The customer will receive four invoices, one each month.

### Many Purchase Orders Generating One Invoice

This happens when many purchase orders are active for the same customer, for a given billing cycle.

#### Example

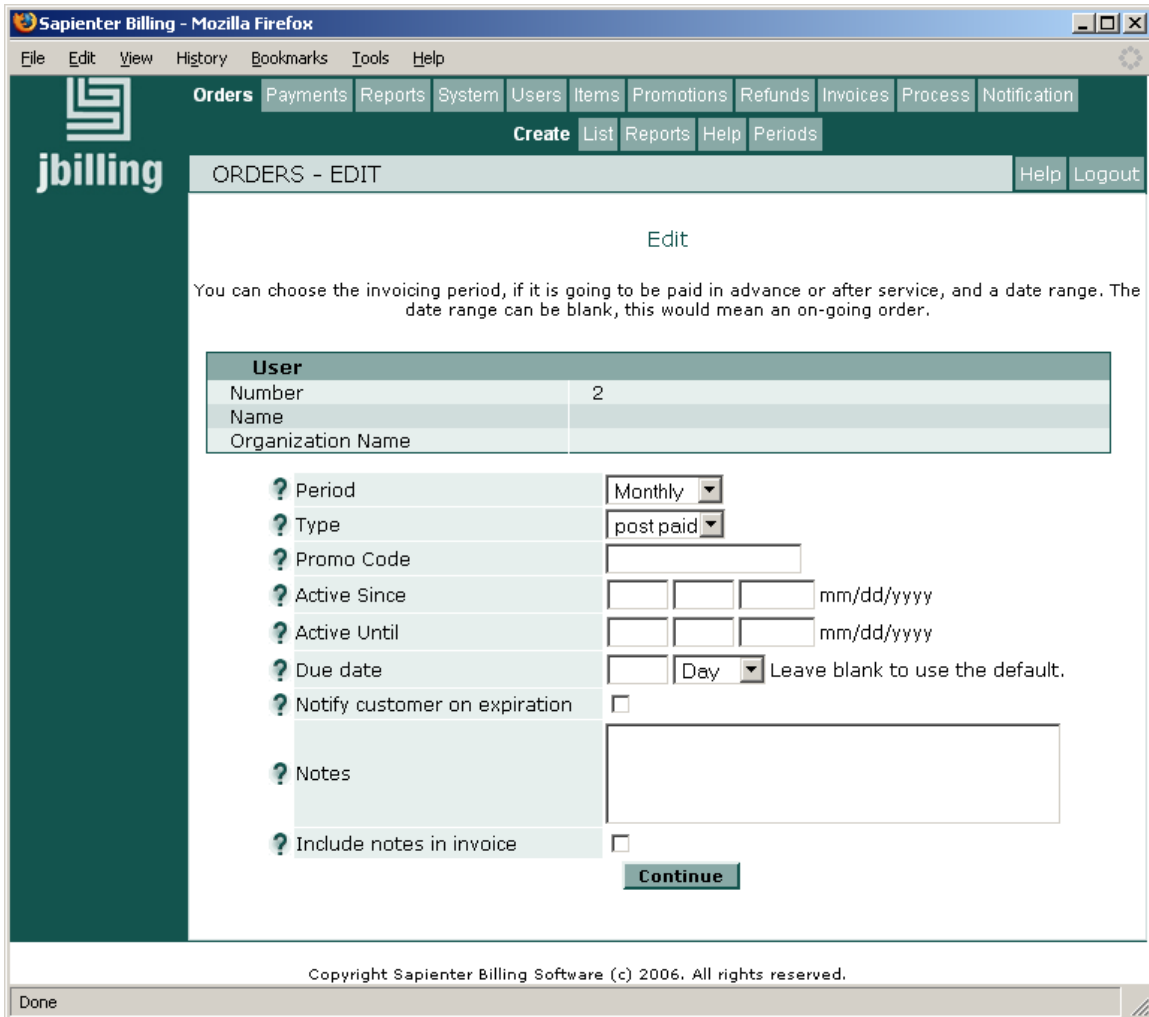
Continuing with the previous example, let's say this customer, after one month of running the top banner, decides to buy from *Trend Inc.* a lateral banner in other pages as well. This would involve creating a new purchase order. As long as both orders are active, they will generate one invoice with both charges, the top and lateral banners. Customers always get a single invoice per billing cycle. This invoice compiles all active purchase orders.

## Creating orders

For space purposes, in the application, purchase orders are simply referred to as *Orders*. To start creating one, click on **Orders**, then on **Create**. The first step is to select which customer this purchase order will belong to. A list of users is featured; select a customer from it by clicking on the radio button.

### Main parameters

The main parameters of this purchase order will then be displayed:



Let's review each of the purchase orders fields:

### Period

The order's period determines how often the order will generate an invoice. A purchase order can reflect a one-time purchase or a periodic service invoiced for each period. The list of periods displayed in this drop-down menu corresponds to the order periods that have been configured for your company. If you want to add or modify these periods, you can do so by clicking on **Orders** and the **Periods**. To learn more about this see the section Order Periods of this document.

A one-time purchase order is going to be included in only one invoice. This kind of purchase orders are similar to a retail sale, where there is no commitment from the customer to repeat the transaction.

### Type

The type of a purchase order indicate when the purchased services will be paid. This can be in advance (pre-paid), or after service (post-paid).

### Example

Our example company, *Trend Inc.*, always bills its customers in advance, so all its purchase orders are pre-paid. Customers have to pay before they can see their ads on-line. On the other hand, a landscape maintenance company would send an invoice to a customer once the job is done, exemplifying a post-paid purchase order.

### Promo Code

Enter here the code of a promotion if one applies to this order. If so, the item related to the promotion will be automatically included in this order. See the 'Promotions' documentation for more information.

### Active Since / Until

Here you can specify if this order applies to a limited period of time. If the field 'Since' is left blank the purchase order will be considered for invoice generation since the date is created. If the field 'Until' is left blank, it implies this purchase order will be on-going, with no specific end date.

#### *Periodic or Recurring*

A periodic or recurring purchase order assigns a period of time which will determine how often the purchase order will recur. The periods available to a purchase order can be seen and modified by clicking on **Orders** and then **Periods**.

### Example

For example *Trend Inc.* only wants to allow recurring purchase orders every: 15 days, 1 month or 3 months. How to configure jBilling to use these there periods is explained in the 'Order Periods' section. Let's examine some combinations of values for periodic purchase orders:

<b>Period</b>	<b>Active Since</b>	<b>Active Until</b>	<b>Result</b>
Monthly	Blank	Blank	An invoice will be generated every month, starting at the date the order is created. This order is on-going and will keep generating invoices until the customer decides to cancel her subscription.
15 days	Blank	July 1 <sup>st</sup> , 2003	An invoice will be generated every 15 days, starting the day the order is created. This will end on July 1 <sup>st</sup> .
3 Months	May 1 <sup>st</sup> , 2003	Blank	The customer will be billed for 3 months starting on May 1 <sup>st</sup> , even if the order was created before this date. This order is on-going and

			will keep generating invoices until the customer decides to cancel her subscription.
Monthly	May 1 <sup>st</sup> , 2003	June 30 <sup>th</sup> , 2003	This order will generate two invoices, one for May and another one for June.

### Due date

The due date that will be applied to all your customers, company wide, is in the Billing Process Configuration section. In the Customer section, you could choose to specify a due date that will apply to a client in particular. Here, at the purchase order level, you can override the previous configurations and apply a due date to one particular purchase order, and therefore to one specific invoice.

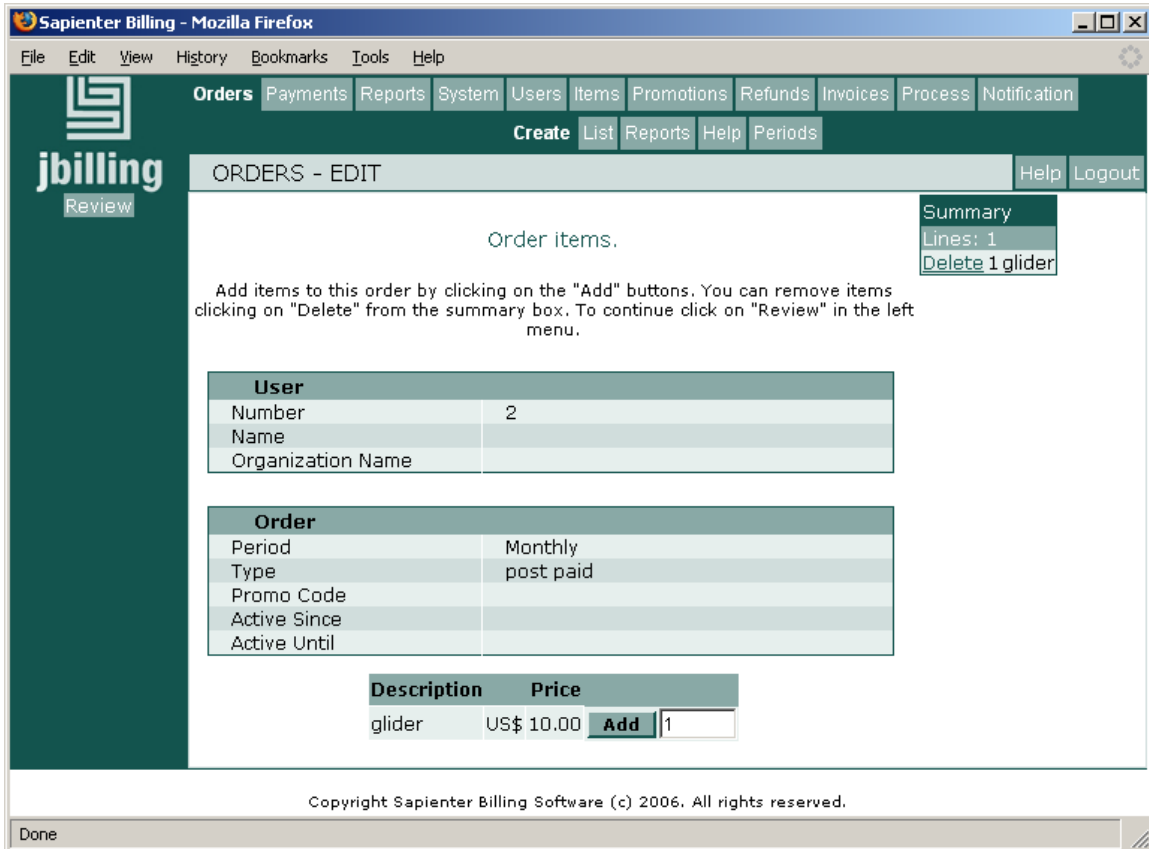
### Notify customer upon expiration

This only applies when an 'Active Until' date has been specified. Should you check this box, jBilling will automatically send a notification to your customer, reminding her that the purchase order has expired. Up to 3 messages can be sent; this, when they are sent and the text sent, are all determined in **Notifications Preferences**.

### Adding items

The main parameters of the new purchase order are set. As you can see, these parameters are about the order's behavior over time. Now it is time to add items to the order with the services that have been purchased.

From the order main parameters screen click on the 'Continue' button. This will lead you to the page where items can be added to the purchase order. A list of items is displayed with an 'Add' button beside each of them. Enter the quantity you wish to add and then click on 'Add'. You will see the item being included in the top-right box that represents the summary of the new purchase order. You may use this review box to remove an item: click on 'Delete' on the left of the item that you want to remove.



Once you are satisfied with the items of this new order, click on 'Review' in the left screen menu. This new screen will show all the information entered so far. You can modify some of this information here too. To go back to the previous screen, click on **Add Items**, on the left menu. You can choose to cancel this purchase order as well, by clicking on **Cancel**, also in the left menu. Once you are satisfied with the new purchase order, click on the 'Submit Order' button.

In this review screen, you can easily change the quantity of any item. You might be able to modify the prices as well, but only if the item has the attribute 'Allow manual pricing' checked. Otherwise the price is read-only.

Sapienter Billing - Mozilla Firefox

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Cancel Add items

**Review**

Review the items before submitting this order. If you modify quantities or prices, click on "Recalculate" to see the results of your modifications before submitting. To add more items, use the option in the left menu. If you want to discard all changes, click on "Cancel".

User	
Number	2
Name	
Organization Name	

Order	
Period	Monthly
Type	post paid
Promo Code	
Active Since	
Active Until	

Description	Quantity	Price	Total
glider	1	10.00	10.00
			<b>Total US\$ 10.00</b>

Recalculate Submit Order

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Done



## Pro-rating

Pro-rating is a new feature introduced with jBilling 1.1.1, to allow for the invoicing of partial periods. When you have a recurring order, it will generate an invoice per period, for example, an invoice every month. Under normal circumstances, your customer will receive an invoice for the whole period, therefore for the full amount of the services she has subscribed.

However, it is very possible that for the first or last period of the subscription, your customer has to be invoiced for only a fraction of the full period. In these cases, the system has to calculate the amount to be invoiced considering the total time invoiced compared to the time of a full period. This 'fractional invoicing' is what we call pro-rating.

Let's see a typical scenario where pro-rating is necessary. A customer is subscribed to a number of services, receiving an invoice every 10<sup>th</sup> of the month. Every month, on the 10<sup>th</sup>, this customer receives one invoice with all the charges for the services she is receiving from your company.

One month, on the 20<sup>th</sup>, the customer calls your customer service to subscribe to a another service that is 60\$ a month. She will not want from now on, to get an invoice on the 10<sup>th</sup>, plus another one on the 20<sup>th</sup> with only the new service. It be best to keep one simple monthly invoice. However, since she is subscribing on the 20<sup>th</sup>, you can't charge a full month.

With pro-rating, you can add a new order with the new service and specify that the order should fit the '10<sup>th</sup> of the month' cycle. The next invoice will add about two thirds of the full period (40\$ in the example) for this initial period of the new service. Subsequent invoices will show the full period of 60\$.

A similar situation happens when the customer cancels a service and you need to invoice for that last part of a period proportionally to the price of a full period. In our previous example, if the customer wants to cancel, being the last day the 25<sup>th</sup>, then the next invoice should show the charge for the period between the 10<sup>th</sup> (being the beginning of the billing cycle), and the 25<sup>th</sup>.

### Enabling pro-rating.

By default, pro-rating is not enabled in jBilling. This means that jBilling expects all orders to invoice full periods only. If you try to enter an order that does not fit full periods, you will get an error. For example, an order with an 'active since' of February 1<sup>st</sup> and 'active until' of March 10<sup>th</sup> will produce an error.

You need to tell jBilling that you want to work with fractions of a period by using pro-rating. There are two steps to do this: setup a preference and configure plug-ins.

Preference 42 indicates if a company is going to be using pro-rating or not. Since the default is not, you need to override it. Take a look to Appendix A for details on how to add a preference. The following is a quick example:

```
INSERT INTO PREFERENCE (ID, TYPE_ID, TABLE_ID, FOREIGN_ID,
INT_VALUE, STR_VALUE, FLOAT_VALUE )
VALUES ( 100, 42, 5, 1, 1, null, null )
```

Now we need to change the default plug-ins that deal with invoice generation so the system can make the additional calculations that pro-rating requires.

Click on 'System', then on 'Plug-ins'. The screen with all the plug-in configuration shows up. You need to replace

```
com.sapienter.jbilling.server.pluggableTask.BasicCompositionTask
```

with:

```
com.sapienter.jbilling.server.process.task.DailyProRateCompositionTask
```

and also:

```
com.sapienter.jbilling.server.pluggableTask.BasicOrderPeriodTask
```

with:

```
com.sapienter.jbilling.server.process.task.ProRateOrderPeriodTask
```

These two new plug-ins don't take any parameters (just like the original ones), so this is just a simple replacement. Click on 'Submit' to get the new plug-in configuration saved.

#### *Calculating fractions of a period*

*The plug-in that you just configured will take the length of the cycle and count the number of days in it. It will divide the total of the order by the number of days in the cycle. This is the daily cost. It will multiply the daily cost by the total number of days in the period. This means that 15 days on June will be half the monthly price, but not so for July, since it has 31 days.*

*This is the 'daily' pro-rating plug-in, you can implement other type of pro-rate calculations by creating your own plug-in.*

## The order 'cycle' attribute

Once pro-rating is enabled, you will see a new attribute in your orders:

? Period	Monthly ▾		
? Type	pre paid ▾		
? Promo Code			
? Cycle Starts	01	01	2008 mm/dd/yyyy
? Active Since	01	10	2008 mm/dd/yyyy
? Active Until			mm/dd/yyyy
? Due date		Day ▾	Leave blank to use the default.
? Notify customer on expiration	<input type="checkbox"/>		
? Notes			
? Include notes in invoice	<input type="checkbox"/>		
? Main subscription	<input type="checkbox"/>		

**Continue**

We call this new attribute the order's 'cycle' date. It tells the system when is it that this order should generate an invoice. Any invoice coming from this order has to be aligned to this date:

- If the 'active since' is not the same as (or aligned to) the cycle date, then you will have a first invoice with a pro-rated value. This is, an amount that is smaller than the total of the order.
- The 'active since' is not a required field. If left blank, it defaults to the order's creation date.
- If the 'active until' is not aligned to the cycle date, then the last invoice from this order will be pro-rated.
- The 'active until' is not a required field. If left blank the order is on-going.

As you can see, this new attribute to define the cycle of the order adds to the 'active since' and 'active until' to give orders pro-rating behavior. Still, the 'active since' and 'active until' do exactly the same as they used to, their meaning has not changed.

Also, the cycle date is not a required field. If left blank, the order will simply be a 'normal' order without any pro-rating. If specified, you will only be able to change the cycle date as long as the order has not generated any invoices.

What does it mean 'aligned'? The order will generate an invoice considering the cycle date and the order's period. In the above screen-shot, the cycle starts on the first of January and the order is Monthly. What this really means is that the customer expects an invoice on the first day of every month.

Now, because the order starts on the 10<sup>th</sup> of January (the customer is getting her service activated this date), then the first invoice will still be on January the first, but rather than for the full amount, it will be only for the 10 to 31 period, or about two thirds of the monthly total.

As you can see, the cycle date is an attribute at the order level. Any order can have its own value for this date. This allows for very complex scenarios that you probably want to avoid, in practice is probably be better to have all the recurring orders for a give customer with the same cycle date.

## Examples

### Sign-up in the middle of the month

*Trend* is a company that prefers to invoice all its customer on the 1<sup>st</sup> of the month. Those that sign-up any other day but the 1<sup>st</sup> will have the first period pro-rated. That is, from the day the sign-up to the end of the month.

Susan sign-up for her front page add on January 10<sup>th</sup>. A new purchase order with a cycle date of January 1<sup>st</sup> and and active since January 10<sup>th</sup> is created. The next invoice will only include the 10 to 31 period. Subsequent invoices will have full months included. All this using one single purchase order.

### Cancellation in the middle of the month

Susan has a pre-paid monthly plan, so she has already paid 100\$ for the month of June. She calls on June 16<sup>th</sup> to cancel the service immediately. She should receive a credit for the remaining of the month (this means that the credit plug-in is in place, see the 'Credits' section for more information).

To do this, the order needs to be edited, adding June 16<sup>th</sup> as the 'active until'. The system will automatically create a new order with a negative price with June 16<sup>th</sup> as 'active since', and July 1<sup>st</sup> as 'active until'. Having pro-rating activated, we will see the billing process creating an invoice with a total of -50 dollars for the period of time that had been originally invoiced, but later had to be refunded to Susan because of the early cancellation.

By only changing the 'active until' of the original order, we will have a new order to represent the cancellation credit. The original order will be now in 'finished' state.

### Change of service.

Even more common than signing up for a new service or canceling an existing service, is a customer changing a current service. Susan calls *Trend* on the 25<sup>th</sup> to upgrade her existing front page banner ad from a side bar to the top bar. This new ad, of course, has a different price. Susan gets an invoice every 15<sup>th</sup> of the month with all the advertisement charges.

First, the existing order for the side bar has to end. We do this by simply editing the order and adding an 'active until' with today's date (the 25<sup>th</sup> in the example). Then, we create a new monthly order with one item, the top bar ad. It will have a cycle date of the 15<sup>th</sup>. We can leave the active since blank, so it takes today's date as a default.

The next invoice will show two charges: one for the side bar ad for the period of 15 to 24, and another one for the item top bar ad for the period of 25 to 14 (next month). We are using a pro-rated end of period plus a pro-rated start period to replace a subscription.

## Credit for early cancellations

When an subscriber calls to cancel one or more services, it could be that the cancellation is in effect for a period that has been already invoiced. If that is the case, we need to produce some way to credit the account. Another way to see it is that we invoiced too soon too much and a correction is needed.

This does not apply for orders that are post-paid. In that case, a cancellation will not affect a period that has been already invoiced simply because we invoice *after* the service has been provided. For example, if a monthly order is post-paid and a customer cancels that order on the 15<sup>th</sup> of the month, changing the 'active until' will be enough: the next invoice will simply cover the fraction of a period left in the order, and the order will change to 'finished' status.

If the order is pre-paid, then we might need a credit depending when the customer calls and when the service should end. If the service should finish some time within the next period, then you don't need a credit. If the service finishes earlier, within an already invoiced period, then a credit is necessary.

## Activating automatic credits

Credits are usually done on fractions of a period. This means that, if you are canceling a monthly order and a credit is necessary, it is going to be for less than a full month. Because of this (end period being only partial), you will need to activate first the prorating features, this is described in its own section.

Activating automatic credits is done with the addition of one plug-in to your system configuration. Click on 'System', then 'Plug-ins' to access the plug-in configuration page. By default, you will not be replacing an existing plug-in, but adding a new one: Click on the 'Add a new Plug-In' link.

The plug-in in question is the following:

```
com.sapienter.jbilling.server.order.task.RefundOnCancelTask
```

The plug-in can work without any parameters. If you want the system to add an arbitrary item to the orders it will create as credits, then you can add a parameter per item. The parameter name has to start with 'item' (lower case). The parameter value will be the item id to add to the orders.

For example, to add item 10 and item 13 to all credit orders, you will need two parameters for this plug-in:

Name	Value
item-A	10
item-B	13

## Using automatic credits

Once the plug-in is configured, the system will automatically create credit orders when appropriate. This is triggered by adding an 'active until'. The new value for 'active until' has to be within an already invoiced date:

Next Day to invoice	30-Jul-2008
Created by user	1
Currency	United States Dollar
Notify customer on expiration	No
Notification step	
Date of last notification	
Due date	Default
Notes	
Include notes in invoice	No
Main subscription	No
Cycle Starts	

Item ID	Number	Description	Quantity	Price	Total
1	DP-1	Front page banner	1	10.00	10.00
					<b>US\$ 10.00</b>

### Invoices generated

Period Start	Period End	Periods Included	ID	Date	Total	Origin
30-Jun-2008	30-Jul-2008	1	<a href="#">4095</a>	30-Jun-2008 12:00:00 AM	10.00	Manual

In the above screen-shot, which value for 'active until' would trigger a credit order? It will have to be *before* July 30, 2008. See that this is the 'next day to invoice' and also a date that is within the period that has been invoice already. So a date like July 20, 2008 will do.

When this order is edited with a new active until, two things happen:

- This order's status is changed to 'finished', and a note is added.
- A new order is created to represent the credit.

Let's take a look to how one of these 'credit' orders look like. Following the previous example, the credit order after entering an 'active since' of July 20, 2008 will look like this:

Number	10771
Status	Active
Period	Monthly
Type	pre paid
Promo Code	
Active Since	20-Jul-2008
Active Until	30-Jul-2008
User Number	<a href="#">1074</a>
Login name	MU11acc304f5b
Date created	30-Jun-2008 02:24:57 PM
Next Day to invoice	
Created by user	1
Currency	United States Dollar
Notify customer on expiration	No
Notification step	
Date of last notification	
Due date	Default
Notes	This order was automatically created as a credit for the cancellation of order 10770
Include notes in invoice	No
Main subscription	No
Cycle Starts	

Item ID	Number	Description	Quantity	Price	Total
1		DP-1 Front page banner	1	-10.00	-10.00
					<b>US\$ -10.00</b>

The main parameters to the new order are:

- The order has all the items from the original (canceled) order, but with the prices made negative.
- The credit order covers only the period of time that needs to be refunded. In this case, it is just the last 10 days of the original subscription.
- The credit order comes with a note, to clarify why it was created.

Partial order cancellations are also possible. If the quantity of an item is reduced in an order (or an item is deleted from it), and today's date is within an already invoiced billing period, a refund is generated.

## Applying the credit

Once we have the purchase order created for us to represent the credit note, we need to decide what to do with it. There are a few possibilities, which one is the best depends on the status of the latest invoice and if the customer remains subscribed to some other services or not.

The last invoice remains unpaid: In this case, we can take the credit order and apply it to the latest invoice. You can do this by selecting the credit order and clicking on the



link 'Apply to invoice'. The invoice will then show the credit items with a new total. The customer will need to receive this new 'amended' invoice.

The customer still has some active orders: In this case it might be best not to do anything. Just leave the credit order to be picked up by the billing process and be added to the next invoice. All the active orders will contribute items to the next invoice, this includes the current active subscriptions plus our new credit order. This alternative makes sense as long as the total of the next invoice remains positive.

The customer is not longer a customer: If the customer has canceled all her services, there isn't any remaining recurring active orders. What to do with the credit order will depend on the way your company deals with refunds: you can immediately generate an invoice (manually or with the help of the billing process), and then send a cheque along with the negative invoice to the customer. You could also have automatic payment processing setup with a payment gateway that will process negative amounts as refunds. See preferences 44-46 in 'Appendix A' for information on activating automatic negative payments (credits).

## Fees for early cancellation

Like credits for early cancellations (above), fees may also be generated when a order is canceled. Fees are generated not only for cancellations within a period that has already been invoiced, but also for future periods that were canceled.

The 'active until' field of an order is used for cancellation. When an 'active until' field is moved forward to an earlier date, a fee is generated for every period that will no longer be invoiced. If 'active until' was instead empty, then a fee is only generated if the cancellation includes a period that has been already invoiced.

Partial order cancellations also possible. When the quantity of an order line in an existing order is reduced, fees can be generated.

The business logic for applying fees is handled by BRMS (business rules management system) rules. See the chapter 'Rules and BRMS' in the 'jBilling Extension Guide' document.

### Activating automatic fees

Activating automatic fees is done with the addition of one plug-in to your system configuration. Click on **System**, then **Plug-ins** to access the plug-in configuration page. By default, you will not be replacing an existing plug-in, but adding a new one: Click on the 'Add a new Plug-In' link.

The plug-in in question is the following:

```
com.sapienter.jbilling.server.order.task.CancellationFeeRulesTask
```

As with any rule-based plug-in, the parameters it takes point to the location where the rules package is deployed. See the section 'Deployment' in the chapter 'Rules and BRMS' from the 'jBilling Extension Guide'.

### Rules for fees

See the section 'Item relationship management' in the chapter 'Rules and BRMS' from the 'jBilling Extension Guide' for more information about the `RulesItemManager` plug-in from which `CancellationFeeRulesTask` is extended.

### Data Model

As `CancellationFeeRulesTask` is a subclass of `RulesItemManager`, the rules you create have available to them all the information related to the canceled order, including order lines, user and contact details, etc. For partial cancellations, the only order line added to the Drools 'working memory' is the modified line, which has its quantity set to the amount of the item that was canceled.

### Helper Service

The rules will have access to the helper service `CancellationFeeRulesTask.FeeOrderManager`, which is a subclass of `RulesItemManager.OrderManager`. The name of the global that is an instance of this class is also 'order'.

FeeOrderManager adds the following useful methods:

- `void applyFee(Integer itemId, Double quantity, Integer daysInPeriod)`  
This applies the item as a fee with the quantity specified. `daysInPeriod` is used for calculating how many periods have been canceled. The number of periods calculated to be canceled is multiplied with the item quantity.
- `void applyFee(Integer itemId, Double quantity)`  
Applies the item as a fee with the quantity specified. A default period of 30 days is used for the number of periods canceled calculation.
- `void applyFee(Integer itemId)`  
Applies the item as a fee with the default quantity of 1.0 and period of 30 days.
- `Date getNewActiveUntil()`  
The order's original 'active until'.
- `Date getOldActiveUntil()`  
The order's new 'active until'.

### Example

The following rule applies fee 24 with the same quantity as the number of item 1 that were canceled. Note that the item quantity is also multiplied by the periods canceled.

```
rule 'Cancel Item 1 Fee'  
  when  
    OrderLineDT0( itemId == 1, $quantity : quantity )  
  then  
    order.applyFee(24, $quantity);  
end
```

### Using automatic fees

When a order is canceled, a 'one time' order is generated with any fees applied by the rules.

Order cancellation can be total or partial.

- A total order cancellation is achieved by changing the order's 'active until' forward to an earlier date (which will generate fees multiplied by the number of periods canceled), or if 'active until' was empty, by setting an 'active until' within an already invoiced period.
- A partial order cancellation is achieved by reducing the quantity of an item in an order (includes deleting the item). If 'active until' has a date set, the fee will be multiplied by the number of periods canceled, otherwise if it the order is currently within a billing period, fees for one period are generated. One order fee is generated for each reduced order line.

## Example

1. First we'll create an order containing item 1 with a quantity of 3 . The order will be a post-paid order set with an 'active until' set three months into the future. If todays date is 2008-12-6, 'active until' is set to 2008-3-6. The order is immediately manually invoiced:

Number	10780
Status	Active
Period	Monthly
Type	post paid
Promo Code	
Active Since	
Active Until	08-Mar-2009
User Number	<a href="#">1061</a>
Login name	testUserName-1189624500411
Date created	06-Dec-2008 12:17:37 PM
Next Day to invoice	06-Jan-2009
Created by user	1
Currency	United States Dollar
Notify customer on expiration	No
Notification step	
Date of last notification	
Due date	Default
Notes	
Include notes in invoice	No
Main subscription	No
Cycle Starts	

Item ID	Number	Description	Quantity	Price	Total
1		DP-1 Lemonade - 1 per day monthly pass	3	10.00	30.00
					<b>US\$ 30.00</b>

### Invoices generated

Period Start	Period End	Periods included	ID	Date	Total	Origin
06-Dec-2008	06-Jan-2009		<a href="#">1</a> <a href="#">115</a>	06-Dec-2008 12:00:00 AM	30.00	Manual

2. Now we will go back and edit the order. A quantity of '-1' is added for item 1, reducing the quantity to 2. The order is then updated:

Item ID	Number	Description	Quantity	Price	Total
1		DP-1 Lemonade - 1 per day monthly pass	2	10.00	20.00
					<b>US\$ 20.00</b>

A new fee order has automatically been generated. If we having a look at this order, we can see that it has fee 24 with a quantity of 3. This is because the example rule above adds a fee for each item 1 that was canceled. In this case we canceled 1 quantity of item 1, but over three billing periods (determined by the 'active until'):

Number	10781
Status	Active
Period	One time
Type	pre paid
Promo Code	
Active Since	
Active Until	
User Number	<a href="#">1061</a>
Login name	testUserName-1189624500411
Date created	06-Dec-2008 12:32:53 PM
Next Day to invoice	
Created by user	
Currency	United States Dollar
Notify customer on expiration	No
Notification step	
Date of last notification	
Due date	Default
Notes	This order was automatically created as a cancellation fee for order: 10780
Include notes in invoice	No
Main subscription	No
Cycle Starts	

Item ID	Number	Description	Quantity	Price	Total
	24	F-1 Cancel fee	3	5.00	15.00
					<b>US\$ 15.00</b>

- Now we'll go back and edit the 'active until' of the original order. This set to the next invoice date (2008-1-6), thus canceling two periods. Another fee order is generated. We see that it has a quantity of 4 (2 billing periods x the 2 remaining items canceled):

Item ID	Number	Description	Quantity	Price	Total
	24	F-1 Cancel fee	4	5.00	20.00
					<b>US\$ 20.00</b>

## Browsing purchase orders

To list your purchase orders, click on **Orders**, then on **List** at the top of the screen. A list of all your purchase orders will appear in chronological order, starting with the latest one. Click on a radio button to see the details relating to a particular order.

### Details of a Purchase Order

From here you can see all the details of the selected purchase order. You can also manipulate and run commands on it. Three tables show up on this screen:

The screenshot shows the jBilling web application interface. The main content area is titled 'ORDERS - VIEW' and contains the following elements:

- Order Details:** A section with links to learn more and a link for manually generating invoices.
- Order Details Table:** A table listing various attributes of the order.
- Item Table:** A table showing the items included in the order.
- Invoices generated Table:** A table showing the details of the generated invoice.

Number	2
Status	Active
Period	Monthly
Type	pre paid
Promo Code	
Active Since	
Active Until	
User Number	2
Login name	customer
Date created	21-Nov-2006 02:19:03 PM
Next Day to invoice	21-Dec-2006
Created by user	1
Currency	United States Dollar
Notify customer on expiration	No
Notification step	
Date of last notification	
Due date	Default
Notes	
Include notes in invoice	No

Item ID	Number	Description	Quantity	Price	Total
	1	A1 glider	2	10.00	20.00
					<b>US\$ 20.00</b>

Period Start	Period End	Periods included	ID	Date	Total	Origin
21-Nov-2006	21-Dec-2006	1	2	21-Nov-2006 02:19:03 PM	20.00	Process

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## Order Details

The first table reveals the order's core information, such as the date this order was created, what is its status (active, finished, etc.), the length of time each period covers, etc. Clicking on the 'User Number' will link you to the customer's screen.

An important field to highlight is 'Next Day to invoice'. This is a date that represents the first day yet to be invoiced. In other words, the next time this order is included in an invoice, will be for the date shown in this field. This date is only relevant for recurring orders. When it is blank, it means that this order has not been included in any invoice yet, and therefore the third table (Invoices generated) will be empty.

Let's examine the above example. This is an monthly invoice, created on 11/21/2006. That same date an invoice was generated, which included one month : from 11/21/2006 to 12/21/2006. Thus, the value of 'Next day to invoice' is 12/21/2006 because that day is the first one not yet included in any invoice.

## Items

The second table lists the items contained in this purchase order, how many of each, and their price.

## Invoices

The third table relates to the invoices this purchase order might have generated. It helps you see what was sent to a customer and when. If there has been no invoice generated, then this table will be empty.

### 'Period Start' and 'Period End'

They expose what period the invoice covered which, in the screen shot of our example, above, started on November 21 2006 and ended on December 21 2006. Please note that the 'Date End', is not included in the period. That is why the 'Next Day to Invoice' , in the Order Details table, is December 21 2006

This only applies for purchase orders that are recurring; one-time purchase orders will show this as blank

### Periods

'Periods' lets you know how many periods were included. In our example, two periods were covered (we know they were each one month long from consulting the 'Period' line in the 'Order Details' table.

### ID

This is the ID of the invoice where this purchase order has been applied. Clicking on the ID will lead you to the details screen of the invoice itself.

### Date

Date the invoice was generated.

### Origin

It can be either 'Manual' or 'Process'. 'Manual' is when the invoice was created manually by clicking on the 'Generate Invoice and Payment' button on the left menu. 'Process' is when the invoice was generated automatically by the billing process.

# Managing purchase orders

## Generate Invoice and Payment

'Generate Invoice and Payment' features on the left menu of the 'Order Details' screen. This is the 'manual' way to generate an invoice from a purchaser order, as opposed to invoices automatically generated by the billing process.

When you click on this link, the system will attempt to generate an invoice and will redirect you to the payment page so you can immediately get the invoice paid. You can ignore the payment part and simply stop after the invoice has been generated.

To understand the results of this manual generation it is very important to consider that the system will use the billing period configured under **Process Configuration** to determine how far in the future will 'see'. When attempting to generate an invoice, the system will define the period to bill. This period will start from the current date. The end will be the current date plus whatever period you have defined as the billing period in the process configuration.

Let's see some examples. We will assume that today is July 1<sup>st</sup> and this is done with a monthly pre-paid purchase order. The billing period will be one month. Therefore, the system will be trying to bill for the period of July 1 – July 31.

Active Since	Next Day to invoice	Result	Comments
July 1 <sup>st</sup>	Blank	1 period invoiced	An invoice for July is created
July 20 <sup>th</sup>	Blank	1 period invoiced	The system is looking until the end of July. Since there is some billable time after July 20, it will generate an invoice for the period July 20 – August 19
August 1 <sup>st</sup>	Blank	No invoice generated	This is beyond the period. It reaches only until July 31
June 15 <sup>th</sup>	Blank	2 periods invoiced	There is some past time here to invoice. The system adds one period and reaches July 15, but after that there is still one period within the window July 1 – July 31, so another period is included. Thus, the resulting invoice will include two periods from the order.
July 1 <sup>st</sup>	August 1 <sup>st</sup>	No invoice generated	This purchase order's next day to invoice is beyond the period



			being considered. Keep in mind that it is only seeing until July 31.
--	--	--	--

## Errors when trying to generate a manual invoice

However, it could be that the purchase order can not generate an invoice. If that is the case, you will receive an error message. These are the causes and possible solutions of this error:

1. This order is not in 'Active' status. If the order is suspended, you just need to click on 'Activate' to get it to 'Active' status.
2. This order has no 'billable time' left and is in 'Finish' status. This will happen with a 'One Time' purchase order that has already generated its invoice. It could also be that is a recurring order with a set 'Active Until' date that has been reached. If that is the case, modify the 'Active Until' to its new value, change the status of the order to 'Active' and try again. You might want to consider creating a new purchase order instead.
3. The 'next day to invoice' or 'active until' are too far in the future. The solution could be to modify the billing period from the process configuration. See the examples above for a better explanation on how this happens.

## Too many periods added to the invoice

This could happen when the 'Active Since' of the purchase order is backdated, as you can see in the previous examples. There are many ways to solve this. We'll go through a few of them mostly to illustrate how the many order/configuration billing parameters work together.

Let's start with the easiest way, to change the process configuration 'Maximum periods to invoice'. This parameter puts a limit on how many periods from a purchase order can be included in a single invoice.

Another way, is to change the billing period from the process configuration to a shorter period. For example, from 1 month to 1 week. This way, you are shortening how far in the future the system will try to invoice. Make sure you rollback your changes to the billing configuration once you have generated the invoice.

Additionally, you could temporarily set the 'Active Until' of the purchase order, then generate the invoice and edit the purchase order to remove the 'Active Until'. For example, being today July 1<sup>st</sup>, for a pre-paid monthly purchase order with an Active Since on May 1<sup>st</sup> you can set the 'Active Until' to May 31<sup>st</sup>, then generate an invoice (only one period will be included), and edit the purchase order to remove the 'Active Until'.

## Apply to Invoice

This allows you to directly apply a single Purchase order to an existing invoice. Click on **Order** and on **List**, then on the radio button of your selected purchase order. On the left menu screen, click on 'Apply to Invoice'. You will be presented with a list of the

invoices belonging to this customer. Select the invoice that will receive this purchase order's items.

The purchase order has to comply with the same requirements as if you were generating a manual invoice. See the previous section for description of these requirements.

**This is the only way to modify an existing invoice**, since you can not directly modify invoices manually. It should be used exceptionally to fix an error. A common situation for this feature is the following: a customer has received an invoice that is wrong. You agree to fix this invoice and do so by creating a one-time purchase order that reflects the changes. Then apply the purchase order to the existing invoice. Since this is a one-time purchase order, it will not be included in any further invoices.

## Suspend/Activate

Changing the status of an order will cause it to either start or stop generating invoices. Click on **Order** and on **List**, then on the radio button of your selected purchase order. On the left menu screen, click on 'Suspend' or 'Activate'. Click on Yes to confirm.

## Edit

To edit a purchase order, click on **Orders**, then on **List** at the top of the screen. Select the purchase order you wish to edit by clicking on the radio button beside it. On the left menu, click on 'Edit this order'. Click on 'Continue' when you are done.

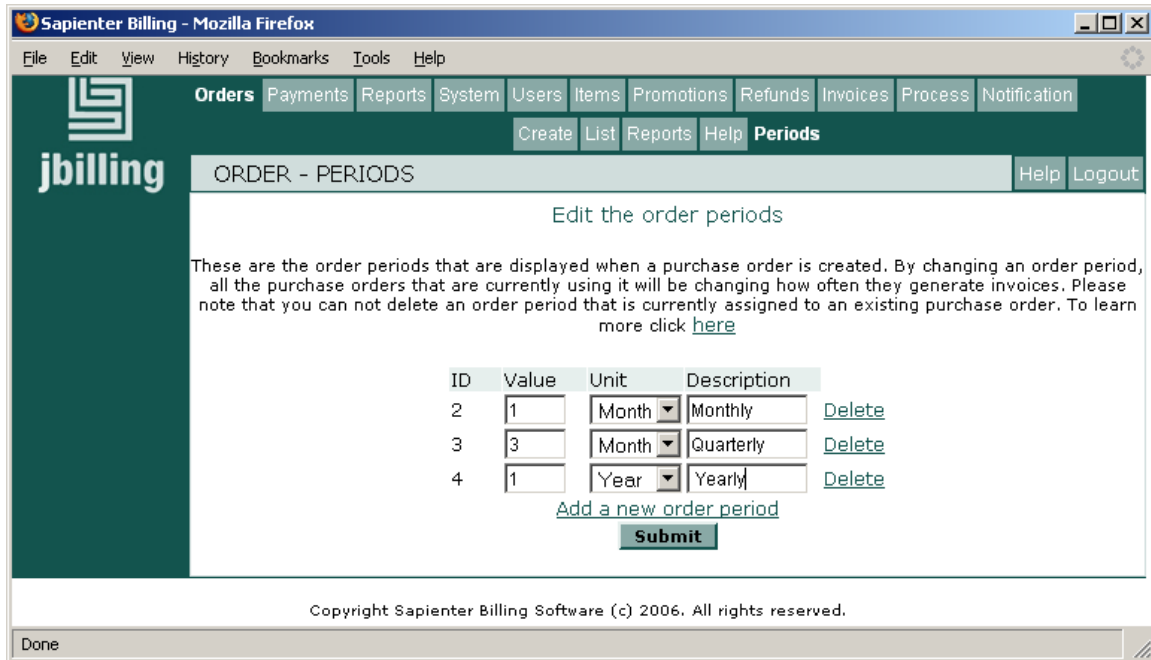
## Delete

To delete a purchase order, click on **Orders**, then on **List** at the top of the screen. Select the purchase order you wish to delete by clicking on the radio button beside it. On the left menu, click on 'Delete this order'.

## Order Periods

Your purchase orders always have assigned an order period. This determines how often the purchase order will generate an invoice. Non-recurring purchase order will have 'one-time' as order period. When you create a new purchase order, you will be selecting the billing period from a drop-down menu. You can use any number of days, weeks, months or years as billing periods. How to add and modify the options in this menu is explained in this section.

Start by clicking on **Orders** and then on **Periods**. The screen with the current order periods is displayed:



## Edit

You can change an existing order period by simply entering a new value on the 'name', 'value' or 'description' fields, and then clicking on 'Submit'.

It is important to consider the implications of changing an order period that is currently being used by active purchase orders. All the purchase orders that are using the order period will be affected by these changes.

For example, if you had purchase orders that were using the order period id #2, which was 1 month, and then change that order period to 3 months, all there purchaser order will be generating invoices in a 3 month period instead of the monthly period. Even if this is the desired effect, keep in mind that it would be very confusing for a someone in the future to understand you billing history.

This could be a very easy way to change the periodicity of existing purchase orders, but has to be use with caution and with full understanding of the consequences.

## Adding a new order period

You if want to have an additional order period, simply click on the link 'Add a new order period'. A new period will be displayed with a default set of values that you can change immediately. Change these default values to those of your new order period.

Once you have clicked on 'Submit' the order period is immediately available. When you create a new purchase order the new order period will be displayed in the drop-down menu. Adding a new order period does not have any impact on existing purchase orders.

## Delete an order period

If you have billing periods that are not in use, it is a good practice to delete them to avoid making mistakes when creating a new purchase order. Just click on the 'Delete' link by the right side of the order period that you want to delete. You will not be able to delete a billing period that is currently assigned to a purchase order.

# ***Chapter 4***

## ***The Billing Process***

*Automating invoice generation and  
payment processing*



## How the billing process works

jbilling is a powerful billing system built to help you save time. Basically, you will need to configure it only once, and then let it automatically generate your invoices, and perhaps process payments for these invoices, without having to think about it or do anything else but create purchase orders for new sales and monitor that all is going as you expect. It is also very flexible and its configuration can easily be modified and adjusted as you get to know the system and as your company grows.

*The basic purpose of the billing process is the automatic generation of invoices*

The billing process is at the very core of jbilling. To configure this critical process, it is important to understand how it operates and to know its different parameters and options.

The billing administrator of your company will configure jbilling and schedule the billing process to run periodically. The period for this schedule can be of any length of time (weekly, monthly, etc). Alternatively, the administrator can, at anytime, manually set a date for the next billing process, overruling the date automatically calculated by the system.

In addition to generating invoices, the billing process will attempt, should you select that option, to process payments cleared by credit cards and direct debit by communicating with a payment processor, which will proceed with the payment the moment an invoice is generated. This additional step of processing payments immediately after the generating of invoices is called automatic payment processing.

### The Billing Period

The billing period is the **single most important parameter to configure**. It will determine how often the billing process runs, therefore how often invoices are generated. A monthly billing period will run once per month, a weekly one, once per week and so on. This seems quite simple, but as a very important consequence: *the amount of time the process will 'see' into the future*.

The billing process looks into a specific period of time, for purchase orders that should produce an invoice. If the process runs on January 1<sup>st</sup> and the period is set for one month, then the process will generate invoices for any purchase order that has 'billable time' falling on any day of January. To understand what 'billable time' is, let's take a closer look into the way the billing process selects a purchase order to create a new invoice.

### Selecting Purchase Orders

Although the billing period defines how *often* invoices are generated, it has nothing to do with how *many* invoices are generated. Whether an invoice is created or not depends exclusively on what purchase orders a customer has. For example, let's say that we have a weekly billing period, and a monthly, pre-paid purchase order. In this example, we will set the start date as January 1<sup>st</sup>:

- The purchase order is created with 'Active since' equal to January 1<sup>st</sup>.
- On January 1<sup>st</sup>, the billing process runs. Since the billing period is set as weekly, the period of the run is from January 1 to January 7. It generates one invoice for the purchase order, but since this is a monthly purchase order, the invoice will cover the period January 1 – January 31.
- On January 8, the billing process runs again. This time for the period of January 8 to January 14. The purchase order does not hold billable time during this period. When you notice the purchase order's details, you find the 'Next day to invoice' field, set as February 1. Therefore no new invoices are generated for this purchase order.
- On January 15 and 22 the billing process runs, with the same result as the previous run: no new invoices.
- Only on January 29 does the billing run generates a new invoice. This is because the run period covers from January 29 to February 5. Since the purchase order has billable time starting on February 1, it will produce a new invoice.

*The billing process will generate one invoice per customer, combining all the applicable purchase orders.*

The billing process will generate one invoice per customer (there is an exception to this rule, see the 'Due Dates' section). But what if the customer has many purchase orders with billable time? The process will still generate only one invoice, containing all the items belonging to all the applicable purchase orders. Let's take the previous example and add to it a one-time purchase order, on January 20. Being a one-time purchase order, it will not recur. On January 29, the billing process runs, but this time it finds two purchase orders falling in its time range. It will still generate one single invoice for this customer, but the new invoice will display the charges from both purchase orders.

## Purchase Order's Periods Included in Invoices

The billing process will normally include one period of the purchase order when it generates a new invoice. In the previous example, it included one month. However, the rule is that it will include as many periods from the purchase order as it can fit in the billing period. Let's take the previous example again, but this time extending the billing period from one week, to two months. This will create more 'room' to include more periods from the purchase order. This time, when the process runs on January 1<sup>st</sup>, it generates one invoice from the purchase order, but with two months worth of charges instead of one. This happens because the period of the run now includes from January 1 to February 29. The run can fit two of the purchase order periods (two times one month) within its scope.

Let's see an example of this: *Trend Inc.* has a customer that has been advertising since January 1<sup>st</sup>. However, there was some misunderstanding and the purchase order wasn't created. On March 1<sup>st</sup> this is discovered and the purchase order is finally created, but with an 'Active since' backdated to January 1<sup>st</sup>. This is a pre-paid monthly purchase



order for a total of \$100. When the billing process runs on March 15, the invoice for this customer is for a total of \$300.

Here is how this happens:

- The billing run takes place on March 15; its period is weekly so the time span goes from March 15 to March 21.
- The billing process has now to take this purchase order and start including periods from it, in an invoice, until it has no more billable time before March 21.
- After adding three periods (months) to the invoice, the 'Next day to invoice' becomes April 1<sup>st</sup>. The process does not add any further periods to this invoice, since the 'Next day to invoice' date is now *past* the end of the billing run scope (March 21).

## Selecting the Right Billing Period

There are a few factors to consider when selecting the billing period. There is no such thing as a one correct way to determine the billing period. It will depend on your business rules and your customers' expectations. The following are just a set of guidelines to help you with your decision.

An important factor to consider is the periods of your purchase orders. *The billing period should be no greater than the shortest period of your recurring purchase orders.* For example, if you have some purchase orders that generate invoices on a weekly basis, you do not want to have a billing period longer than a week. This is true even if your weekly purchase orders are a minority, and the rest are all monthly. You still want to match the *shortest* of your purchase order's period.

Another important factor to consider is how you want to manage your billing schedule. Do you prefer to have a single monthly billing day? This translates to one day in the month where all the invoices are generated. All your customers will be receiving their invoices the same day. The other option is to bill your customers depending on when, in the month, they initially subscribed to your services.

Note that these two options define *when* the invoices are created in the billing run, and *how many* invoices are created in the billing run. Not *how often* any single customer receives her invoice. How often any customer receives invoices is determined only by the period of her purchase orders. Here we are exploring the billing process configuration.

There are two basic choices, let's explore them through an example: *Trend Inc.* sells ad banners and invoices to its customers monthly, which means that all the recurring purchase orders are monthly.

### Single monthly billing day:

The 1<sup>st</sup> of each month, all of *Trend Inc.*'s customers receive an invoice with the current charges. The billing period is, therefore, 1 Month. However, what if a customer signs up in the middle of the month? If the purchase order is simply created and it is left to the process to generate invoices, it could take a few weeks for it to generate the first invoice.

*Trend* does not want this. It prefers to invoice and get paid immediately, the company terms being that all purchases are to be pre-paid. Also, if left as is, when the process

runs, it will include two periods from the purchase order in the first invoice (see the previous section to know why). This is not what the customer expects.

The solution for this is for *Trend Inc.* to create a one-time purchase order with the prorated charges until the end of the month. Then a recurring purchase order with an 'Active since' dated for the first day of the following month. A customer signing up on January 15 for a \$100 ad, will require of *Trend Inc.* the following actions:

2. A one time purchase order for 50\$ (half the monthly charge, since registering half way through the month).
3. A monthly purchase order for 100\$, with an 'Active since' equal to February 1.
4. If *Trend Inc.* wants to get paid immediately for the 50\$, then a manual invoice has to be generated by clicking on the link 'Generate invoice and payment' found on the purchase order screen. Otherwise both purchase orders will be picked up by the process on February 1 and generate one invoice for 150\$.

#### Several billing days in a month:

*Trend Inc.* sets the billing period to one week. Remember, the customers will still receive one invoice per month because the purchase orders are monthly. When a new customer signs up, a single monthly purchase order is created. Since the process runs every week, only a few days will pass until the customer receives her first invoice. From then on, the customer will receive one invoice per month, around the same day every month.

Let's compare this set-up with the previous scenario. With this one, there is no need for a one-time purchase orders to reflect the fraction of an initial period. Invoices are generated weekly, so there are about four billing runs per month. In the previous scenario there was just one monthly run. Thus, in this scenario each run will generate about a quarter of the invoices compared with the previous choice. This is because the total number of generated invoices remains the same when the whole month is considered.

Even though the purchase orders are all monthly, a weekly billing period is a very good alternative for *Trend Inc.* The first impression is to think that billing your customers the first day of every month should be the simplest configuration, but as you can see in the example, in *Trend Inc.*'s case. it is much more complicated that way because of the handling of customers signing up on different days of the month.

As the example demonstrates, a weekly billing process reduces the complexity. Although each customer can have a different billing day, jBilling will take care of invoicing each of them at the right time.

## Invoices Carried Over to Other Invoices

By default, when the billing process generates a new invoice, it will include in it any previous overdue invoice. In other words, an invoice that remains unpaid when the next invoice is being generated, is going to be carried over to the new invoice. This way, your customers can simply pay their latest invoice and bring their accounts up-to-date, even if they had failed to pay a previous invoice.

When the billing process runs and it is generating a new invoice for a customer, it checks if this customer has any overdue invoice remaining unpaid. If that is the case, it will add a line to the new invoice (for each of the overdue invoices) with the legend 'Overdue invoice ... due date ...' with the information of the invoice being carried over.

When this happens, the following fields will be affected:

- The new invoice will have a 'Carried balance' with the amount that was taken from the overdue invoice
- The overdue invoice will be marked as 'paid'. Its balance has been transferred to the new invoice, so it no longer has to be paid.
- The overdue invoice will show 'Delegated to invoice' followed by the ID of the new invoice.
- The balance of the overdue invoice is now 0.

## Due Dates

When an invoice is generated, the system assigns it a due date. This date is calculated by adding to the billing process date, the period of time you configured under 'Configuration'. For example, if the billing process is running on October 1 and the configured due date is 1 month, the resulting invoices will have November 1 as their due date. If the configured due date is 30 days, the result will be October 31.

You can override the due date for a specific customer. These are optional values. If you enter 1 month for the billing process due date configuration (company wide), but then create a customer with a due date of 90 days, the later value will take precedence for that customer only.

The same applies at the purchase order level, where you can enter a due date value that will apply to that specific purchase order, regardless of that particular customer's due date, or the company wide due date's value. This, however, has an important consequence: what happens if two purchase orders should be included in one invoice, but the two purchase orders have different due dates? In such a case, the system will generate one invoice per purchase order, each invoice with its own due date.

## Automatic Payment Processing

As part of the billing process, jBilling can attempt to get your invoices paid with credit card numbers, as soon as they are generated, by using an ACH (automatic clearing house). This is done through a payment processor. jBilling will submit the transactions to this payment processor, which will reply with the result of the transaction.

Depending on your notification preferences, the billing process will send an email to your customers with the result of the payment, which could have either failed, or been successful. If a customer does not have the information necessary to submit the payment (a credit card for example), the billing process will not attempt the payment.

Automatic payment processing works by connecting to a payment processor that handles the payment authorization. This means that you need an account with a payment processor before this feature can work. jBilling needs to know about the type of account that you have and the parameters of it. See the Getting Started guide for details on how to configure a payment processor.

There are many reasons why a payment can fail: the credit card is suspended, or expired. It might be maxed out or with an invalid name. Other problems might be on the payment processor side: it might be temporarily unavailable, or simply not working properly. In any case, it is a good practice to retry a payment before taking action and suspend the customer's account.

jbilling can retry those payments that were failed by the payment processor when the automatic payment processing took place. You can choose how many retries you want, and how many days have to go by in between those retries. These are configuration parameters covered in the next section.

Normally, you will have jbilling configured to send notifications with the result of an automatic payment. Thus, typically a failed payment will result on an email to your customer stating that the invoice remains unpaid. There is a good chance that the problem can be solved in only a few days, just before the retry takes place. By setting up automatic retries jbilling the payment can be received without your intervention.

## Configuration of Parameters

There are a few parameters that will determine how your billing process will run.

To access your billing process configuration click on **Process** and then **Configuration**:

The screenshot shows the 'Sapienter Billing - Mozilla Firefox' browser window. The navigation menu includes 'Orders', 'Payments', 'Reports', 'System', 'Users', 'Items', 'Promotions', 'Refunds', 'Invoices', 'Process', and 'Notification'. The 'Process' menu is open, showing 'List', 'Configuration', 'Latest', 'Review', and 'Help'. The 'Configuration' option is selected, leading to the 'BILLING PROCESS - CONFIGURATION' page. The page title is 'BILLING PROCESS - CONFIGURATION' and it includes 'Help' and 'Logout' links. The main content area is titled 'Edit Paramters.' and contains the text 'Customize your billing process.' Below this is a form with the following fields:

Next Run Date	8	26	2006	mm/dd/yyyy
Generate Review Report	<input checked="" type="checkbox"/>			
Review Report Days	3			
Number of Retries	0			
Number of days between retries	1			
Billing Period	1	Week		
Due date	1	Month		
Require recurring order	<input checked="" type="checkbox"/>			
Use process date for invoices	<input type="checkbox"/>			
Automatic payment processing	<input type="checkbox"/>			
Maximum periods to invoice	1			
Apply over payments to invoices	<input checked="" type="checkbox"/>			

A 'Submit' button is located at the bottom of the form. The footer of the page contains the text 'Copyright Sapienter Billing Software (c) 2006. All rights reserved.'

## Next Run Date

This is the date where the billing process is schedule to run. Right after installing jbilling, you'll need to enter a date in this field. This is the date at which the very first run of your billing process will take place.

You need to enter this date only once, to override the installation's default value. Once the first run will have taken place, the date for the next run will be automatically updated by the system.

### Advanced tip:

At any time, it is possible to manually specify a date for the next billing run. This should not be necessary under normal circumstances, but it is a feature that can come in handy if needed. Should you chose to manually change the date of the next billing run, the new date you enter will overrun the one that had been automatically selected by the system, in accordance with your last configuration. The system will thereon process the billing run according to this new date.

For example, given the date September 2004, *Trend*, for whom jbilling has been automatically generating invoices on the first of every month, decides to change the 'Next Run Date' to September 15<sup>th</sup> 2004. Thereon, jbilling will automatically generate invoice on the 15<sup>th</sup> of every month (assuming a 'Billing Period' of 1 month).

## Generate Review Report

This is a flag indicating to the system to run a preview of the billing process before the real process takes place and invoices are sent to your customers. The Review Report is like a 'pretend' run. It is a great tool to help identify any problem with the invoicing before the run actually happens. It allows the Billing Administrator, should mistakes or inaccuracies be noticed, to apply changes to purchase orders, edit customers' contact information, enter payments, modify the description of an item or its price, etc.

It is recommended to set this flag 'on', for the first few billing cycles at the very least. Since the Review Report does not generate real invoices, the only way to view them is by clicking on **Process** and then on **Review**. For more details, please see section "Review Report, Overview", below.

## Review Report Days

How many days before the real billing process do you want the Review Report to be generated? In other words, how many days before the value in 'Next Run Date' do you want to review the process? The greater the number of days, the less accurate the report will be. For example, if the Review Report runs 15 days before the billing process, there are likely to be payments or purchase orders created during that period of time, and you will not have had an opportunity to review how these transactions affect the invoices generated. A good number of days to start with is 5.

Example: *Trend Inc.* turns the flag "On" for the system to generate a Review Report and indicates it wants it done 5 days before the billing run. Considering that the next billing process will run on the 1<sup>st</sup> of July, the Review Report for the month of July will therefore be generated on June 25<sup>th</sup>.

## Number of retries

Some of your customers, or all of them, might have opted for the automatic payment processing option (either by using a credit card number or by direct debit). In these cases, jBilling will proceed with clearing the payment the moment an invoice is generated. Should this attempt to process a payment fail, jBilling can try again.

In this field, you specify how many retries you wish for. You can find more information about payment retries in the 'Automatic Payment Processing' section of this document.

Example: *Trend Inc* has many customers who's invoices get automatically paid for every time new ones are generated. It happens that one customer has a problem with its bank account, or that another one has not renewed its credit card, therefore, jBilling's attempt to clear the payment fails. *Trend Inc.* indicated to the system that it should retry 2 times to clear a payment.

## Number of days between retries

Enter here how many days you wish to have in between retries. It is recommended to allow for enough time in between the retries for your customers to sort out whatever difficulty might have prevented the first payment from being cleared.

Example:

*Trend Inc.* enters 5 days in between the retries (therefore, a first retry on the 5th of the month and a second one on the 10th). This means a total of three attempts to receive payment: the initial one with the original billing process, plus two retries.

## Billing Period

When the billing process takes place, the system looks ahead for the period of time specified during the configuration of the system. The system will generate an invoice for any purchase order containing billable time, falling within this period of time. The system allows for this period to be any length of time (weekly, monthly, etc even daily).

You don't want this period to be too long. It is too long when some invoices can get more than one period of time from a purchase order. On the other hand, a period is too short when you have unnecessary runs that produce no invoices.

Example:

*Trend Inc.* sells banners of advertisement displayed on the Internet. Some are sold in one week packages, others in one month packages and yet others in 3 month packages. These services are all pre-paid and are generally hired over many cycles. Thus, for *Trend* a one week billing process is a good choice: it is the shortest period of any of their purchase orders.

## Due Date

The Due Date is the period of time your customers are given to pay their invoice before it becomes overdue. This field here represents the default Due Date, company wide. It is possible to override this Due Date for a customer in particular to whom you wish to give a unique one (either when creating a new customer, or when editing the information for an existing one). This can also be done at the Purchase Order level, where you assign a particular Due Date for one Purchase Order in particular (either

when creating a new P.O., or when editing the information for an existing one), which will override the other ones.

See the 'Due Dates' section for more information.

### Require Recurring Order

If this box is checked, the system will generate an invoice for a customer **only if there is at least one recurring Purchase Order** included in the invoice. This will prevent the system from generating invoices for one-time Purchase Orders (probably with small totals), and force it to include them in the invoices including recurring Purchase Orders.

If your customers expect an even flow of invoices, say one per month, you might need to have this box checked. This would prevent the billing process to generate an invoice in the middle of the month for a one-time purchase order. This one will be later picked up along with the recurring monthly purchase order.

Let's see an example. *Trend's* customers receive their invoices in a monthly basis, in the 1<sup>st</sup> of each month. This does not prevent them from making one-time purchases any time in the month. *Trend* finds it easier to collect payments when the invoicing remains simple: one invoice per month per customer. Therefore, it does not want these one-time sells to generate invoices of their own, it wants them to be included in the monthly invoices along with the regular recurring fees. In this case, *Trend* will turn on the 'Require Recurring Order' option.

### Use process date for invoices

If this check-box is set, **all the invoices generated by the billing process will be created with the same date of the billing process.**

If this check-box is not set, the date of the resulting invoices will be taken from the purchase orders included in each invoice. The period from the purchase order being included in an invoice will be the main factor for the invoice date.

Let's explore some examples where 'Use process date for invoices' is set:

<b>Period being invoice from the purchase order</b>	<b>Billing process date</b>	<b>Invoice date</b>
July 10 – August 9	July 8	July 10
August 10 – September 9	August 11	August 10
September 10 – October 9	September 9	September 10

In all cases, the invoice date is equal to the first day being invoices. As you can see, what determines the invoice date is not the billing process, but the period that is being included from a purchase order.

If many purchase orders are being included in a single invoice, the earliest period from a recurring purchase order will take precedence. This means that if you have a recurring purchase order generating invoices, with some one-time purchase orders included as well, the date to set the invoice date will be taken from the recurring purchase order only.



The invoice date is very important, because the due date of the invoice will be calculated based on the invoice date.

### Automatic Payment Processing

As part of the billing process, Sapienter can attempt to get your invoices paid as soon as they are generated by the billing process. This is done for payment methods such as credit cards or ACH (automatic clearing house). Sapienter will submit the transactions to a payment processor, which will reply with the result of the transaction.

The billing process will send an email to your customers with the result of the payment, which could have either failed, or been successful. If a customer does not have the information necessary to submit the payment (a credit card for example), the billing process will not attempt the payment.

There is more information about automatic payment processing in the previous section.

### Maximum periods to invoice

This parameter sets a limit on **how many periods from a purchase order will be included in an invoice**, and applies only to recurring purchase orders. Under normal circumstances, you will always have just one period going into a new invoice. For example, from a new monthly purchase order active since June 1st, the month of June is billed in the first invoice.

However, when you are entering a purchase order that is backdated, you might want several periods to be included in an invoice. In the previous example, if the current date was August 15, you might want the first invoice to include June, July and even August if the order is prepaid.

By setting this parameter to 1, the system will never try to 'catch-up' with the billing of a backdated order. Higher values will allow for this up to the number specified.

### Apply over payments to invoices

By using this option, the system will **automatically link new invoices to payments that have some balance left**. If you receive a payment that exceeds the latest invoice, or receive the payment in advance, you can use this option to automatically apply the balance of that payment to future invoices.

When an invoice is generated (either manually or by the billing process) the system will verify if the related customer has payments with balance greater than zero. If that is the case, it will use those payments towards the payment of the new invoice. A payment can have a balance greater than zero when it has been created without linking it to an invoice, or when its amount is greater than the balance of the invoice that was linked to.

Let's put this in an example. One of *Trend's* customers gets a 100\$ invoice every month. This month the customer, by mistake, sent a 150\$ cheque. Since it is more trouble to send the cheque back and get a new one for the right amount, it's been agreed that the extra 50\$ will go as a partial payment for the next invoice.

By turning on the option 'Apply over payments to invoices', *Trend* does not have to do anything special about this situation. It will simply enter the 150\$ payment and get it



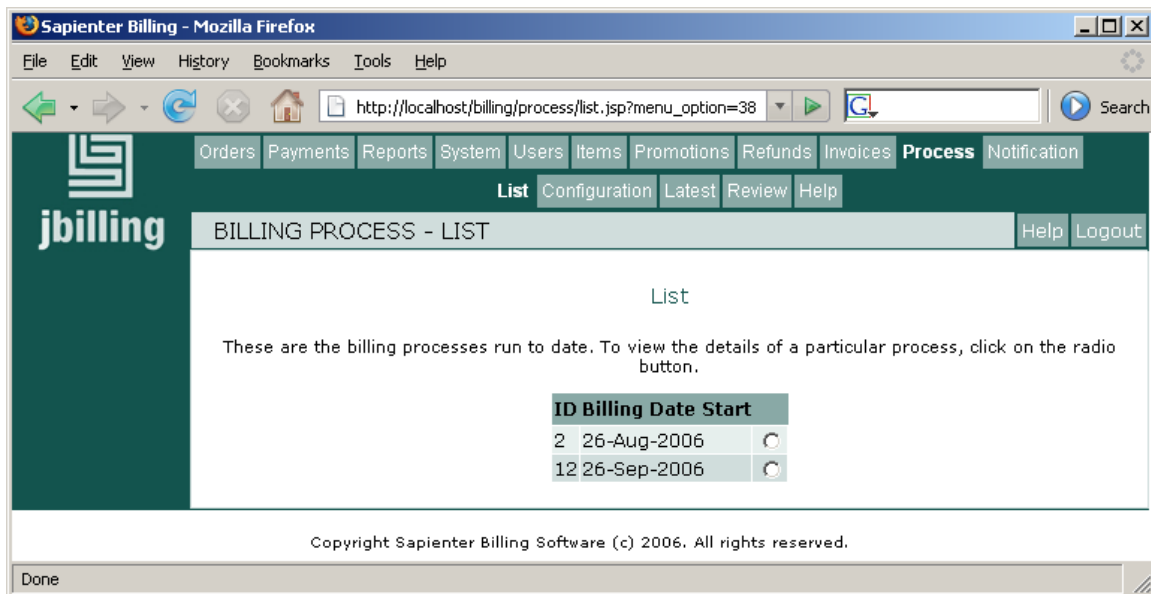
linked to the current invoice. Next month, a new invoice for 100\$ will be generated. But this time it will be already linked to a payment and will have a balance of just 50\$.

## Viewing the Process Results

Once the billing process has run, you will want to know what is that happened: how many invoices were generated, how many got paid automatically, etc? Also, you might want in the future to take a look to the results of previous billing process:

### The list of billing processes

To get a list of all the billing processes generated for your company, click on **Process** and then on **List**. Each record in this list represents a billing process. By clicking on any of them you will get its details.



### Examining the latest billing process

To view the latest Billing Process, click on **Process**, then on **Latest**. As you can see, the screen here contains much detail related to your latest Billing Process.

There are two sections, the billing process and the total. Let's go over the fields of these sections:

This is your latest billing process.

To learn more click [here](#)

Billing Process	
ID	12
Number of runs	1
Billing Date Start	26-Sep-2006
Billing Date End	26-Oct-2006
Orders Processed	1 <a href="#">View list</a>
TOTAL:	
Invoices Generated	1 <a href="#">View list</a>
Currency	United States Dollar
Total Invoiced	US\$ 83.00
Total Paid	US\$ 0.00
Total Not Paid	US\$ 83.00
Totals by Payment Method	
RUNS	

## Billing Process

- ID: This number was automatically assigned by the system to uniquely identify this billing process.
- Number of runs: The first run simply refers to the billing run that took place. Should this number be higher than “1”, then it indicates how many times jBilling re-tried to process payments that failed at the first attempt.
- Billing Dates: These dates refer to the *period of time* that has been billed, as opposed to *when* the billing took place.
- Orders Processed: This number refers to how many Purchase Orders were included in invoices. Click on *View List* to display the list of Purchase Orders.

## Total

The ‘Total’, shows the aggregate values of all the runs. It is an addition of all the fields from the runs. Thus, it includes the initial billing run, plus all the retries. Here you can see how much you invoiced (and should get paid) and how much you actually got paid *through the automatic payment processing*.

- Invoices Generated: The Number of invoices this billing run generated. Click on *View List* to display the list of invoices.
- Currency: The currency used in your billing process.
  1. Total paid: Refers to the amount jBilling successfully processed automatically, adding up all the runs, using a payment processor. These are payments that the processor has confirmed as good. Do not confuse this number with the total payments you've received on the invoices that this process has generated. That would include payments such as cheques and credit cards done *after* the billing process.

- Total not paid: This total includes the payments that for some reason did not get paid. It could be that the payment was attempted using a payment processor, but it was rejected (for example, an expired or maxed out credit card). It could also be that the customer did not provide a payment method that allows for automatic processing, such a credit card or ACH, and will pay by cheque instead.
1. Total by payment method: Same as Total paid, but discriminated by payment method. You will be getting a total for each credit card type.

## Runs

These sections detail what happened during the initial billing process, and then, if applicable, the subsequent runs that were, in fact, 're-tries'. In the example illustrated in the screen shot, there is only one run: the initial billing process. If there were other runs, they could only be retries. Retries do not generate invoices, they only try to get those invoices still unpaid paid through a payment processor.

RUNS	
Start	19-Dec-2006 04:10:00 PM
End	19-Dec-2006 04:10:02 PM
Invoices Generated	1
Currency	United States Dollar
Total Invoiced	US\$ 83.00
Total Paid	US\$ 0.00
Total Not Paid	US\$ 0.00
Totals by Payment Method	

- The Total Invoiced represents the sum of all the invoices generated during the billing process. In our example, one invoice was generated.
1. Total Paid is the total in payments that jBilling's automatic payment processing successfully cleared.
- Total Not Paid is the money jBilling's was not able to collect through a payment processor.

## The Process Review Report

The Review Report is a 'pretend' billing run. It normally runs a few days before the genuine billing process. You decide if the review report will be generated, and if so how many days before the real process, using the parameters in the process configuration.

## Process report

The billing process Review Report represents a recreation of the results of the billing process without generating real invoices and payments.

To learn more click [here](#)

Review	
Review status	The review report is pending approval
Next Run Date	26-Oct-2006
<a href="#">APPROVE</a> <a href="#">DISAPPROVE</a>	

Billing Process	
Billing Date Start	26-Oct-2006
Billing Date End	26-Nov-2006
Orders Processed	1 <a href="#">View list</a>
TOTAL:	
Invoices Generated	1 <a href="#">View list</a>
Currency	United States Dollar
Total Invoiced	US\$ 103.00

The review report is not a real billing process, so it does not send invoices to your customers, nor does it process payments. It is a great tool to help identify any problem with the invoicing before the billing run actually happens. It allows the Billing Administrator, should mistakes or inaccuracies be noticed, to apply changes to purchase orders, edit customers' contact information, enter payments, modify the description of an item or its price, etc. Since the Review Report does not generate true invoices, the only way to view these simulated invoices is by clicking on **Process** and then on **Review**.

The Review Report, once generated, can be in one of three states:

- **Neutral:** The system has generated the Review Report and is waiting for the Billing Administrator of your company to either approve or disapprove it. If left ignored, your 'real' billing process will not run. Your Billing Administrator would then receive an email on the day your Billing should be processed, warning her that the approval of the Review Report is required in order to allow the billing to run as planned.
- **Disapproved:** The Review Report was generated and disapproved by your Billing Administrator. Whether changes to the purchase orders are applied or not, the system will automatically generate another Review Report within 24 hours, which will once more need to be either approved or disapproved. This allows you to verify that the system interpreted the way you were hoping for, the changes you might have applied.
- **Approved:** The Review Report was generated by the system and approved by your Billing Administrator. If the Review Report was approved before the date planned for your next billing run, your billing process will happen as planned.

In short, once a Review Report is generated, **it needs to be approved before your billing is allowed to run**. If left to Neutral, it will prevent the system from generating the 'real' billing run (the one that will actually send invoices to your customers) from happening.

Once the Review Report is generated and waiting for a response, it is possible to apply changes to Purchase Orders or customers' files before approving it, and then

simply approve it. *This is not a recommended process.* If you have made changes to affect the results of the billing process, then you should disapprove the review so it runs again. Then, once the system has generated another Review Report, verify that the changes show up the way you expected and finally approve the Review.

It is important to note that **the real billing process it is not based on the review report** itself, but on the other documents: purchase orders, invoices, payment etc. and their status at the moment that the billing process runs. If you enter any data that would affect the billing process, for example, entering a new purchase order, then this will be considered by the billing process regardless of the status of the review report.

Let's see an example of this: the review report runs, and shows that 10 invoices are going to be created for a total of 1000\$. You then approve this report, to allow the billing process to take place. Still, after this approval but before the real billing process takes place, you enter a new order for 100\$. Your review report, the one that you approved, still shows 10 invoices for 1000\$; yet, when the real billing process runs, you get 11 invoices for 1100\$.

The billing process can be the same as the review process only if no data has changed in between each run. This might not be realistic to achieve, depending on the size of your customer base. On one hand, *you want the review process to run right before the real process*, minimizing the time in between them. This will prevent the situation described above. On the other hand, you need some time in between the review process and the real one to fix any issues actually found thanks to the review process. The actual days in between these two processes depends very much on your business rules.

# ***Chapter 5***

## ***Invoices***



## Overview

An invoice is a list of services rendered to your customer, containing prices and charges. Any invoice will feature the name of your company and your contact information, the name of your customer, their contact information, as well as the invoice number and ID, the date at which it was issued, its due date, whether there is a carried-over balance, and so on.

Sometimes an invoice will simply reflect the items of a corresponding purchase order, while in other cases, it will include additional charges not directly related to a purchase order, such as taxes, additional fees, special discounts, late payment fees, etc.

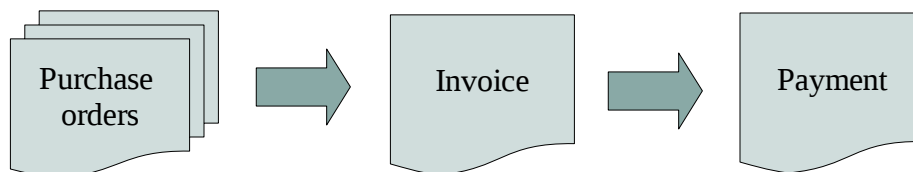
An invoice can have several representations.

- Web (HTML): The HTML representation is the one you can see in your web browser, when using the web-based graphic user interface of jBilling.
- PDF: The PDF version is normally called 'paper invoice', because this is version is the one use for printing invoices. Paper invoices can be customized to match your company's corporate image.
- Email: You can write the text of an email, using variables to represent values such as total, due date, etc. Invoice emails can optionally have as an attachment the PDF version of the invoice as well. The email representation of an invoice is handled by jBilling as a notification. See the notifications documentation for more information.

## The relationship between purchase orders and invoices

In jBilling, it is very important that you can trace the series of events that are key for a billing process. Billing information accumulates over time, creating a history of events with your customers. We want you to know when something happened, and most important, *why*. When a customer is sent an invoice, this is done because she has bought something from you. These items are listed in the invoice.

In jBilling, the even of the purchase is backed by the purchase order document. Therefore, there can not be an invoice without at least one purchase order. Payments and invoices have a similar relationship: a payment should be paying an invoice, so there should not be a payment without first having an invoice:



## Creating invoices

Since invoices can only be created based purchase orders, you first need to create these. Then, the actual invoice can be generated in two ways:

- The billing process generates an invoice automatically (please refer to the Billing Process Documentation).



- An invoice is created manually (please refer to the Purchase Order Documentation).

## Modifying an invoice

An invoice cannot be edited directly. You can not quickly change a total of a quantity. If you could do this, we would lose the traceability of the purchase order – invoice relationship.

The only way to modify an invoice is by creating and applying a new purchase order that will either cancel out or correct the erroneous invoice. For more details, please refer to the Purchase Order Documentation.

## Deleting an invoice

To delete an invoice, click on **Invoices** and on **List**. Click on the radio button of the invoice you wish to delete, and then on the 'Delete' link on the left side of the screen. You are then asked to confirm this choice. Please keep in mind that once an invoice has been deleted, it is deleted permanently.

Once an invoice has been deleted, the purchase order that had generated the invoice in the first place, gets automatically modified to the status it held before the invoice was generated.

### Example

An invoice is generated out of a one-time purchase order. This one-time purchase order's status will then change from 'Active' to 'Finished'. When the invoice is deleted, the status of the purchase order will go back to 'Active'. The purchase order will probably generate a new invoice again if not modified.

## The invoice details screen

To view an existing invoice, click on **Invoices** and on **List** in the top menu. Then, click on the radio button of the invoice of your choice. The invoice details page is displayed:

INVOICES - VIEW

Details.

These are the details of this invoice.  
To learn more click [here](#)

Invoice	
Number	6
ID	15
Date	26-Sep-2006
Due date	26-Oct-2006
Total	83.00
Status	Paid
Balance	0.00
Carried Balance	63.00
Payment attempts	1
User Id	<a href="#">2</a>
Currency	United States Dollar
Payments	
Orders included	<a href="#">6</a> 21-Dec-2006 US\$ 83.00
Delegated to invoice	<a href="#">4</a> 26-Jul-2006
Invoices included	
Notes	<a href="#">5</a>

[Click here to send an email notification with this invoice](#)

This invoice lines:

Description	Quantity	Price	Amount
Invoice number 5 due date 09/26/2006		US\$	63.00
Lemonade - all you can drink monthly Period from 09/26/2006 to 10/25/2006	1	US\$ 20.00	20.00
<b>TOTAL</b>		<b>US\$</b>	<b>83.00</b>

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Let's take this invoices as an example and analyze the data. Invoice number 6 has a total of 83\$. 63 dollars come actually from a previous invoice that was not paid and is overdue (Carried Balance is 63.00 and there is an invoice line with the other invoice balance). We can see in 'Invoices included' the ID of the invoice that has been carried over to this one. By clicking on it, we'll get to the details of that invoice.

Our invoice is currently paid, there is no outstanding balance (Status is 'Paid', and Balance is 0.00). One payment is related to this invoice, and it has paid it in full. The payment in question is #6, and by clicking on this number we'll go to the payment details screen.

The invoice date is 9/26 and payment was expected before 8/26. The invoice was paid late, on 12/21.

We can download a PDF version of this invoice by clicking on 'Download PDF'. This is usually done by customers to get a hard copy of the invoice. You can send the invoice as an email by clicking on 'Click ere to send an email notification with this invoice'.

## Numbering

The system will, by default, apply to your first invoice generated, the number 1. If, however, your company has generated previous invoices from a legacy system, it is necessary to tell the system what number the first invoice it generates for you should bear.

Invoices will be generated using the number that you provide. The system will increment this number by one for every new invoice.

With Sapienter, you have the option of adding a prefix to your invoice numbering. This prefix can have up to 20 characters and can be any digit, letter or symbol. To configure the number of your first invoice, and perhaps the prefix to your invoices, click on Invoice, then Numbering. You can update the invoice numbering at any time.

# ***Chapter 6***

# ***Payments***

*Getting your invoices paid*



## Paying invoices

The last step in a billing cycle takes place when your customers pay their invoices. A payment reduces the balance of an invoice, and when that balance reaches zero, the invoice is considered paid.

The most common situation is to receive one payment per invoice, and for the total amount of the invoice. In this case, we will have one payment per invoice, without any further complexity. This is the ideal case and could perfectly be the case for your company.

However, there are many other situations that can happen that will make the relationship between payment and invoices more complex. A customer might send a payment for the wrong amount, smaller or greater than her invoice. Or she might send one payment to pay two invoices. Eventually, you might have many payment associated with one invoice, or many invoices associated with one payment.

In jBilling, the association of a payment to an invoices is called 'link'. A payment is linked to an invoice when it is paying it. jBilling will track these links: it will tell you how much a payment is paying for each invoices that it has a link with. Also, if an invoice is being paid by many payment, it will tell you which are these payment and how much each of them are paying to an invoice.

The balance of an invoice is how much of it remains to be paid. The balance of a payment is how much of it is still not linked to an invoice. If a payment has a balance greater than zero, it means that it can still be linked to an invoice. You can create and remove links to invoices very easily from the web-based interface.

Let's go through an example to better illustrate the relationship between payments an invoices.

- On June 1<sup>st</sup> a new customer sends a cheque to *Trend* for 50\$. She does so because she thinks that that is the sign-up fee.
- On June 15<sup>th</sup>, this same customer receives an invoice for 100\$. She then sends a cheque for 100\$.
- On July 15<sup>th</sup>, she gets an invoice for a total of 100\$, but with a balance of 50\$. She then sends a cheque for 50\$.

We have now the following payment/invoice situation:

Payment number 1 is paying 50\$ of invoice number 1. This invoice is also partially paid by payment number 2. Between these two payment, the invoice is fully paid.

Payment number 2 also pays invoice number 2 for half of its value. The rest of that invoice is paid by payment number 3.

So we have three payments, and two invoices, but the middle payment is linked to both invoices.

## Types of payments

We can classify payments in two ways: by *how* they are entered in the system, and if the payment has been processed by a payment processor. Let's see these two categories in more detail:

## By method: manual or automatic

A payment can be entered **manually** by a staff user or a customer directly in the system, or it can be **automatically created** by the billing process.

Entering a payment manually is described in detail below, in its own section. It basically means to select the invoice that is getting paid and to enter the payment details, like the cheque number and amount in the case of a cheque.

A payment is automatically created by the billing process when using a payment processor to, for example, submit credit card payments. To learn more about automatic payment processing, refer to the Billing Process Documentation.

## By processor: entered or processed

Payments can be 'entered' or 'processed'. We call entered payments to those that you simply enter in the system. There is no real-time processing to get the payment approved by a third party payment processor.

A good example for this is a paper cheque that you receive from one of your customers. If you process a credit card payment outside the system, for example, by calling directly the credit card issuer by phone, you will also simply enter the payment on the system, without any further processing.

A 'processed' payment is submitted to a payment processor, which is going to reply if the payment has been successful or not. If the payment is accepted, the funds will be deposited directly into your merchant account. This process is all done in real-time, with the whole transaction taking only a few seconds. A typical example of this kind of payment is a credit card payment.

For those payment methods that could be both 'entered' and 'processed', the field 'Process real-time' will show a check-box. If you submit the payment with the check-box set, the payment will be processed through your payment processor; otherwise it will be simply entered.

## Combinations

Let's review some combinations of these two types of payments. Note that some are not applicable, such an automatic payment that is entered (automatic payments are always processed in real-time).

	<b>Entered</b>	<b>Processed</b>
<b>Manual</b>	A staff user, like the billing administrator, enters a paper cheque or a credit card payment that has been approved on the phone.	A staff user or a customer submits a payment that is cleared in real time by your payment processor. This is usually done for credit card payments.
<b>Automatic</b>	Not applicable.	The billing process

		<p>submits a payment for each invoice immediately after it has been generated. The payment processor returns the result of each payment in real-time.</p>
--	--	---

## Payment methods

jbilling supports several payment methods. By default, jbilling is configured for credit cards and cheques. However, it support ACH (automatic clearing house) as well. You can configure the system to specify which payment methods you want to accept. Doing this involves changing some data directly in the database, so it is out of the scope of this document. Only those payment methods that you have decided to work with will be displayed in the payment's menu.

Some payment methods can be processed in real-time and allow you to work with automatic payment processing (to learn more about these terms, see the section 'Types of payments' above). For this, you will need an account with a payment processor.

A payment processor (also known as 'payment gateway') is an independent company, in to way related to jbilling, which provides you with a real-time processing of payments. The payment processor will take your payment submission and forward it to the appropriate financial institution for instant approval. The result of the transaction will be captured by jbilling to take the corresponding action on the customer's account.

If you want to add credit card support, or add another credit card brand to your list of accepted credit cards, you will first have to contact your payment processor or open a merchant account. These and similar actions are outside your jbilling account, they are all related with your payment processor.

These are the payment methods currently supported:

- Credit cards.
- Automatic clearing house (ACH). Allows direct transfers from bank accounts. It is also called 'direct debit', because your customer's bank account is directly debited the payment's amount.
- Cheque (paper).

## New payments

To submit a new payment in the system, start by click on **Payments** and then on the payment method that you will be using for the new payment. For example, to enter a new credit card payment, click on **Payments** and the **Credit Card**.

### Selecting a customer

The first step is to select the customer that the new payment is for. You will be displayed with a list of customers, select one by clicking on a radio button.



Now that you have selected the customer, the page with the payment details is displayed. The following is the one for credit card payments:

### New credit card payment.

Enter the payment details. To link the payment to an invoice, select an invoice from the list.

#### Invoice List

Number	ID	Date	Due date	Total	Balance
2004/31	1905	01-Dec-2004 12:00:00 AM	01-Jan-2005	US\$ 856.00	856.00

User	
Number	3503
Name	
Organization Name	

Invoice
No invoices selected.

Amount	<input type="text"/>
Date	<input type="text" value="12"/> <input type="text" value="27"/> <input type="text" value="2004"/> mm/dd/yyyy
Card number	<input type="text"/>
Name on card	<input type="text"/>
Expiry date	<input type="text"/> <input type="text"/> mm/yyyy
Process real-time	<input checked="" type="checkbox"/>
<input type="button" value="Submit"/>	

## Linking to an invoice

The next step is to select from the invoice's list the invoice that this payment will be applied to. Only those invoices that have some balance are displayed in this list. A payment should always be linked to an invoice. In theory, every time you are entering a payment is because a customer has first received an invoice requesting this payment.

Although is technically possible to go ahead and enter a payment that is not linked to any invoice, this should be done only for very exceptional circumstances, usually related to migrating from a legacy billing system to jbilling. Note that this option is not available to customers login in to jbilling to submit an on-line payment. Customers always have to select an invoice before being able to submit a payment.

Once you have selected an invoice, its balance will be copied to the amount field of the payment. You can modify this by simply editing the field.

Partial payments are supported by the system. The amount paid will be deducted from the invoice's balance. If the balance reaches zero, the invoice is marked as 'paid' (Status equal to 'Paid').

## Submitting the payment

The payment information varies depending on the payment method. Credit card payment will require the card number, name, etc. while cheque payment will have different required fields.

For those payment methods that support real-time processing (see 'Types' above), here you can select if you want the payment to simply be entered, or if you want it to be submitted to the payment processor for immediate processing.

Once you have entered all the payment information, click on 'Submit' to review all the payment information. The review screen will simply display all the payment's details for you to review before the payment is finally submitted.

## The payment details screen

When you click on **Payments**, the list of payments will be displayed. You can then see the details of a particular payment by clicking on any of the radio buttons:

The screenshot shows the 'Payment - View' screen in the jBilling application. The page title is 'PAYMENT - VIEW' and the browser is Mozilla Firefox. The navigation menu includes 'Orders', 'Payments', 'Reports', 'System', 'Users', 'Items', 'Promotions', 'Refunds', 'Invoices', 'Process', and 'Notification'. The 'Payments' menu is active, showing sub-options for 'Cheque', 'Credit Card', 'List', 'Reports', and 'Help'. The main content area displays 'Payment Details.' and provides information about the user linked to the payment, a table of linked invoices, and a table of payment details.

User		
Number	2	
Name		
Organization Name		

The following invoices are linked to this payment

ID	Link Date	Total paid
<a href="#">15</a>	21-Dec-2006 11:08:11 AM	83.00 <a href="#">Unlink</a>

Payment	
Number	6
Amount	US\$ 83.00
Date	21-Dec-2006
Balance	US\$ 0.00
Bank	Bree First Bank
Cheque number	123-21312-A
Cheque date	10-Oct-2006

[Click here to send an email notification with this payment](#)

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There is a section with the list of links that this payment has with invoices. Here you can see which invoices this payment is paying, when the link was created and how much of the invoice is being paid. The left column is the ID of the invoice, if you click on it you will be taken to the invoice details screen.

It is from this list that you can also remove a link to an invoice, by clicking on 'Unlink'. The effects of this operation are described in the following section.

The fields displayed will depend on the payment method. In any case, you can send an email with the information of this payment (as specified by the payments notifications), by just clicking on the link 'Click here to send an email notification with this payment'.

For payment methods that can be processed with a payment processor, the result of a payment can be:

- Successful: The payment was submitted to a payment processor and approved.
- Failed: The payment was submitted to a payment processor and declined.
- Entered: The payment was not sent to a payment processor, it was simply entered in the system. See the section 'Types' above for more information.

If no result is shown, the payment was entered, not submitted to a payment processor.

## Deleting, modifying and linking a payment

Before you can delete or edit a payment, you need to remove all the links between the payment and any invoices. **A payment can not be modified as long as it is linked to invoices.** To remove the link between a payment and an invoice, click on 'Unlink'. This will undo the effect of the payment by increasing the invoice balance and also increasing the payment balance.

Once a payment is on its own, without actually paying any invoices, you will see the option 'Delete', on the left side of the screen. By clicking on it, you will be removing the payment from the system.

Another option that can be present when the payment is not linked to invoices, is 'Edit'. This option also requires that the payment has been entered manually (see 'Types of payments' above). **A payment that was processed by a payment processor can not be modified.** Otherwise, payments entered such as cheques and manual credit cards can be edited to correct errors.

The last operation that you can do with an existing payment is to link it to invoices. For this, the payment has to have a balance greater than zero. Linking a payment to an invoice amounts to use the payment to pay (at least partially) the invoice. This is usually done when the payment is created (either manually or by the billing process), so manually linking a payment to an invoice should be an exception.

To create the link, click on 'Pay an invoice with this payment' option on the right side of the screen, which will take you to a list of the customer's current invoices with some amount yet to be paid. From here, you just follow a similar procedure than the one to create a payment.

Note that all the payment's balance will be used to pay the invoice, up to the total balance of the invoice. If a payment has 50\$ balance, and the invoice 50\$ or more, then

the payment will be paying 50\$ and finish with zero balance. If the invoice's balance is smaller than 50\$, then it will be fully paid and the payment will have some balance left.

## Refunds

Refunds represent the return of certain amount of funds to a customer. Refunds can be summarized as payments that have the opposite effect. Instead of reducing an invoice's balance, they increase it. You will issue a refund only when you have received a payment first. When you create a refund, you will link it to the payment that is being refunded, just like a payment is linked to the invoice that is being paid.

Except for the differences described above, managing refunds is just like managing payments. You select the method, like cheque, credit card, etc. You select the customer and the amount. They can be total, returning the total amount of the payment, or partial. Refunds also follow the same rules as payments for the processing. They can be simply 'entered', or they can be processed in real-time through your payment processor. Note that not all payments processors allow you to submit on-line refunds.

For example, an 'entered' refund would be a cheque that you send to a customer because the customer over paid you or was overcharged for some services. For a processed refund, you would normally be refunding a payment that was also processed on-line through a payment processor. In the case of a credit card refund, your customer's credit card will be refunded in real-time, just like a payment is cleared in real-time.

For refunds involving a payment processor, jBilling only submits the refund request and shows to you the result that is returned by the payment processor. For the details and ramifications of how this affects your customer's payment instrument (credit card, bank account), or how this affects your merchant account, you would have to contact your payment processor.

# ***Chapter 7***

## ***Notifications***

*Letting know your customers  
about billing events*

## Introduction to jBilling's notifications

An important part of any billing process is how to notify customers about billing events. Imagine a manual billing process: a large portion of the total effort will be to remind customers about their invoices, tell them that a payment is still due, etc. This applies even for large volume billing processes that are highly automated: you need to retry failed payments, cancel accounts that have not paid for a while, etc. In short, communication with your customers is key, and needs to be automated as much as possible.

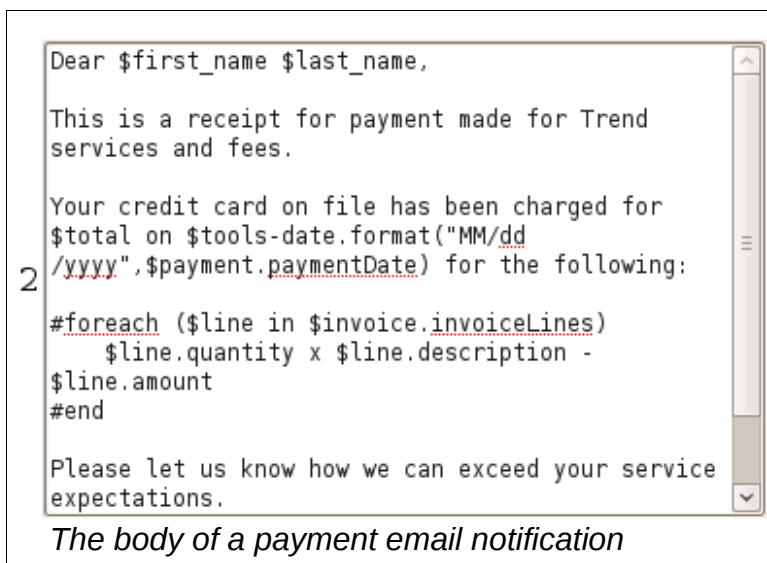
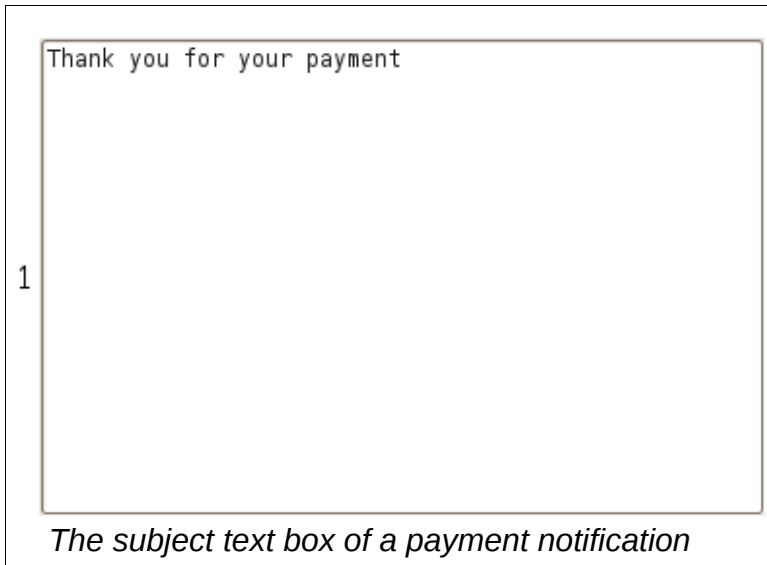
**jBilling** will notify your customers about various events, the most important one being most likely a new invoice. By default, these notifications have text that might not suit your company, so it is very important that you review and edit the text for those that you will be using.

The emails sent by **jBilling** can be as simple or as elaborate as you want: you can send a simple text email, or you can send a rich HTML email with colors and graphics. You can also add as much information as you want in a notification; by using the Velocity template engine, jBilling allows you to do complex notifications that include variable amounts of data. For example, you can send complete invoices with all the data that a customer expects from a paper invoice as an email.

## Writing your own text

Let's start by getting a list of all the notifications that you can configure by clicking **Notification**. These are all email notifications except 'Invoice (paper)'. Once you click on an email notification, you will see two text boxes. The first one represents the subject of the email; the second one is the body of the email.

If you have HTML emails turned on (see the parameters section below), then you will see a third text box. This third box will have the content of the HTML version of the email. **jBilling** will always send HTML emails with the plain text content as an alternative. This means that you need to add your text to both the second box (plain text) and the third box (HTML). This allows those recipients of your emails that can not or don't want to receive HTML emails to still receive, open and read your notification in its plain text format.



Here is where you enter the text for your own notifications. Note that the text is not static, it has variables. jBilling doesn't send the same email to every customer, it uses the same template for every customer. The total of an invoice, for example, needs to be specific to each email sent. For these dynamic values, we have variables.

### Dynamic values with variables

Some notifications use variables to generate dynamic text. To use a variable, simply put the name of the variable with the '\$' character in front. For example, to display the user name of a customer you would write \$username, where username is the name of the variable.

The following are the variables that are in common to all the notifications that are sent as emails to your customers:

- `first_name`: The first name of this customer.
- `last_name`: The last name of this customer.
- `address1`: The first line of the address of this customer, as specified in his/her contact information.
- `address2`: The second line of the address of this customer, as specified in his/her contact information,
- `city`: The city, as specified in his/her contact information.
- `organization_name`: The organization name of this customer
- `postal_code`: The zip or postal code of this customer
- `state_province`: The state or province of this customer.
- `username`: The user name that this customer needs to login to **jBilling**.
- `password`: The password that this customer needs to login to **jBilling**.
- `user_id`: This customer's unique identification number. This could be useful for your customer service to quickly locate this customer's account.
- `company_id`: This is your company unique identification number, which is needed for your customers to login to **jBilling** (unless it is specified in the URL).
- `company_name`: This is your company's name.

In addition to these simple variables, there are other complete objects with a lot of information. You can access this information using Velocity's features (see section later):

- `contact`: This is a `ContactDTO` object with the customer's primary contact information.
- `user`: This is a `UserDTO` object with the customer's key account information.
- `company_contact`: This is a `ContactDTO` object, with your company's contact information.
- `credit_card`: This is a `CreditCardDTO` object, with the customer's credit card information.

## Using Velocity template engine

Velocity is an open source template engine that is part of the apache software foundation (<http://velocity.apache.org/>). With it, we enable jBilling's notifications to have variables and even embedded logic. For example, for an invoice total we need a variable; but to display the invoice lines, we need a way to loop over each invoice line to display it. We can't know how many invoice lines every invoice will have when we are writing the invoice email notification!

This section will explain why and how jBilling implements the notification templates with Velocity, but it is not a replacement for Velocity's documentation. Velocity is a feature-rich product, we encourage you to read its documentation or some of the books written about it.

### Variables and objects



As mentioned before, with just a '\$' we indicate the presence of a variable. There are many simple variables, but then there are also complete objects exposed as template variables. For example this:

```
$first_name
```

... will produce the same results as this:

```
$contact.firstName
```

This is because the first is just a simple variable that **jBilling** adds for convenience, while the second form uses the 'contact' object which has all the customer's contact information. With Velocity, you can 'navigate' through the object structure, that is why we can access the field 'firstName' from the 'contact' object.

The contact object is of type ContactDTO. You can access any of its fields. To find out which fields this object (or any other object) has, please download jBilling's source code. The integration guide is also a source of documentation of jBilling's object model.

### Logic

Velocity implements its own scripting language that includes typical constructs such as 'if', 'for', etc... This is very useful when trying to display the lines of an invoice:

```
#foreach ($line in $invoice.invoiceLines)
    Qty: $line.quantity - $line.description - $line.amount
#end
```

The above loop will produce something like this:

```
Qty: 1 - Subscription to monthly banner - 100
```

```
Qty: 4 - Additional fees - 44
```

....

There are many other applications for embedded logic within notification templates, but keep in mind that templates should remain simple and easy to change by non-technical users.

### Tools

As good as Velocity is, you will find the need for some additional functionality when it comes to show exactly what you want to the customer. For example, in the invoice line from above, may be it would have been better to show this:

```
Qty: 1 - Subscription to monthly banner - $100.00
```

Note the formatting of the money value. It includes the currency symbol (\$) and the cents.

There are a number of tools available for Velocity under the subproject 'Velocity Tools / Generic Tools' (<http://velocity.apache.org/tools/releases/1.4/generic/>). For the previous example, you would use the 'NumberTool' which you can access through the variable 'tools-number'. **jBilling** makes all these tools available for you as variables:

Variable name	Tool
---------------	------

tools-date	DateTool
tools-math	MathTool
tools-number	NumberTool
tools-render	RenderTool
tools-escape	EscapeTool
tools-resource	ResourceTool
tools-alternator	AlternatorTool
tools-valueParser	ValueParser
tools-list	ListTool
tools-sort	SortTool
tools-iterator	IteratorTool

Here is an example of the 'DateTool' used to format a date:

```
$tools-date.format("MM/dd/yyyy", $payment.paymentDate)
```

The date coming from the payment object will be rendered as '02/10/2009' rather than the default Java date format: 'Fri Apr 10 15:27:32 PDT 2009'.

## Notification Templates

Some notifications have their own specific variables on top of the common variables listed above.

We will now review these notifications. Note that some have additional variables to help you add more information to the message:

### Invoice (email):

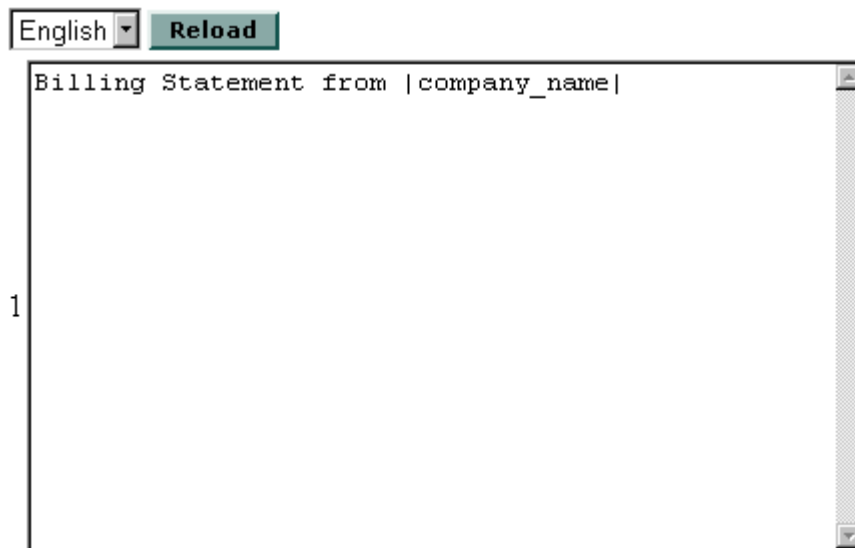
This is the notification sent to your customers when a new invoice is generated by the billing process. The following are additional available variables:

2. `total`: The total amount of this invoice.
3. `due_date`: The due date.

4. `notes`: The associated notes of this customer. This will only be displayed if the related notification preference is selected.
5. `id`: A number that acts as a unique identifier of this invoice.
6. `number`: The invoice number.
7. `invoice`: The `InvoicedTO` object with all the invoice's fields

#### Example

In our example, *Trend* clicks on the radio button beside **Invoice (email)** and writes in the first text box (the one where the subject of the e-mail appears):



The screenshot shows a web form interface. At the top left, there is a dropdown menu set to 'English' and a 'Reload' button. Below this is a large text input field containing the text 'Billing Statement from |company\_name|'. To the left of the text input field, there is a small vertical label '1'. The text input field has a vertical scrollbar on the right side.

Then in the second box, *Trend* writes the notification body. Note the extra field 'entityID' by the URL. This is important to avoid having your customers having to enter your company ID every time they login:

```
Dear |first_name| |last_name|,

This is to notify you that your latest invoice
(number |number|) is now available. The total
amount due is: |total|. You can view it by login
in to:

https://application.sapienter.com/billing/user/login.jsp?entityId=|company_id|

For security reasons, your statement is password
protected.
To login in, you will need your user name:
|username| and your account password: |password|
```

**Submit**

### Invoice (paper):

Even if all your customers will be notified about their invoices by email, you still need to provide text for this notification. The text is used for two text boxes which appear in the PDF format of the invoice.

Using the default paper invoice design, the first box will be text showing up at the top of the invoice and the second box, text featuring at the very bottom. Please note that the common variables described at the beginning of this section do not apply for this notification.

### Invoice Reminder:

This notification's purpose is to remind your customers that an invoice had been sent to them. When this option is selected (see section "Invoice Reminder" below for more detail), one or several e-mails will automatically be sent to your customers at intervals that you will have previously chosen.

The messages will be sent after an invoice has been generated and until that invoice is paid or reaches its due date (whichever comes first).

Let's see an example if *Trend* decides to use this notification. In the first box, *Trend* writes for subject of the email:

Invoice reminder

And in the second box, the body of the message:

Dear \$first\_name \$last\_name,

Trend wished to kindly remind you that you have received an invoice for which we have not received a

payment yet. Please keep your account up to date and submit a payment as soon as possible.

Regards,

Trend's Billing Department

## Payments

These two notifications (failed and successful) will let your customers know about the result of a payment attempt. The system automatically submits one of these when a payment has been processed in real-time using a payment processor.

Payment methods that fall in this category are credit cards, direct debit and ACH. When you simply enter a payment, without **jBilling** doing any processing through a payment processor, you can choose to send a notification by clicking on the submission link after entering the payment. This applies to cheques and any other payment that doesn't involve real-time processing.

These additional variables are available for payment notifications:

1. `method`: The payment method, such as 'Visa', 'Cheque', etc
2. `total`: The total of this payment.

Let's see an example for *Trend*. For the 'Payment (failed)', in the first text box (the subject of the email) *Trend* writes:

Payment failed

And in the second box:

Dear `$first_name` `$last_name`,

The payment you have attempted to submit has failed. Please try again or contact our Billing Department for more details.

Regards,

Trend's Billing Department

For 'Payment (successful)' in the first text box (the subject of the email), *Trend* writes:

Thank you for your payment

And in the second box:

Dear \$first\_name \$last\_name,

We have received your payment done with \$method for a total of \$total dollars. Thank you for your business.

Regards,

Trend's Billing Department

### 'Ageing' notifications:

These are the notifications named 'User ...', such as 'User Overdue'. You will need to enter the text for those related to the ageing steps that you've selected in the 'Ageing' options. Refer to the Ageing section of the System chapter for more information.

*Trend* chooses to notify by e-mail any late payer up to 3 times over a set period of time. Here is the first message a late paying client will receive:

Clicking beside "User Overdue" *Trend* writes in the first box (which is the subject of the e-mail) the following text:

Overdue Balance

And in the second box:

Dear client,

Our records show that you have an overdue balance on your account. Please submit a payment as soon as possible.

Regards,

## Trend's Billing Department

In "User Overdue 2" the second message sent to a late payer will be more firm and in "User Overdue 3", it will warn the faulty customer that her case will be transferred over to Collections if she does not pay within the next 24 hours.

### Payout reminder

This is a partner related notification, so if you are not working with partners or affiliates you should ignore it. The system sends this notification to your billing administrator when a partner is due for a payout.

There are two variables: `partner_id` for the number of the partner that is due a payout, and `total`, which represents the total amount that should be paid. Please note that the common variables described at the beginning of this section do not apply for this notification.

### Partner payout:

Again, this is a partner related notification, so if you are not working with partners or affiliates you should ignore it. **jBilling** sends this notification only when processing automatic payouts.

The partner being paid will receive this email. The following are variables for this notification: `period_start` and `period_end` will represent the period that has been included in this payout. The total amount of the payment will be associated with the variable `total`. Please note that the common variables described at the beginning of this section do not apply for this notification.

## Email Delivery Parameters

### Introduction

**jBilling** will send emails to your customers on your behalf for many reasons. Sending them their invoices is one, but there are many more reasons, such as reminders, failure to receive a payment, balance overdue, etc.

Emails need a mail server to be delivered. When the notifications engine of **jBilling** needs to send an email, it will connect to a mail server using the email delivery parameters. You can use a mail server from your ISP provider, or set up your own mail server. It is possible also that you are running **jBilling** from a company that is hosting **jBilling** for you and include a default mail server.

The best option is if you run your own mail server, but in any case, reviewing and configuring the email delivery parameters will save you and your customers some confusion.

### Why not to use the default parameters

Each email delivery parameter has a default value. If you do not specify any parameters, the system will still attempt send emails using those defaults. Depending on

the version of **jBilling** you are running, and where is that **jBilling** is running, these defaults values can vary greatly.

When the system sends an email using just the default parameters, your client receiving it can get quite confused. A typical scenario of default values would be at the top of the email: "From: [admin@jBilling.com](mailto:admin@jBilling.com)". And should the customer wish to reply, the reply will be sent back to [admin@jBilling.com](mailto:admin@jBilling.com). Therefore you will not receive that reply.

If you do not configure a mail server, all emails might just fail to be delivered, or the mail server of the hosting company using **jBilling** is going to be used. So if an email sent to one of your customer bounces back, it will bounce back to the hosting server, not to you. Then, there is no way for you to find out that a customer has not received your notification. Also, your clients will be able to see in the email's properties that the email they just received was not sent by your company but by the hosting company.

## The parameters

It is possible to configure all those parameters, or none of them, or only some. But we do recommend that you configure at least the first two in order to avoid confusion on your customers' part, so they know that the invoices they are receiving are actually from you. This is the very minimum and it is assuming that you are using **jBilling** from a hosting company that provides you with a mail server. Otherwise, you'd need to set all the parameters to specify your mail server.

Go to **Notifications** and then click on **Parameters**.

- **from\_name**: This is the name that will appear in your clients' "From" address field at the top of their email.
- **reply\_to**: If a customer receiving an email clicks on "Reply", she will be replying to the address specified in this field.
- **bcc\_to**: Here you can enter an email address that will receive a copy of every single email that the system sends to your customers. You can use this to monitor what is being sent to your customers, or to have an archive of all the communication done by **jBilling** to your customers.

The five other parameters specify the mail server. You will need to contact your Internet service provider (ISP) or your network system administrator for the correct values.

- **smtp\_server**
- **from**
- **username**
- **password**
- **port**

Here is how *Trend* Configures the Email Delivery Parameters:

```
from_name:      Trend Billing Department
reply_to:       billing@trend.com
```



from: billing@trend.com  
username: trend  
password: vanilla  
smtp\_server: smtp.trend.com  
port: 25

## Notification preferences

There are a number of preferences that affect your notifications. These are grouped in a screen you can access by clicking on **Notification** and then **Preferences**.

### Self delivery paper invoices

When you have a customer with 'Paper' as a delivery method the billing process will generate a PDF invoice and include the resulting document in a file, along with the invoices of all the other customers that also have 'Paper' for delivery method.

This is done to simplify printing and mailing paper invoices. Instead of having to go to each invoice and download the paper version of it for printing, you will be having one single file containing all the invoices to be printed.

The system will email this file to the billing administrator if this preference is set or to the **jBilling** system administrator if it is not set. In other words, when you set 'Self delivery paper invoices' you are indicating that you want to print and mail the invoices yourself.

### Customer's notes on invoices

You customers can have personalized notes with any text. This text can be copied to an invoice when it is being generated by the system. If you want the notes to go in the invoices, mark this preference. Leave it unset to prevent your customer from seeing the notes in future invoices.

Once an invoice is generated and the notes are copied to it, the notes in the invoice will not change even if you change the customer's notes. When you change the notes of a customer, any *new* invoice generated will have the modified notes.

It is a common situation to add some notes to a customer, then download an existing invoice in PDF format and expect to see the notes. The notes that you've entered will be included in the *next* invoice that the system will generate for the affected customer.

Paper invoices will show the notes just below the list of items, while email invoices have a variable that allows you to include the notes anywhere you want.

### Purchase orders about to expire

You might want to let know your customers that a purchase order is reaching its 'Active until' date. Your customer can then renew a service that is subscribed to. For this, the purchase order will have to have the attribute 'Notify customer on expiration' set, as well as some date in the 'Active until' field.

The system can send between one and three emails per purchase order. When these emails are going to be sent will depend on the preferences 'Days for order notification' under **Notification Preferences**. These indicate how many days before the purchase order's 'Active until' each email is going to be sent. If instead of three reminders, you'd like to send two, simply leave the preference "Days for order notification – 3' blank.

There is one notification per step. You can set the text of the emails by clicking on **Notification** and then on any of the 'Order about to expire' notifications.

## Invoice reminders

This feature's purpose is to remind your customers that an invoice had been sent to them. It is called a reminder because the invoice has yet to be paid, but it is not past its due date.

When this option is selected, one or several e-mails will automatically be sent to your customers at intervals that you will have previously chosen. They will be sent after an invoice has been generated and until that invoice is paid or reaches its due date (whichever comes first).

Keep in mind that invoice reminders are different than the notifications from the ageing process. In a nutshell, **jBilling** sends invoice reminders *before the due date* of an invoice, while the ageing process takes over *after the due date*. Also, invoice reminders are just that, reminders; while the ageing process involves notifications and changing the status of the customer account.

Click on the **Notification** tab at the top of the screen, and then on **Preferences**. To activate the Invoice Reminders feature, go to the "Use invoice reminders" line and check the box located to the right.

In the box below that, you indicated the number of days you wish to have between the generation of the invoice and the first reminder. The last line allows you to indicate the number of days you wish to have between the subsequent reminders, should you wish to have more than one. Beware that if you put in that box a small number, your customer might receive many reminders before the due date of her invoice and could end up tuning out to what you are trying to say.

### Example

As you will see in the section that addresses the Billing Process, *Trend* chooses to give to its clients 30 days before their invoice becomes overdue. *Trend* wishes to remind them up to 3 times before the due date that an invoice has been generated and should be paid as soon as possible.

This is what Trend enters:

Use invoice reminders	<input checked="" type="checkbox"/>
Number of days between invoice generation and first reminder	<input type="text" value="15"/>
Number of days between subsequent reminders	<input type="text" value="5"/>
<input type="button" value="Submit"/>	

This is what will then happen:

Let's say that the invoice is generated on the first day of the month. If the client has not paid by the 15<sup>th</sup>, the text that was composed previously (going to Notification and then Compose) will be emailed. Should the client still not pay, a message will be sent again 5 days later, on the 20<sup>th</sup>, and again on the 25<sup>th</sup> of the month. If by the due date the client had failed to pay, her account will then get into the ageing process.

# ***Chapter 8***

## ***System Configuration***

*Setting parameters to suit  
your business rules*



## Branding

By default, jbilling web-based application has the jbilling logo in the top left corner, as well as jbilling's image: fonts, colors, etc. You might want to change these for your own colors and logo. This way, when your customers login to the system, they will find the familiar 'look and feel' from your company.

Please note that the branding of jbilling can only be done within the parameters of the Jbilling Public License (JPL). You can change the parameters described in this document, while other references to jbilling and Sapienter Billing Software have to be left in place. For more information, the JPL is available at <http://www.jbilling.com/JPL>

Branding the application to fit your needs is very simple. There are two parameters for you to modify. By default they are blank (empty), which means that jbilling's defaults will be used.

### Logo URL

This is the location your logo for the top left corner. The file has to be in any of the Internet supported formats (jpg and gif for example). You have to enter the complete URL of the location of the file, for example <https://www.yourcompany.com/images/logo.gif>.

If you have installed jbilling to run with encryption (where all the addresses start with 'https' instead of 'http'), you will need to provide the logo URL from a secured host as well. If you provide a location for you logo that is not encrypted (starts with 'http'), most web browsers will display a warning message when accessing every page.

### Cascade style sheet URL

Cascade style sheets provide a way to specify all the display attributes of a web page. This includes colors, fonts, text formatting, spaces between characters, etc. jbilling's web-based application relies on a .css file for all its formatting attributes. You can find this .css file at [http://your\\_host/billing/css/jbilling.css](http://your_host/billing/css/jbilling.css) (where 'your\_host' is the location of the host where you've installed jbilling, such as 'localhost').

Once you have modified this file with your preferences, you will have to put it in a web server and enter its location in the system by clicking on **System** and then **Branding**. The same issues regarding the 'http' and 'https' protocols described for the logo apply for this parameter as well.

## Currencies

You can sell your products and services in several markets that have different currencies. jbilling will invoice your customers in the currency that they are expecting, and will make any currency exchange calculations in the process.

The first step is to configure which currencies you want to use. Click on **System** and then **Currencies**. A list of the currently supported currencies will appear. jbilling ships with some pre-installed currencies. Adding new ones is not difficult, but involves inserting rows directly in the database and it is beyond the scope of this guide.

Make sure to set the check-box under the column 'In Use' for every currency that you want to use. The system will provide a default exchange rate as shown under 'System exchange rate'. This is how each currency compares against the US dollar. You can override this rate with your own. Make sure to click on 'Submit' once you have finished making your changes.

Once you have selected which currencies you will be using and their exchange rates, you can assign one of these currencies to each of your customers. This is done when the customer account is created, or by editing an existing customer. You can learn more about this in the User chapter.

Another important step is related to your items. You can provide each of them with prices in the different currencies that you are using. You only have to provide the price in one currency, and if the item is going to be sold in a different one, the system will perform the currency conversion. Still, you can provide a price in all the currencies. Doing so will prevent the system from doing any conversions, it will simply pick the prices in the right currency.

When you create a purchase order to a customer, the item's list will be displayed in the customer's currency. This price will follow the rules described above: if the item has a price defined for the needed currency, it will use it. Otherwise a currency conversion will take place.

## The ageing process

### Introduction

What happens when a customer hasn't paid her invoice and the due date has come and past? This is the issue that the ageing process addresses. The term 'Ageing' is given to reflect the several steps that a customer account goes through, starting with 'Active' and ending with 'Deleted'. This process **notifies your customers about their overdue invoices, and changes the status of that customer's account.** Go to the Ageing configuration screen by clicking on **System** and then **Ageing**.

*The ageing process can automate the suspension of non-paying customers.*

## Ageing steps

Warning: changing the Ageing setting might result in your purchase order to change to 'Suspended' status, and/or your customers being deleted. To learn more click [here](#)

Grace Period	<input type="text" value="5"/>
Call-back URL	<input type="text"/>
English	<input type="button" value="Reload"/>

Step	Status	Can Login	In Use	Days	Welcome Message	Failed Login Message
1	Active	Yes	Yes		<div>   <p style=fo	
2	Overdue	Yes	<input checked="" type="checkbox"/>	<input type="text" value="7"/>	You ave an overdue inv	
3	Overdue 2	Yes	<input checked="" type="checkbox"/>	<input type="text" value="10"/>	You ave an overdue inv	
4	Overdue 3	Yes	<input checked="" type="checkbox"/>	<input type="text" value="0"/>	You ave an overdue inv	
5	Suspended	No	<input type="checkbox"/>			
6	Suspended 2	No	<input type="checkbox"/>			
7	Suspended 3	No	<input type="checkbox"/>			
8	Deleted	No	<input type="checkbox"/>			

Let's go over the events that relate to the ageing process:

1. An invoice is overdue, because its due date is past the current date.
2. The grace period gives the customer a few more days before any action is taken.
3. After the grace period is over, the ageing steps are applied, depending on which ones you've configured.

You configure when and which of these events happen mostly through the following parameters. Note that *if you do not want the ageing process to take place at all, you just need to turn off all the check-boxes of the ageing steps and click 'Submit'.*

There are eight steps. The only one that is mandatory is the first one, 'Active', that is actually consider outside the ageing process. All your customers start in 'Active' status. If the have an invoice that is overdue, they will remain in 'Active' status for the number of days specified in the Grace Period.

When the grace period is over, the ageing process takes the customer to the first ageing step. This is the first step that has checked the 'In Use' check-box. A customer will remain in that status for the number of days specified in the 'Days' column.

When that period is over, the process takes the customer to the next step. The system will only move your customers through states that you have selected as 'In Use' by checking the 'In Use' check-box.

This automatic process of taking your customer through various ageing steps happens **only as long as the customer does not pay her invoices**. If she gets the invoice that is

*By submitting a payment, a customer gets out of the ageing process and back to 'Active' status*



overdue paid, she gets out of the ageing process and back to 'Active' status. The system can send an email notification for this event as well.

As you can see, you can select how many steps are involved (up to eight), and for how long a customer is in each step. Let's go over each of these parameters in more detail

## Grace period

For a customer to get into the Ageing process, one of her invoices has to go overdue. When this happens, the system will wait the amount of days that you specify under 'Grace Period' before moving the customer to the first step. The grace period allows for cheques to arrive by mail, for instance, should you have customers sending their payments using slower means.

## Steps

The key attribute of an ageing step is its status. The status of a step is pre-configured: step 1 is active, step 2 is overdue, step 5 is suspended, etc. Each of these statuses have very important consequences to a customer account. Let's review them:

3. Active: This is the normal status of a customer, before entering the ageing steps.
4. Overdue/2/3: A customer has failed to submit a payment before the due date. The customer will receive emails containing a text you will have selected and at a frequency of your choice (see example below). Other than this notification, there are no other changes in the customer account: all the purchase orders remain exactly the same.
  - Suspended/2/3: Once a customer's account is suspended, the system will update all the customer's active purchase orders to 'suspended' status, and therefore **stop generating invoices** for this account. The system also sends a notification to the customer.
  - Deleted: At this stage, a customer's account is **deleted from the system**. For obvious reasons, you have to be careful when using this step. Normally, you will only use this ageing step when you are sure a customer will not pay her invoices and you just want to remove her account from the system.

There is also a column called 'Can login'. This is not related with login in to jBilling. Your customers can always login into the system (except in the 'deleted' status). This way, they can take action to get up-to-date with their payments, like updating their credit card information or submitting a payment. The column 'Can login' is only relevant when integrating your system with jBilling through one of the integration APIs.

You can select which steps your customers will go through in the ageing process by using the 'In Use' check-box of each step. If the check-box is checked, the ageing process will use the step, otherwise it will be ignored.

The column 'Days' of each step represents the amount of days your customers will stay in this step before moving on to the next step. For the last step, this value has to be zero. A customer reaching the last ageing step will stay in that state until she actually pays and is back to 'Active'.

The 'Welcome Message' is the message that will be displayed right after login. Here you can also specify the welcome message for the Active status. This is an important

message that will be displayed to all your active customers immediately after they login to jbilling. Please note that this text accepts HTML tags, you can use these tags to customize the look of your welcome screen.

You might not want your customers to ever login to jbilling. If that is the case, the welcome message is irrelevant for you.

The 'Failed login message' is only relevant when using an integration method. When a customer wants to access your services, your system can query jbilling for this message to be displayed.

For each step that you select (marking the 'In use' flag), **you will have to specify the notification email message**. You can do this by clicking on menu option **Notification** and then on each of the notifications that apply to the statuses you selected for your Ageing process.

*Each ageing step is related to a notification.*

For example, if you've selected the steps 2 (Overdue), 5 (Suspended) and 8 (Deleted), you will have to enter the text for the notifications User Overdue, User Suspended and User Deleted. Additionally, you will need to enter the text for the notification 'User Reactivated', which is sent when a customer in the Ageing process goes back to 'Active' status after a payment.

## Example

As you can see in the screen-shot earlier in this chapter, our example for *Trend* has a 5 day grace period, which indicates it wants to have 5 days go by before a customer gets notified by e-mail that their payment is late. In other words, a customer will be bothered with emails only 5 days after an invoice is actually overdue.

This is done mostly because many of *Trend's* customers pay by cheque, and this kind of payment requires someone from the accounting department to actually login to jbilling and manually enter the payment. Since there is some human intervention required, *Trend* chooses to use a grace period of five days.

For the ageing steps, *Trend* switches on 3 steps: Overdue, Overdue 2 and Overdue 3. There are no steps from the 'Suspended' group. *Trend* prefers not to automate these steps because they involve more than simply sending emails asking customers to pay their late invoices. Suspended steps go farther and suspend purchase orders that otherwise would be active.

For *Trend* this is not a good choice. It does not have such a large number of customers that would require to automate this part of the collection process. It prefers to take those customers that had reached the 'Overdue 3' step and give them a call directly before any further action is taken.

The idea of this example is to show you that the best choice for the ageing process configuration depends on many factors on how you run your company: how large it is? is the relationship with your customers personalized, or you favor a fully automated system? *Trend* finds a balance by automating part of the process with jbilling, and leaving the rest to its human resources.

Let's take a closer look to the parameters of these three steps for *Trend*: We will assume an invoice with a due date of June 1<sup>st</sup>.

Overdue: (7 Days). The message related to this step is sent right after the grace period is over, on June 6<sup>th</sup>. A customer would be in 'Overdue' state for 7 days, starting on June 6<sup>th</sup> and ending on June 13<sup>th</sup>.

Overdue 2: (10 Days). The message related to this step is sent on June 13<sup>th</sup>, when the customer is moved from 'Overdue' state to 'Overdue 2' state. A customer would be in 'Overdue 2' state for 10 days, starting on June 13<sup>th</sup> and ending on June 23<sup>rd</sup>.

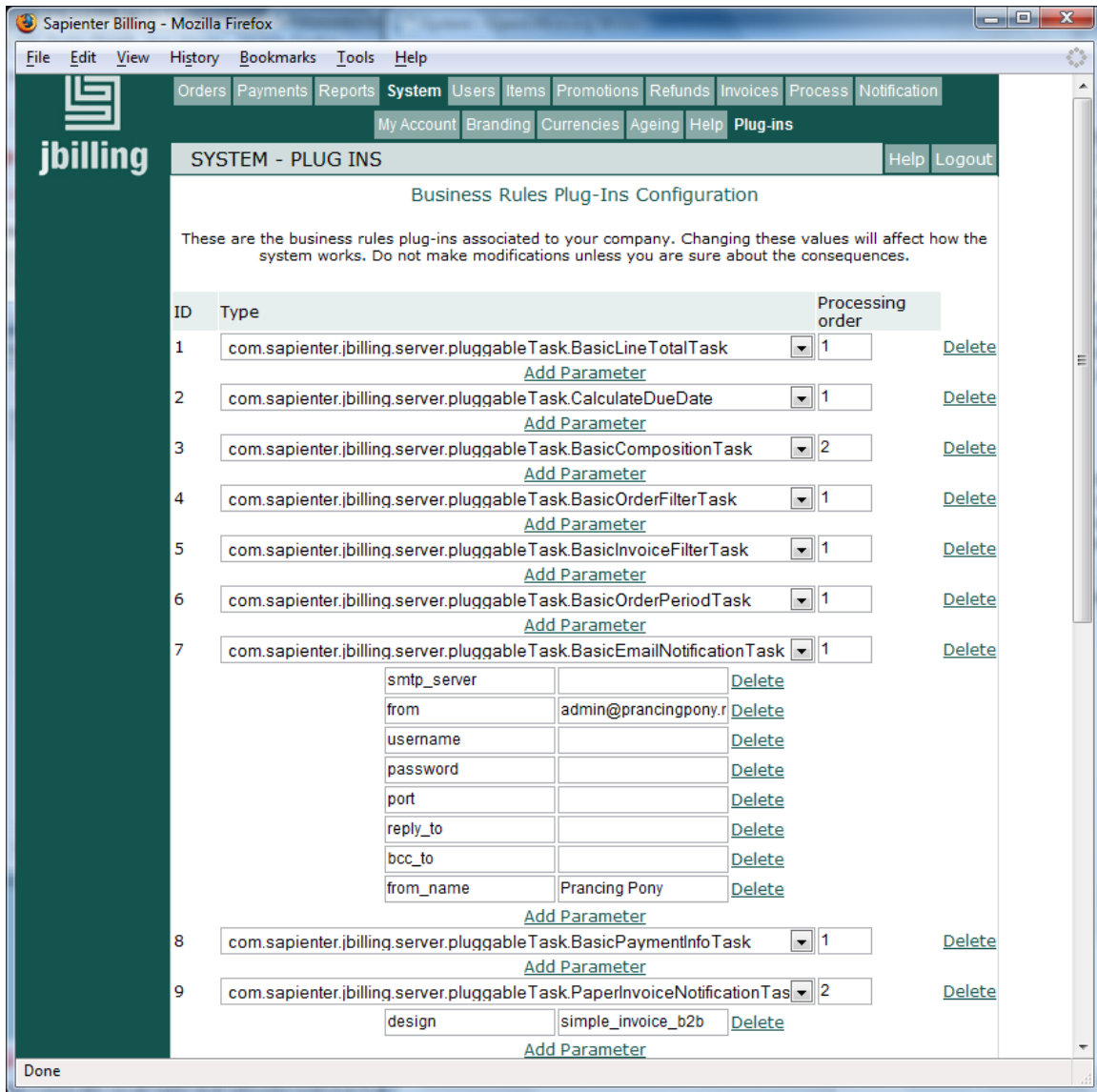
Overdue 3: (0 Days) Since this period is the last one selected; the value next to it needs to be zero. The message related to this step will be sent on June 23<sup>rd</sup>. From here the only change of status that can happen automatically is when the customer pays and she is back to 'Active' status. The only other way that her status can change is by a manual change: an employee of *Trend* editing her account and changing her to 'Suspended', 'Deleted' or other arbitrary values.

## Plug-in Configuration

At the very core of jbilling there are modules with most of the business logic code. These modules have been organized following a 'plug-in' architecture: a module can be easily replaced by another one, thus altering the behavior of jbilling. We call them 'plug-ins' because they can be swapped without having to deal with the source code: you don't need a programmer to do this.

Plug-ins are Java classes, that is why the names follow the Java naming conventions. There are a number of plug-ins available by default with the standard jbilling. The details of each of these plug-ins such as their parameters are out of the scope of this document. You will only need this when you want to extend or modify a plug-in, or may be create your own.

You can add, remove and change a plug-in by clicking on System and the Plug-ins. A list with all your plug-ins is displayed:



Each plug-in has three fields:

**ID:** This is an internal unique number that helps to identify this plug-in. This is largely for internal use of jBilling, but might be useful to you at times. For example, the 'router' plug-in that allows you to assign a payment processor to a user, needs to know about other plug-ins. It does so by taking the IDs of those plug-ins as its parameters.

**Type:** This is the Java class name that will be used by jBilling when a plug-in of this category is needed. For example, when jBilling needs to send a notification, it will go look into your configuration to see which plug-in is there that belongs to the notification category.

**Processing order:** Some times you will have more than one plug-in for the same category. Let's see an example with payment processors. You could have two accounts with two different payment gateways. You can add them both as plug-ins, but you need

to give one the processing order '1' and the other one a '2'. *They can not have the same processing order, otherwise an error will happen.* The system will always start by using the plug-in with processing order 1. If that gateway is unavailable, it will try the next one (this is normally called 'fail over strategy'). You can have any number of payment processors configured this way.

Additionally, a plug-in can have parameters. Not all do, but it is not unusual. A parameter gives the plug-in some additional information on how to behave, and makes the plug-in more easily reusable.

For example, the 'PaperInvoiceNotificationTask' is responsible for generating a PDF invoice. It takes one parameter: 'design' with the name of the file that has your paper invoice design. You can create a new design and simply change this parameter to start using it. This way, it is easy to have many designs available and change the active one at any time.

### Changing the plug-ins configuration

To add a new plug-in, go to the bottom of the page and click on the 'Add a new plug-in' link. This will create a new plug-in with a default value. You will have to select the class name of the plug-in you want to add from the drop-down list. Click on Submit when you are done.

You might then want to add some parameters to this plug-in. For that, click on the 'Add parameter' link just below your recently added plug-in. A new parameter with a default value will appear. Change the default value for the parameter name and value that you want and click 'Submit'.

Deleting a plug-in or parameter is equally easy. Just click on the 'Delete' link on the right side of the plug-in or parameter that you want to delete.

# ***Chapter 9***

## ***Sub Accounts***

*Grouping customers*



## Introduction

In many occasions, each of your customers actually represents many individual customers, gathered under one organization. These individual customers are the end users of your services, but they should not be invoiced directly. The invoice should go to the organization and should include all the charges of each of the end customers.

A typical example is a company providing cellphones to their employees. If you are the cellphone provider, your customer is the company, not the employees. But they are the end users of your services. The company wants one invoice, but it has to clearly separate the usage of each of its employees. You do not want to send an individual invoice to each employee, they are not the ones paying.

jBilling allows this multiple-level customer organization through its sub-account support. The organization will then 'own' many sub-accounts. We can visualize this as the organization being the 'parent' account, and each of the end customers or sub-accounts being the 'children' accounts.

The main concept behind this is that a customer account can be a parent account that is linked to many children account. Both the parent and the children accounts can have their own purchase orders representing the services that they are subscribed to or have bought from you.

When the billing process generates invoices, it will create **just one invoice for the parent account**, including all the charges from the purchase orders belonging to the children accounts. The resulting invoice will be divided in sections, on per sub-account, with a description of the account, the items and a sub-total.

## When to use sub-accounts

As a general rule, you should organize your customers as parent-children when the child account can be identified as the end user of your services, and the parent account the one that receives (and pays) the invoice. Putted in a different way, if the one using your services is different that then one paying for them, there's a good change you will need to use sub-accounts.

This general rule applies to many practical situations that initially can look quite different from one another, yet they share the same account structure. Let's see some common ones:

A large account, with multiple locations: Your customer is an organization that has multiple locations or branches. Each of these locations is subscribed to your services in a fairly independent way. Still, you are to send one invoice to the head office, where it is going to be received and paid. This invoice will clearly state all the charges for each of the locations.

An organization with many users: This would be the case for a mobile phone company selling to businesses. A typical client will be a company with many employees. Some of these employees will receive a cell phone paid by the company. This client will need to receive one single invoice per period with the details of the charges related to each of its employees. Therefore, the company will be represented as a parent account, and each employee as a child account.



A reseller of your services: A reseller will buy your services and resell them to its customers. The reseller will take care of billing these customers in its own terms. You will have to invoice the reseller for all the services that have been resold. You can set up this situation with the reseller being a parent account, and each of the end users as a child account. The end user will not receive an invoice, the reseller will. The invoice will detail which end users are included and with which services.

## Creating a parent-children account

We need to create the parent account first. To do this, click on **Users**, then **Customers** and then on the link 'New'.

New User.

Enter the login information for a new user.

Login name	<input type="text" value="rbts"/>
Password	<input type="password" value="••••••••"/>
Repeat Password	<input type="password" value="••••••••"/>
Email	<input type="text" value="info@rbts.com"/>
Currency	<input type="text" value="United States Dollar"/> ▼
Partner ID	<input type="text"/>
Parent ID	<input type="text"/>
Allow sub-accounts	<input checked="" type="checkbox"/>

Enter the new customer's information just as a normal new account, except for the field 'Allow sub-account'. Make sure that this check-box is checked. This will indicate that the new customer will be a parent account.

Click on 'Submit' and take notice of the number that the system has assigned to this new user. We will need this number to create children account of this parent.

Edit.

Update user information.

The new user has been created.

Number	3666
Type	Customer
Login name	rbts
Password	<input type="text"/>
Repeat Password	<input type="text"/>
Status	Active
Language	English
Currency	United States Dollar
Parent ID	
Allow sub-accounts	Yes
Invoice delivery method	Email
Due date	<input type="text"/> Day

Notice also, that the field 'Allow sub-accounts' is shown as 'Yes'. This confirms that our new customer is a parent account.

We will skip in this example the steps to enter this customer's contact and payment information. To learn more about this, consult the users documentation.

The next step is to create a new child account. Click again on **Users**, then **Customers** and then on the link 'New'. Enter the child account login information along with the number of the parent account:

## New User.

Enter the login information for a new user.

Login name	<input type="text" value="rbts-1"/>
Password	<input type="password" value="••••••••"/>
Repeat Password	<input type="password" value="••••••••"/>
Email	<input type="text" value="info@rbts.com"/>
Currency	<input type="text" value="United States Dollar"/>
Partner ID	<input type="text"/>
Parent ID	<input type="text" value="3666"/>
Allow sub-accounts	<input type="checkbox"/>

Since children accounts can not login to jbilling, the login name, password and email are not going to be used. Still, the system requires these fields so you will need to enter some information.

For children accounts, it is **very important to enter the First Name and Last Name of the contact information**. These are the fields that will be used as a header in the invoice when the items belonging to this child are listed.

## The differences between sub-accounts a common accounts

Parent and children accounts work pretty much the same as common accounts. Still, there are a few differences that are important to mention:

### Listing parent and children accounts

When you click on **Users** and then **Customers** the list of customers does not include children accounts. **Only normal accounts or parent accounts are listed**. To view the children accounts associated to a parent account, start by selecting the parent account.

The usual customer screen shows up, with a few differences. First, the number of children account is added to the user's information. Also, a link to this customer's list of children accounts is available:

CUSTOMERS - VIEW

Customer Order List  
Customer Invoice List  
Customer Payment List  
Customer Refund List  
**List of sub-accounts**

Customer Details

This is a snapshot of this customer, including contact and credit card information a

User	
Number	3666
Login name	rbts
Type	Customer
Language	English
Status	Active
Currency	United States Dollar
Last Login	
Number of sub-accounts	<b>1</b>

[Click here to edit this user](#)

**Notes**

[Click here to edit this note](#)

## Purchase orders

Parent and children accounts can have their own purchase orders. These will be included in the invoices generated for the parent account.

### For children

To create a purchase order for a children account, you follow the exact same steps for the creation of a purchase order for a normal account. The only difference is that you have to first select the parent account from the list of customers to create the new purchase order. Since this is a parent account, the list of children accounts will be displayed. Now you have to select the children account that will own the new purchase order.

### For parents

Follow the same steps as when creating a purchase order for a normal customer. When you select the customer that is a parent account, you will see a list of the children account that this parent has. Along with this list, there is a link 'Use parent'. Click on this link to indicate that you want to create a purchase order for the parent account.

## Children accounts for this customer

Account to create a purchase order, or if you want to create one for the parent, click on 'Use Parent'

Use Parent

Number	Organization	Last Name	First Name	Login name	
3569	Trend Inc	Doe	Joe	child2	<input type="radio"/>
3568	Trend Inc	White	Peter	child1	<input type="radio"/>

## Sub-accounts login

Children accounts can not login to jbilling. These accounts do not receive invoices or submit payments, so there would be little value for them to login to jbilling.

On the other hand, parent accounts will find all their billing information and history by login in to jbilling, just like a normal account. Additionally, parent accounts can list the sub-account that they own and verify their information

Orders Payments Account Refunds Invoices **Sub-accounts**

NTS - LIST

## Children accounts for this customer

To view Customer's Details click the radio button.

Number	Organization	Last Name	First Name	Login name	
3569	Trend Inc	Doe	Joe	child2	<input type="radio"/>
3568	Trend Inc	White	Peter	child1	<input type="radio"/>

## Invoices

Children accounts do not receive invoices. Instead, all their related purchase orders are included in the invoice sent to their parent.

Parents receive an invoice that compiles the charges for all its children. Let's take a look to the lines of an example invoice:

This invoice lines:

Description	Quantity	Price	Amount
Plan A Monthly Lease Fee	1	C\$ 263.68	263.68
Plan B Monthly Lease Fee	1	C\$ 396.18	396.18
<b>1 - Sub account: User ID 3568 Peter White</b>			
Plan A Monthly Lease Fee Period from 11/13/2004 to 12/12/2004	1	C\$ 263.68	263.68
Plan C Monthly Lease Fee Period from 11/13/2004 to 12/12/2004	1	C\$ 528.68	528.68
Basic Set Up Fee Period from 11/13/2004 to 12/12/2004	1	C\$ 265.00	265.00
<b>Sub account Total</b>		<b>C\$</b>	<b>1057.36</b>
<b>2 - Sub account: User ID 3569 Joe Doe</b>			
Plan A Monthly Lease Fee Period from 11/13/2004 to 12/12/2004	1	C\$ 263.68	263.68
Plan B Monthly Lease Fee Period from 11/13/2004 to 12/12/2004	1	C\$ 396.18	396.18
Vanity Set Up Fee Period from 11/13/2004 to 12/12/2004	1	C\$ 662.50	662.50
<b>Sub account Total</b>		<b>C\$</b>	<b>1322.36</b>
Goods and Services Tax		C\$	46.19
<b>TOTAL</b>		<b>C\$</b>	<b>3252.34</b>

The header for each children section uses the first name and last name of the primary contact of the children account. The items in the invoices are order by the item number (just like in a normal invoice), but also grouped by sub-account. You can also see that this invoice had some items from a purchase order that belongs directly to the parent account. These items are listed first.

# ***Chapter 10***

## ***Blacklist***

*Filter payment requests*

## Overview

The blacklist is a list of customer and/or payment information that is used to filter payment requests, which are expected to fail, before they reach a payment processor gateway. There are currently six filters implemented: user id, name, phone number, address, credit card and IP address. Different filter types can be enabled or disabled without affecting the data in the blacklist.

Administrators and clerks have the ability to add or remove individual customers to/from the blacklist through the GUI. The GUI also shows any matches the customer has in the blacklist.

When the aging process takes a customer status to 'Suspended' or higher, all their available details, such as used id, credit card, address, etc., are added to the blacklist. The idea is that this customer tries to resubscribe later with any of the same details, they automatically blacklisted.

Batch upload of a comma-separated values (CSV) blacklist file through the GUI is also possible. It can either add to or replace existing uploaded blacklist entries.

## Activating the Blacklist

To active the blacklist, two plug-in need to be added to your system configuration, as well as a preference enabled with the id of the payment filter plug-in configuration.

### Payment Filter Plug-in Setup

Click on **System**, then **Plug-ins** to access the plug-in configuration page. By default, you will not be replacing an existing plug-in, but adding a new one: Click on the 'Add a new Plug-In' link.

The new plug-in is the following:

```
com.sapienter.jbilling.server.payment.tasks.PaymentFilterTask
```

It's important that plug-in is configured to be the first payment processor in the plug-in processing order. This is so a payment only reaches a real payment processor if it isn't first stopped by the blacklist payment filter. See 'Plug-in Configuration' under the 'System Configuration' chapter.

### Plug-in Parameters

By default, all filter types are disabled. Each filter type you wish to use must be explicitly enabled as a plug-in parameter. The following table lists all possible parameters. Setting a value of false or removing a parameter causes it to be disabled.

Name	Value
enable_filter_user_id	true
enable_filter_name	true



enable_filter_cc_number *	true
enable_filter_address	true
enable_filter_phone_number	true
enable_filter_ip_address **	true
ip_address_ccf_id **	3

Notes:

\* In jBilling 1.1.2, this was unfortunately left as 'enable\_filter\_test'.

\*\* The IP address is a custom contact field (CCF). If this filter is enabled, the id of the IP address CCF must be provided as the value of the 'ip\_address\_ccf\_id' parameter. See the section 'Custom contact fields' under the chapter 'Users'.

## Blacklist Preference Setup

Preference type 43 needs to be set to indicate the id of the payment filter plug-in. See 'Appendix A' for information on adding preferences. The plug-in id is the number next to the class name of the configured plug-in. The configuration might look like the following screenshot:

The screenshot shows a configuration interface for preferences. The first preference (ID 460) is for the class `com.sapienter.jbilling.server.payment.tasks.PaymentFilterTask`. It has the following parameters:

- `enable_filter_user_id`: true
- `enable_filter_name`: true
- `enable_filter_cc_number`: true
- `enable_filter_address`: true
- `enable_filter_ip_address`: true
- `enable_filter_phone_num`: true
- `ip_address_ccf_id`: 3

The second preference (ID 470) is for the class `com.sapienter.jbilling.server.payment.blacklist.tasks.BlacklistUserStatusTask`. Below the preferences are buttons for `Add Parameter`, `Add a new Plug-In`, and `Submit`.

If the id of the PaymentFilterTask plug-in is 460 and the next preference id will be 100, the SQL would be something like this:

```
INSERT INTO PREFERENCE (ID, TYPE_ID, TABLE_ID, FOREIGN_ID, INT_VALUE,
STR_VALUE, FLOAT_VALUE)
VALUES (100, 43, 5, 1, 460, NULL, NULL)
```

## Blacklist Suspended Customer Plug-in Setup

If you would like customers that are moved into the 'suspended' status or higher from a lower status to have their details automatically blacklisted, the following plug-in needs to simply be added through the plug-in configuration screen (**System**, then **Plug-ins**):

```
com.sapienter.jbilling.server.payment.blacklist.tasks.BlacklistUserStat  
usTask
```

## Blacklist Matches

When viewing the customer details screen (click **Users**, then **Customers** and select a customer), an information box lists any blacklist matches for that particular customer. It only includes matches for the enabled filters. Below is an example:

[Click here to edit this credit card](#)

Invoice
No invoice was found

Blacklist Matches
User id is blacklisted.
Name is blacklisted.
<a href="#">Click here to remove this user from the blacklist</a>

## Add/Remove Link

The add/remove link on the bottom of the 'Blacklist Matches' box, shown above, allows administrators or clerks to add or remove a customer's user id from the blacklist. This can be done whether the user id blacklist filter is enabled or disabled.

## Batch Upload

The batch upload feature allows externally generated comma-separated values (CSV) blacklist files to be uploaded through the GUI. It can either add to or replace existing uploaded blacklist entries.

It will not modify blacklist entries that were created by the add/remove link or because customers have had their status become 'suspended' or higher.

To get to the Batch Upload screen, click on **System**, then **Blacklist**.

Orders	Payments	Reports	<b>System</b>	Users	Items	Promotions	Refunds	Invoices	Process	Notification
	My Account	Branding	Currencies	Ageing	Help	Plug-ins	Mediation	<b>Blacklist</b>		
SYSTEM - BLACKLIST								Training	Help	Logout
Blacklist Batch Upload										
A blacklist CSV file can be uploaded to either add to or replace any existing blacklist records in the system.										
Add Records		<input checked="" type="radio"/>								
Replace Records		<input type="radio"/>								
CSV File		<input type="text"/>							Browse...	
<input type="button" value="Submit"/>										

## CSV Format

Each line of the CSV file corresponds with one blacklist entry. It is assumed there is no column name header line present. The columns are as follows:

TYPE, FIRST\_NAME, LAST\_NAME, ADDRESS\_1, ADDRESS\_2, CITY, STATE\_PROVINCE, POSTAL\_CODE, COUNTRY\_CODE, PHONE\_COUNTRY\_CODE, PHONE\_AREA\_CODE, PHONE\_NUMBER, IP\_ADDRESS, CC\_NUMBER, USER\_ID

The type field is an integer that indicates what blacklist entry type the line belongs to. Valid values are:

Type Number	Type Name	Fields
1	USER_ID	USER_ID
2	NAME	FIRST_NAME, LAST_NAME
3	CC_NUMBER	CC_NUMBER
4	ADDRESS	ADDRESS_1, ADDRESS_2, CITY, STATE_PROVINCE, POSTAL_CODE, COUNTRY_CODE
5	IP_ADDRESS	IP_ADDRESS
6	PHONE_NUMBER	PHONE_COUNTRY_CODE, PHONE_AREA_CODE, PHONE_NUMBER

At least one field is required for each line type.

## Example

The following is an example of a valid CSV file:

```
1,,,,,,,,,1006
2,Joe,Bloggs,,,,,,,,
4,,,321 Main Rd.,,Vancouver,BC,V6B2E2,CA,,,,,
6,,,,,,,,,61,02,55554321,,,
3,,,,,,,,,5105105105105100,
5,,,,,,,,,123.123.123.123,,
```

## Failed Payments

When a payment is failed by the blacklist filter, the payment authorization record looks something like this (a blacklisted credit card number, for example):

<b>Payment</b>	
Number	16
Amount	US\$ 10.00
Date	04-Dec-2008
Balance	US\$ 0.00
Name on card	Frodo Baggins
Type	3
Card number	5555555555554444
Expiry date	01-Sep-2100
Result	Failed
<a href="#">Click here to send an email notification with this payment</a>	

<b>Authorization record</b>	
Processor	Payment filter task
Code 1	Credit card number blacklist filter
Code 2	
Code 3	
Approval Code	
Transaction ID	
MD5	
Card Code	
Date	04-Dec-2008 09:14:01 PM
Response Message	Credit card number is blacklisted.

# ***Chapter 11***

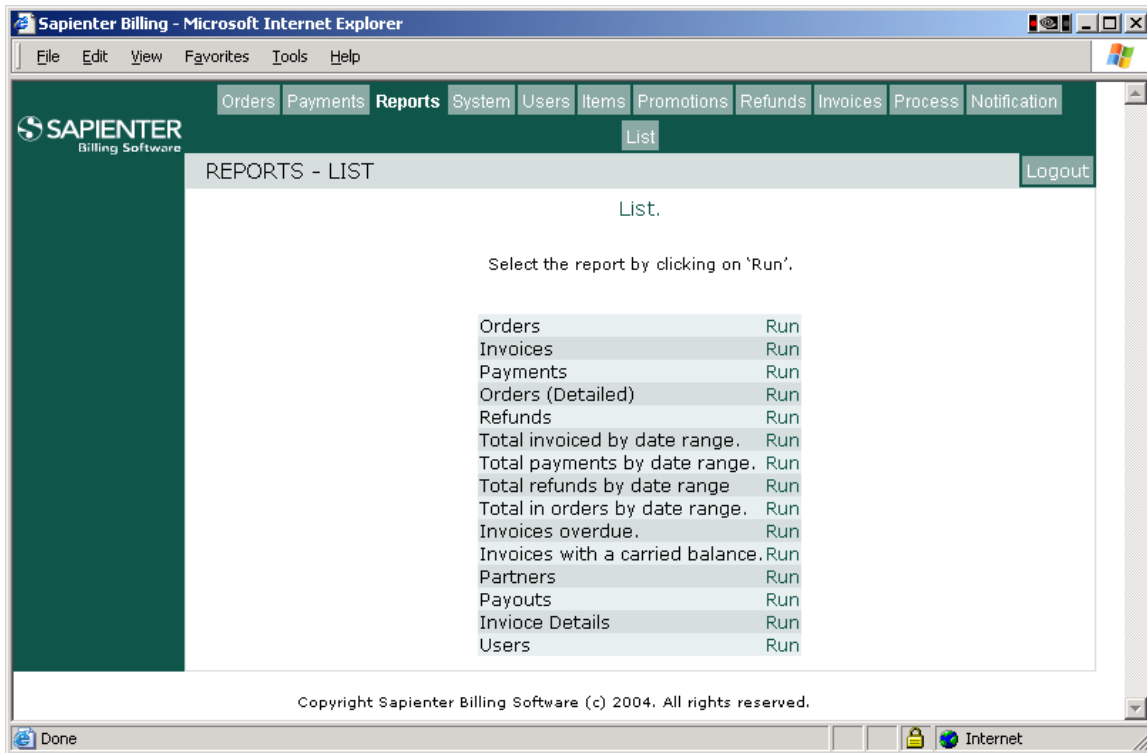
## ***Reports***

*Analyze your billing results*



## Introduction

jBilling's Reports Engine is a powerful and flexible tool that will allow you to query all your billing information. It doesn't limit you to a single set of reports; it allows you to create your own reports. This chapter will guide you through all the parameters, creating one example report in the process. The final section contains many common reports given as examples. To start, click on the tab **Reports** at the top of the screen:



Here you can see a list of the available reports. Beside the name of each report, there is a 'Run' link. Clicking on it will take you to the parameters screen. Let's take a brief look at each of the standard reports:

Name	Each row represents	Common usage
Orders	One purchase order	How much has been sold? Which customers have placed a new purchase order?  Which orders are about to expire?
Invoices	One invoice	How much has been

		invoiced? Which invoices have been paid, or should be paid? Which invoices are about to be overdue?
Payments	One payment	How much has been received in payment? How much using credit cards (or other methods)?
Orders (Details)	A purchase order line. Includes the item ID, prices and quantity.	How much of one particular item has been sold? How many items have been sold?
Refunds	One refund	How much has been given in refunds? Which customers have been given refunds?
Total invoiced by date range	A single number representing the total invoiced	The total invoiced given a starting and ending date.
Total payments by date range	A single number representing the total received in payments	The total received in payments given a starting and ending date.
Total refunds by date range	A single number representing the total refunded	The total in refunds given a starting and ending date.
Total in orders by date range	A single number representing the total in purchase orders	The total amount in purchase orders given a starting and ending date.
Invoices overdue	One invoice that is overdue	Which invoices are now overdue?
Invoices with a carried balance	One invoice that is carrying a balance from an overdue invoice.	Which of the current invoices (yet to be paid), have as part of their total previously overdue invoices?
Partners	One partner	How much is it owed to the affiliates?
Payouts	A payout to a partner	How much has been paid to the affiliates?



Invoice Details

An invoice line

How much has been invoiced for a particular item? How much in taxes has been invoiced?

Users

One user

Which customers are now in the ageing process? Which customers are from a particular state/country?

## The reports engine

Click on the link beside 'Invoices' to go to the invoices parameters screen:

The screenshot shows the Sapienter Billing software interface in Microsoft Internet Explorer. The browser title is 'Sapienter Billing - Microsoft Internet Explorer'. The page has a dark green header with the SAPIENTER Billing Software logo and a navigation menu with tabs: Orders, Payments, Reports, System, Users, Items, Promotions, Refunds, Invoices, Process, Notification. A 'List' link is visible below the navigation menu. The main content area is titled 'REPORTS - PARAMETERS' and 'Invoices'. It contains the following elements:

- A sidebar on the left labeled 'Your saved Reports'.
- Buttons for 'Run' and 'Reset'.
- A 'Report Name' input field with a 'Save' button.
- A section titled 'Report Headers' with the instruction 'Pick which columns to include in the result'. It contains a table with the following columns and settings:

Column Name	Visibility
<input checked="" type="checkbox"/> ID	none
<input checked="" type="checkbox"/> Number	none
<input checked="" type="checkbox"/> Login name	none
<input checked="" type="checkbox"/> Date	none
<input checked="" type="checkbox"/> Billing Process	none
<input checked="" type="checkbox"/> Delegated to invoice	none
<input checked="" type="checkbox"/> Due date	none
<input checked="" type="checkbox"/> Currency	none
<input checked="" type="checkbox"/> Total	none
<input checked="" type="checkbox"/> Payment attempts	none
<input checked="" type="checkbox"/> Payable	none
<input checked="" type="checkbox"/> Balance	none
<input checked="" type="checkbox"/> Carried Balance	none

- A section titled 'Filters' with the instruction 'Specify the conditions to filter the results'. It shows a filter for 'ID' with a dropdown set to 'equal' and an empty input field.

In the parameters screen, you will set all the parameters that will determine the information listed by the report. There are three blocks of fields that are important to identify:

- The columns to select are in the first block, and are under the title 'Report Headers'.
- The filters, second block
- The columns which will indicate how the results will be ordered are in the third block.

We will go over the details for each of these blocks later in this tutorial.

Hit the 'Run' button to get your first report executed. By default, all the columns in the report have a check mark beside them (with no particular order applied to them), and none of the filters are selected. If left as such, it would result into generating **a list of all the invoices of your company**.

## Interpreting the results

At any time, you can click on the 'Run' button to execute the chosen report. This will take you to the Results screen. In this screen each row represents one item. For example, if you are running the Invoices report, each line represents one invoice. You will see a link at the far right of each row that says 'Details'. If you click on it, it will bring you to the invoice's details screen, where you can see all the information about the selected invoice.

To save the results, click on the link 'Download'. This will generate a comma separated file (csv) with all the rows returned by the report. This file is readable by many applications including Microsoft Excel.

If you want to go back to the reports parameters screen, click on the 'Back' link that is on top of the results page.

## Selecting the columns

The first list of fields is the list of columns that will be included in results. This list is under the title 'Report Headers' and has three columns:

- A check-box that indicates if the column will be shown in the results.
- The name of the column
- A drop-down menu to select a function to apply to this column

### Example

Let's start with a simple example. We will get a list of all the invoices.

Click on **Reports** then on the **Run** link beside the 'Invoices' report to get to the Invoices report screen.

By default, all the columns are selected. In most cases, this is going to result in too many columns being retrieved. We will limit the result to just the following columns: Number, Login name, Date, Payable and Total. Make sure that only these columns have their check-box set:

**Run** **Reset**

Report Name  **Save**

Report Headers	
Pick which columns to include in the result	
<input checked="" type="checkbox"/> Number	none ▼
<input type="checkbox"/> ID	none ▼
<input checked="" type="checkbox"/> Login name	none ▼
<input checked="" type="checkbox"/> Date	none ▼
<input type="checkbox"/> Billing Process	none ▼
<input type="checkbox"/> Delegated to invoice	none ▼
<input type="checkbox"/> Due date	none ▼
<input type="checkbox"/> Currency	none ▼
<input checked="" type="checkbox"/> Total	none ▼
<input type="checkbox"/> Payment attempts	none ▼
<input checked="" type="checkbox"/> Payable	none ▼
<input type="checkbox"/> Balance	none ▼
<input type="checkbox"/> Carried Balance	none ▼

Now click on the button 'Run' to execute this report and get the results.

## Functions

You can apply a function to get the data processed by the report engine. This usually results in less rows being retrieved. For example, instead of each individual invoice, you might want all their totals added up to get a grand total on how much was invoiced. Then you will need to apply a 'Sum' function to the field 'Total'. When you run the report you will be getting only one row as a result with the total of all the invoices totals.

These are the functions available:

- **Sum**: It will add up all the values into a single total.
- **Average**: Same as 'Sum' but it will divide the total by the number of rows processed.
- **Minimum**: It will return the minimum value found.
- **Maximum**: The opposite of minimum, returning the maximum value found.
- **Grouped**: This is not a real function; it is useful when running reports that have functions that apply to a group of rows only. This will be explained in the next section.

Let's put these functions to work: From the previous example, clear all the checkboxes, leaving only 'Total' selected. Then click on the drop-down menu to select 'Sum'. This means that we only want the total of the invoices, and we want it added up.

Report Name | \_\_\_\_\_ | **Save**

Report Headers	
Pick which columns to include in the result	
<input type="checkbox"/> Number	none
<input type="checkbox"/> ID	none
<input type="checkbox"/> Login name	none
<input type="checkbox"/> Date	none
<input type="checkbox"/> Billing Process	none
<input type="checkbox"/> Delegated to invoice	none
<input type="checkbox"/> Due date	none
<input type="checkbox"/> Currency	none
<input checked="" type="checkbox"/> Total	sum
<input type="checkbox"/> Payment attempts	<div style="border: 1px solid black; padding: 2px;">           none  <b>sum</b>            average            minimum            maximum            grouped         </div>
<input type="checkbox"/> Payable	
<input type="checkbox"/> Balance	
<input type="checkbox"/> Carried Balance	

**Filters**

Click on Run and you will see a single number representing the total invoiced.

It is possible to select only a few columns. But all these selected columns must have the either a function selected or none of them can. In other words, you cannot have some with "none" for function and some with "sum".

For instance, if in the previous example you had selected 'Login name' from the list, and left it with 'none' as a function, and had selected 'Total' and had applied to it the function 'sum', you would have gotten the following error: 'The field 'Login name' has to be aggregated'.

This happens because the engine doesn't know if you want all the rows with the login name, or a single one with the totals added up.

## Grouping

Grouping allows us to tell the report's engine to group a set of rows and then apply a function to them. To mark a column as 'grouped', simply select this option from the drop-down menu.

In our invoices example, let's say that now we want the total invoiced for each user. Instead of one grand total, we want one total per customer.

We will need the Total selected, with the function 'Sum'. Now we will also select 'Login name' with 'Grouped' applied:

Report Headers	
Pick which columns to include in the result	
<input type="checkbox"/> Number	none
<input type="checkbox"/> ID	none
<input checked="" type="checkbox"/> Login name	grouped
<input type="checkbox"/> Date	none
<input type="checkbox"/> Billing Process	grouped
<input type="checkbox"/> Delegated to invoice	none
<input type="checkbox"/> Due date	none
<input type="checkbox"/> Currency	none
<input checked="" type="checkbox"/> Total	sum
<input type="checkbox"/> Payment attempts	none
<input type="checkbox"/> Payable	none
<input type="checkbox"/> Balance	none
<input type="checkbox"/> Carried Balance	none

With this, we are saying: Take all the invoices of each user, add them up, and give me the total. Click on 'Run' to get the results.

## Filtering the results

In almost all situations, we do not want a report to be based on all the records at once. In our example, we have been working with all the invoices ever generated. But we most probably want to limit the report to a period of time, or a particular customer, or some other condition.

The second block of fields in the report's screen is for the filters. Here is where you will specify the conditions that a row has to meet in order to be included in the report's result. There are three columns on this list:

- Column name
- Operator: the mathematical condition to meet
- Input field: Here you enter the value to compare against. If left blank, the column is not included for filtering. The value 'null', represents an empty value. For numeric fields, you can enter multiple values separated by commas.

Let's continue the previous example by adding a filter. This will limit the invoices being included in the sum to those generated in the first quarter of 2004. This case involves two conditions because we want to specify a range of dates:

Filters			
Specify the conditions to filter the results			
Number	equal	<input type="text"/>	
ID	equal	<input type="text"/>	
Login name	equal	<input type="text"/>	
Date	equal or greater	01 / 01 / 2004	mm/dd/yyyy
Date	smaller	04 / 01 / 2004	mm/dd/yyyy
Billing Process	equal	<input type="text"/>	
Delegated to invoice	equal	<input type="text"/>	
Due date	equal	<input type="text"/> / <input type="text"/> / <input type="text"/>	mm/dd/yyyy
Due date	equal	<input type="text"/> / <input type="text"/> / <input type="text"/>	mm/dd/yyyy
Total	equal	<input type="text"/>	
Payment attempts	equal	<input type="text"/>	
Payable	equal	<input type="text"/>	
Balance	equal	<input type="text"/>	
Carried Balance	equal	<input type="text"/>	

We can translate this filter to the following sentence:

Include only the invoices generated after or on the first day of 2004, and before (not including) April 2004.

Click on 'Run' to get the results.

## Getting the results in order

To make the results more readable and useful, especially when they involve thousands of records, it is important to be able to get them in the right order. The third block of fields allows you to specify how you want the results to be ordered. For each column, you can select the order position.

Let's order the previous example by the Login Name. This way, it is going to be easy to locate a particular user in the results:

Sort report items by Set priority for sorting	
Number	none ▼
ID	none ▼
Login name	none ▼
Date	none ▲
Billing Process	1
Delegated to invoice	2
Due date	3
Currency	4
Total	5
Payment attempts	6
Payable	7
Balance	8
Carried Balance	9
	10 ▼

By assigning the order position 1 to the column Login name, the results will be ordered by Login name. We could have added subsequent columns to the order, giving them each a '2', '3', '4', etc. as order position. Every column included has to have its own unique order position; otherwise we will get the error: 'The order values have to be consecutive'.

## Saving your work

You can spend many hours fine-tuning the parameters of a report. And most probably, you will want to run this report again later, or even use it as a template where you make small modifications to get different results. To save all the parameters that you have entered so far, simply enter a name for your report in the input field 'Report Name' and then click on the button Save.

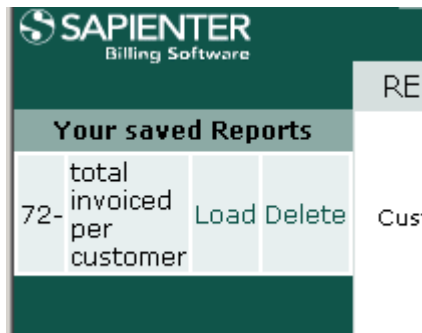
For our invoices example, let's enter 'total invoiced per customer':

Report Name

**Report Headers**  
Pick which columns to include in the result

ID

The saved report will show up on the left menu with the name that you gave it. When you click on the 'Load' link, all the parameters of the saved report will be applied.



You can also delete a saved report. To do it, just click on the 'Delete' link. A confirmation message will follow.

## Advance Filtering

### Dealing with Codes

You have probably noticed that many reports have 'Code' fields. For instance, the Payments report has two of them: 'Result Code' and 'Method Code'. These code fields pair with another field that contains the meaning of the code. 'Result Code' will pair with 'Result' and 'Method Code' with 'Method'. When you run the Payments report you can see that for a payment with Result Code '1' the Result field is always 'Successful'.

This is important when using filters. If you want your Payments report to only list successful payments, you need to enter a '1' for the 'Result Code' field.

### Multiple values for a filter field

In some occasions, you might need to filter many values for a single field. You can do that by separating them with a ','. When you specify multiple values, you can only use the operators 'equal' or 'not equal'. Also, multiple values are only allowed for numeric fields.

Let's see an example: a list of payments done with Visa and MasterCard. If you run the Payments report, you will notice that the Method Code for Visa is 2, and the one for MasterCard is 3. All we need is a report with a filter on the Method Code with both values: 2 and 3:

Date	equal		/		/		mm/dd/yyyy
Date	equal		/		/		mm/dd/yyyy
Method Code	equal	2,3					



Note that a comma is needed to separate the different values. Without using the multiple values, we would have needed to run the report twice, once for Visa (2), and a second one for MasterCard (3). And how do you modify this report to list payments *not* done with Visa or MasterCard (done with any other payment method)? It is very easy, simply change the operator from 'equal' to 'not equal'.

### Empty values (null)

Another common situation is the need to specify an empty value for a filter. In any filter field, you can enter 'null', and the report will interpret that as the empty value. When you specify 'null', you can only use the operators 'equal' or 'not equal'.

For example, you might want a list of invoices that have not been delegated to another invoice. When an invoice has been included in another invoice, the field 'Delegated to invoice' has the ID of the target invoice. When an invoice has not been included in another invoice, 'Delegated to invoice' has simply no value. Since in this example we want to list only those invoices, we need to enter 'null' in the filter field 'Delegated to invoice'.

Billing Process	equal	
Delegated to invoice	equal	null
Due date	equal	/ / mm/dd/yyyy

To get a list of the invoices that have been delegated to another invoice, simply change the operator from 'equal' to 'not equal'.

## Examples

### Total invoiced in the first week of August.

It is very important to know how much has been invoiced in a given period of time. The total invoiced is in many cases the revenue of your company. This example will demonstrate this for the first week of August. The result will include the invoices generated by the billing process, as well as those generated manually.

1. Click on **Reports** and then on the Run link by the Invoices report.
2. In the Report Headers section, select only the 'Total' column, leaving all the rest unselected.
3. In the drop-down menu of the 'Total' column, select 'Sum'
4. In the filters section, select the option 'equal or greater' for the first 'Date' field.
5. For that same field, enter '08/02/2004'
6. For the second 'Date' field, select 'smaller' and enter '08/09/2004'

Date	equal or greater	08	/	02	/	2004	mm/dd/yyyy
Date	smaller	08	/	09	/	2004	mm/dd/yyyy

- Click on the button Run to get the results.

### Total invoiced per customer in the first week of August.

This report will tell you who has been invoiced in a given period of time, and for how much. If a customer has more than one invoice, they will be consolidated in a single total. Customers that have not been invoiced in the selected period will not be included in the results

- Click on **Reports** and then on the Run link by the Invoices report.
- In the Report Headers section, select the 'Total' and 'Login Name' column, leaving all the rest unselected.
- In the drop-down menu of the 'Login Name' column, select 'grouped'.
- In the drop-down menu of the 'Total' column, select 'Sum'
- In the filters section, select the option 'equal or greater' for the first 'Date' field.
- For that same field, enter '08/02/2004'
- For the second 'Date' field, select 'smaller' and enter '08/09/2004'
- In the Sorting section, select '1' for the 'Login Name'.

Number	none
Login name	1
Date	none

- Click on the button Run to get the results.

### Total paid in the first week of August

This report will add up all the successful payments received in the first week of August. Payments that have failed for any reason are excluded. All the payment methods are included. Here you can see the usage of result codes; since '1' means a successful on-line payment, and '4' a payment that has been manually entered (usually a cheque), we will include only the payments with these results.

- Click on **Reports** and then on the Run link by the Payments report.
- In the Report Headers section, select only the 'Amount' column, leaving all the rest unselected.
- In the drop-down menu of the 'Amount' column, select 'Sum'.

5. In the filters section, select the option 'equal or greater' for the first 'Date' field.
6. For that same field, enter '08/02/2004'.
7. For the second 'Date' field, select 'smaller' and enter '08/09/2004'.
8. For the first 'Result Code' filter field, enter '1, 4'.

Attempt	equal				
Result Code	equal	1,4			
Amount	equal				
Enter date	equal		/		mm/dd/yyyy
Enter date	equal		/		mm/dd/yyyy
Date	equal or greater	08	/	02	/ 2004 mm/dd/yyyy
Date	smaller	08	/	09	/ 2004 mm/dd/yyyy
Method Code	equal				

9. Click on the button Run to get the results.

### List of invoices that have been paid

This report will help you track which customers have paid and which haven't. For this, we need to specify that the invoice needs to have been already paid (Payable = 0, meaning that is not payable). We also need to exclude the invoices that have been delegated to other invoices (Delegated to invoice = null). Invoices that have been delegated will show up as not payable, but this is because their balance has been transferred to another invoice, not because a payment has been received. You might want to add a filter on the 'Due date' to narrow the list down to those whose due date falls in a specific period of time.

1. Click on **Reports** and then on the Run link by the Invoices report.
2. In the Report Headers section, select the following columns: 'ID', 'Number', 'Login Name', 'Date', 'Due date', 'Total'.
3. In the filters section, select the 'equal' option for the 'Payable' field and enter '0'
4. For the 'Delegated to invoice' filter field, select the 'equal' option and enter 'null'

Billing Process	equal		
Delegated to invoice	equal	null	
Due date	equal		mm/dd/yyyy
Due date	equal		mm/dd/yyyy
Total	equal		
Payment attempts	equal		
Payable	equal	0	

### List of overdue invoices

The easiest way to get a list of overdue invoices is by running the 'Invoices overdue' report: Click on **Reports** and then on the Run link by the Invoices overdue report. The report will list the invoices that are overdue at the time you are running the report. If you need a list of overdue invoices for a different date, you will need to configure your own report based on the Invoices report.

### Amount of items sold

Let's count how many items are present in active orders. We will restrict the count to one item in particular. For example, for the fictitious company *Trend* in the business of selling advertisement on the net, the item ID 232 represents a banner. You can find out the ID of any of your items by clicking on **Items**.

1. Click on **Reports** and then on the Run link by the 'Orders (Detailed)' report.
2. Leave only the Quantity field selected and pick the 'Sum' function.
3. In the filters section, enter the item id that you want to count on the field 'Item Number'. For *Trend* this would be 232.
4. For the filter field 'Status Code' enter '1'. This will limit the count to only the currently Active purchase orders.
5. Click on the button Run to get the results.

### How much are we owed in overdue payments?

Because an overdue invoice can be carried over into the next billing run, and show up on the latest invoice, two reports have to be run in order to get a correct answer to this question. One to add up the total of overdue invoices, and another to sum up the carried over balance on invoices that have not yet been paid and are not yet overdue.

First report: Adding up the total of overdue invoices.

5. Click on **Reports**, than on Run beside 'Invoices'.

6. In the 'Reports Headers' block, de-select everything except 'Total' and select 'Sum' in the drop menu.
7. In the 'Filters' block below, go to the 'Due Date' line and chose 'Smaller' in the drop menu. Write today's date in the fields beside.
8. Still in the 'Filters' block, 'Payable' should equal '1'.
9. Click on 'Run' at the top of the screen and write down the number provided.

Second report: Summing up the carried over balance on invoices that have not yet been paid but are not yet overdue.

2. Click on **Reports**, than on Run beside 'Invoices'.
3. In the 'Reports Headers' block, de-select everything except 'Carried Balance' and select 'Sum' in the drop menu.
4. In the 'Filters' block below, go to the 'Due Date' line and chose 'equal or greater' in the drop menu. Write today's date in the fields beside.
5. Still in the 'Filters' block, 'Payable' should equal '1'.
6. Click on 'Run' at the top of the screen and add this second number to the one the first report provided you with.

# ***Chapter 12***

## ***Partners***

*Tracking referrals and payouts*



## Overview

jBilling can help you manage those accounts that sell your services for a commission. We will call this accounts 'Partner Accounts' to avoid confusion with other terms. It is common to refer to this as 'affiliates' or even 'sales representatives'. As a broad definition, they are any individual or organization that brings new customers to you, and gets paid a commission based on the revenue related this new customers.

Our definition of 'Partner accounts' does not include an organization that resells your services to its own customers. This reseller will buy from you and sell to its customers. You will send an invoice to the reseller, and the reseller will send invoices to its customers. This situation is covered by the 'Sub-Accounts' feature. Please refer to its documentation to learn more about it.

jBilling will help you track the commissions that you have to pay to each of your partners and alert you when a payout is due. You can also list your partners, the customers that each of them 'own', among many reports. A partner can have special pricing for your items; this pricing will be extended to the partner's customers. Last but not least, your partners can login to jBilling to check their accounts, which includes payouts, list of customers, etc.

## Parameters

A view to the parameters associated with a partner will reveal most of the functionality that jBilling offers to manage these accounts. Click on **Users** then **Partners** and the left menu option **Defaults**

The screenshot shows the 'NEW PARTNER - DEFAULTS' form in the jBilling software. The form is titled 'NEW PARTNER - DEFAULTS' and includes a subtitle: 'These are the defaults values that are shown when a new partner is created.' The form contains the following fields and options:

Percentage rate	<input type="text" value="0.0"/>
Referral fee	<input type="text" value="0.0"/>
Fees' currency	<input type="text" value="United States Dollar"/>
One time fee	<input checked="" type="checkbox"/>
Payout period	<input type="text" value="1"/> <input type="text" value="Month"/>
Batch payout	<input type="checkbox"/>
Related clerk	<input type="text" value="188"/>

At the bottom of the form is a **Submit** button. The interface also shows a navigation menu on the left with options: New, List, Defaults, Reports, Partners Due, Payout. The top navigation bar includes: Orders, Payments, Reports, System, Users, Items, Promotions, Refunds, Invoices, Process, Notification. The footer text reads: 'Copyright Sapienter Billing Software (c) 2004. All rights reserved.'

## Defaults

Every partner will have a set of parameters. You will define these parameters when you create the partner's user account. By default, a set of values will be assigned to these parameters. These values are the default values. They are meant to make the creation of a new partner easier.



### Percentage rate

A partner can either have a percentage commission or a flat fee commission. Specifying a percentage rate means that a partner will get paid a commission based on the total revenue brought by its customers. In this case, revenue means the amount that a customer has successfully paid. Note that this is different than the amount invoiced to a customer.

### Referral fee

This represents a flat fee that is paid as a commission. Unlike a percentage rate, a referral fee is not proportional to the revenue that the customers brought by a partner generated.

### Currency

Here you can specify in which currency a partner will be paid

### One time fee

If this check-box is set, your partners will get paid only once per customer. Otherwise they will be paid periodically as long as a customer remains active.

### Payout period

This is a period of time that indicates how often your partners will receive payouts. Note that this parameter takes effect only if 'one time fee' is not checked. Otherwise, partners get paid only once per referred customer.

### Batch payout

Just as jBilling can process payments from your customers automatically with the billing process, it is possible to send funds through a payment processor. This allows you to fully automate the payouts to your partners. However, you will have to have an account with a payment processor that supports this kind of transactions.

### Related clerk

You have to assign a staff user to your partners. This user will be receiving emails that the system sends regarding payouts to the partners.

In this field, you have to enter the ID of a staff user. If you do not have any staff user besides the billing administrator, then use the billing administrator's ID number.

## **Creating a new partner account**

Click on **Users** then **Partners** and **New** in the left menu. You will be entering the basic login information for the partner account. After clicking on 'Continue' you will be displayed with the partner's parameters. These parameters are initialized to the defaults that you have specified (see 'Defaults' above for more information about the default parameters).

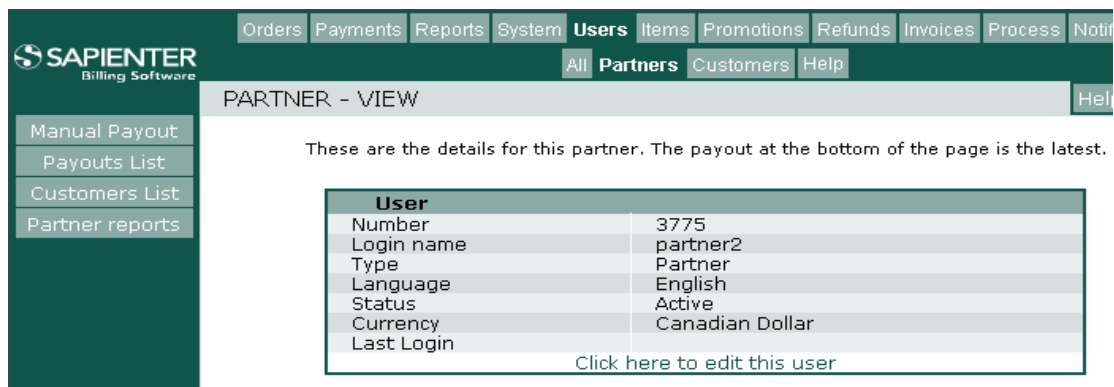
Once the account is created, the system assigns a partner ID to the new account. This ID will be necessary when creating a new customer that has been referred by this partner. This link between a customer and a partner is what allows the system to calculate the commissions for a partner.

## Managing a partner account

### List

To list all your partners, click on **Users** and the **Partners**. The list will show you the next payout date scheduled for each partner, as well as the current amount due. You can then see the details of a particular partner by clicking on the radio button on the right side of each listed partner.

### Details



The screenshot shows the SAPIENTER Billing Software interface. The top navigation bar includes: Orders, Payments, Reports, System, **Users**, Items, Promotions, Refunds, Invoices, Process, and Notifications. Below this, there are sub-navigation tabs: All, **Partners**, Customers, and Help. The main content area is titled 'PARTNER - VIEW' and contains the text: 'These are the details for this partner. The payout at the bottom of the page is the latest.' Below this text is a table with the following data:

User	
Number	3775
Login name	partner2
Type	Partner
Language	English
Status	Active
Currency	Canadian Dollar
Last Login	

Below the table is a link: [Click here to edit this user](#)

In this screen, you can find various information about the selected partner. The most important of it is the partner's parameters: when is the next payout, amount due, etc. You will also find the record of the latest payout given to this partner.

From here, you can also click on the links at the bottom of each box to update the partner's record. For example, to change the password click on the link 'Click here to edit this user'.

Let's go over the options that you can find in the left menu:

#### Manual Payout:

This option allows you to immediately enter a payout to a partner. You will be prompted with the date range that you want to include in this payout, as well as the payment method.

Starting date	<input type="text" value="12"/>	<input type="text" value="23"/>	<input type="text" value="2004"/>	mm/dd/yyyy
Ending date	<input type="text" value="1"/>	<input type="text" value="23"/>	<input type="text" value="2005"/>	mm/dd/yyyy
Payment method	<input checked="" type="radio"/> Cheque <input type="radio"/> Credit Card			
<input type="button" value="Submit"/>				

The system will calculate the amount for this payout, base on the payments that this partner's customers have for the given date range, and the partner's parameters. The more important parameters for this calculation are 'Percentage rate' and 'Referral fee'.

Once you click on 'Submit', you will be forwarded to a page similar to the payment page. In this page you have to enter the payment details of the payout.

### [Payouts List](#)

This is a list of all the partner's payouts, starting from the newest. You can click on the radio button by the right side of a payout record to see the payout's details.

### [Customers List](#)

This is a list of all the customers referred by this partner. You can see the details of any of these customers by clicking on the radio buttons.

### [Reports](#)

These are a set of reports that query data related to the customers of the currently selected partner. To learn more about how to run a report, refer to the Reports Documentation.

- Customer's orders: Returns one record per purchase order belonging to a customer referred by this partner.
- Customer's payments: Returns one record per payment belonging to a customer referred by this partner.
- Customer's refunds: Returns one record per refund belonging to a customer referred by this partner.

### **Partners due a payout**

jBilling will send an email to the staff user in charge of each partner when a partner is scheduled to be paid. To get a list of all the partners whose 'next payout date' is earlier than today, click on **Users** then **Partners** and then on the left menu option **Partners due a payout**.

# ***Chapter 13***

## ***Security***



## Overview

Security is important, specially when the system is a billing system. Here you have all your customer's information: contact, credit cards, purchasing behavior, etc.

It is very important to take security as an area that needs to be addressed from a number of different fronts: your network, access to the server that is running jbilling and the database that is supporting jbilling.

For example, if you are running on a secure operating system such as Linux, it will be very difficult for someone to gain access to it without a password. Yet, simply installing Linux and using it with all the parameters out of the box is not a good idea. You need to configure its many security options, like the firewall. Closing unneeded ports to the outside and shutting down services that are not required are just some of the tasks that relate to securing your server.

The same applies to your database. A robust database has built-in security that, when used properly, give you a good degree of security on the data stored there.

*To run jbilling securely make sure that your network, operating system and database are secure to the level that a system handling sensitive information deserves. That will be a very good start. For the rest, a few additional configuration setting will give you a high degree of security.*

This is why, with jbilling, we have mostly focused on those areas that, no matter how secure your OS and database, if the application is not secure it would mean unauthorized access to the billing system.

## Credit cards

Credit card information, number, names, etc, is one of the most sensitive types of information that jbilling will hold. Thus, it can be stored in the database with encryption. This would prevent (or at least, make it more difficult) someone gaining access to your database from taking your customer's credit card numbers.

### Encryption

Encryption is done by using a secret key. This key helps to scramble the the name and number of a credit card so it gets stored in an non-readable way in the database.

The key is stored in the `jbilling.properties` file, under the property `'credit_card_password'`. Make sure you change the default value to some rather lengthy and random string. Do not use readable words.

Because a key is involved in the encryption and decryption process, it is very important to secure the `jbilling.properties` files well. Use your operating system features to make sure that only those authorized can read this file.

*With UNIX based system, it is a good idea to make jbilling.properties readable only to root with permissions '440'.*

The next step is to enable credit card encryption. This is done through another property in the file `jbilling.properties`. If `'credit_card_secure'` is `'true'`, then all the

names and numbers will be stored encrypted. If is 'false', they will be stored in plain, readable text.

This property *has* to be set when you are installing jbilling, therefore *before* any data has been entered in the system. Once you have any credit cards stored in the database, you can not change the 'credit\_card\_secure' property. In that case, some data will be already be stored either encrypted or not, and when you change the property, the system will not be able to understand the data (it will expect it to be either encrypted or plain text, when in fact it is stored the other way).

## Hiding

Encrypting the data in the database is important, but that does not prevent users from seeing credit card information. A user with role 'clerk' or higher can see the credit card information of all the customers in the system. Additionally, a customer can see her own credit card information which is a problem if someone else finds out her password to login to jbilling.

It is common to want to prevent any potential problems by just making all the credit card numbers to be masked so only the last four digits are displayed to any user. To enable this 'credit card number hiding' in jbilling, you need to do so with a jbilling preference. In this case is preference number 37 and it has to be setup to '1'. See the preferences section for more information on how to do this.

By using this preference, the system also hides the credit card number from the log files generated by the system and even in API calls to retrieve user information.

Combining this feature with the credit card encryption (and, most important, a secure operating system, database and network), will make jbilling a very secure billing system where you can safely store your customer's credit card information.

## Password management

A user password is the most important security feature to prevent unauthorized access to the system. There are several security features built-in jbilling to help keep passwords secret to their owners.

*If your jbilling setup is such that you do not want external users to access it (including customers), take advantage of a firewall to block connections coming from the Internet.*

## Requirements

A password needs to comply with some requirements to be accepted by jbilling:

- It has to be at least six characters long.
- It needs to contain both numbers and letters.
- It can not be the same as any previous password for this user for the last two years (applies only when changing the password, not when creating a new user).
- It can not be the same as any field from the contact information (first name, for example).

## Encryption

Passwords can be stored encrypted in the database. Since password do not need to be shown at any time, the encryption method is a 'one-way' encryption: once password is encrypted, it can not be decrypted. This works because when a user tries to login, the entered password is encrypted and in this form compared with the one in the database (which is also encrypted). If they are the same, the authentication is successful.

*These requirements are implemented in jbilling by using 'validators'. You could change which validators are applied to new passwords by changing the file 'validation.xml' in the source distribution of jbilling.*

In jbilling, the password of roles above customer are always encrypted, you do not need to do anything for this to happen.

Customer's password are optionally encrypted. You can enable it by using the property `password_encrypt_all` in `jbilling.properties`. If 'true' all the passwords will be encrypted, otherwise only those of users with roles *above* customer (clerks, administrators, etc).

Why would you want the customer's password to be stored in plain-text? Having encrypted information in the database has its drawbacks. For example, you won't be able to tell a customer what her password is (although you can change it and tell her the new password). The feature to retrieve passwords (activated with the link 'Did you forget you password? In the login page) does not work if the password are stored encrypted. The customer would receive the password encrypted in the email, which is useless.

## Limiting retries

How many times do you allow a user to enter the wrong password in a row? A typical way to find someone's password is to simply try. If done in an automated way, this has a chance to be successful, compromising the user's account.

To prevent this, you can configure jbilling to lock a user out if she tries too many times to login. You can do this by using a jbilling preference. The one in question is preference 39. If it is 0, then the feature is disabled and a user has unlimited attempts to login. If set to a number greater than 0, then that number is the number of times that your users can attempt to login. To learn how to change the value of a jbilling preference, read the Preferences section.

If the limit of retries is reached, the account is locked-out by changing its password to the value in the property `'lockout_password'` in `jbilling.properties`. Make sure to change this property from its default and to set it to a long, random string of up to 20 characters.

## Expiration

A good way to enhance the security of password is by making them expire. When the password expires, the user is forced to change it. This enforces the good practice of periodically changing a password, but it comes at a price. Users usually remember a few set of passwords, and forcing them to change them often leads to more events of forgotten passwords.



Thus, password expiration is optional in jbilling, and can be activated or deactivated at any time. You will be using a preference for this, in the case is preference 40. Set it to 0 if you do not want your passwords to expire; this is the default value.

If you want to enable password expiration, set the preference to a number higher than 0. The value will be the number of days the password is valid, passed that date, the password is expired and needs to be changed.

To learn how to setup preferences in jbilling, refer to the Preferences section.

## Securing jbilling with SSL

You would only want to use SSL when your users (customers or administrator) access jbilling using the Internet. If all the access to jbilling is done in a local network (LAN), then SSL is of little use.

The SSL protocol allows applications to communicate across a network in a way designed to prevent eavesdropping, tampering, and message forgery. SSL provides endpoint authentication and communications privacy over the Internet using cryptography.

jbilling does not implement or deal with SSL directly. Instead, it relies on Tomcat to do this, since it is the component that takes of serving the web pages of the jbilling web-based graphic user interface. Therefore, it is mostly Tomcat that you need to configure to use SSL.

The documentation on how to configure tomcat is here:

<http://tomcat.apache.org/tomcat-5.0-doc/ssl-howto.html>

Let's go over the main points:

- You need to have a key. You can generate it yourself, but the browsers will give a warning. Otherwise, you can buy one from a certificate authority.
- Once you have a key (which is just a file), you need to edit the file `server.xml` located in `jbilling\server\default\deploy\jbossweb-tomcat50.sar` and change:
  - Uncomment the SSL section
  - Update the location and name of the key store
  - Update the password of the key store

Once you have the ability to establish a secure connection with jbilling, you will want to avoid anyone having unsecured sessions. You can easily configure jbilling so it does not allow unsecured connections by having the property `force_https` in the `jbilling.properties` file set to 'true':

```
# redirect all unsecured requests (http port 80) to SSL (https port 443)
force_https=true
```

When this property is 'true', jbilling will verify that every requests starts with 'https' rather than 'http'. If an unsecured (http) request is detected, it is forwarded as 'https'.

# ***Appendix A***

## ***Preferences***



Preferences are used to modify the behavior of a jBilling module, and can be set at the company level. This means that if you are running several companies in a single jBilling installation, each of them will have their own set of preferences.

Preferences are stored in a database table, and they can be manipulated by issuing a database update command. In many cases, they can also be updated in a screen of the graphic user interface (GUI) and, when that is available, it is the typical way to change a preference value.

For example, if you want to change the grace period of the ageing process, you will simply click on 'System', then 'Ageing' and enter the value that you want in the 'Grace period' field. In that case, you don't need to know that it is a preference that you are dealing with.

Yet, there are a number of preferences that are not exposed in the GUI (some people in jBilling call these 'hidden features', because until this document was released it was very difficult to know and take advantage of them).

For those cases, you will need to insert or update the preference database table. The following are the columns and their meaning:

Column	Description
ID	This is a unique sequential number. You need to find out what is the last number in use and take the next one: <pre>select max(id)+1 from preference;</pre>
TYPE_ID	Here you enter the preference number (see the table below). For example, for 'invoice prefix', you enter '18'.
TABLE_ID	Enter '5' for company preferences or '10' for user preferences. In almost most cases, you will be entering company preferences.
FOREIGN_ID	Enter the ID of the company this preference is for (usually '1'). If this is a user preference, enter here the ID of the user.
INT_VALUE	The preference value, if it is a number without decimals.
STR_VALUE	The preference value, if it is text.
FLOAT_VALUE	The preference value, if it is a number with decimals.

Note that only one value is valid. Only one of the last three columns can have a value, the other two should be null.

Let's see an example to make jBilling attach a PDF version of the invoices when sending them as emails:

```
INSERT INTO PREFERENCE (123, 32, 5, 1, 1);
```

The following is the complete list of preferences you can set. The focus is on those that can *not* be modified through the GUI:

Number	Name	Default Value	Description
1	<i>This preference has been obsoleted</i>		
2	CSS location	/ billing/css/ billing.css	This is part of the branding component and editable through the GUI. See the System section of the documentation.
3	Logo location	/ billing/grap hics/jb-log- small.jpg	This is part of the branding component and editable through the GUI. See the System section of the documentation.
4	Grace Period	none	This is part of the ageing component and editable through the GUI. See the System section of the documentation.
5	Partner default rate	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
6	Partner default fee	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
7	Partner default one type payment	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
8	Partner default per unit	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
9	Partner default per value	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.

10	Partner default automatic payment	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
11	Partner default assigned clerk id	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
12	Partner default currency id	none	This is part of the partner component and editable through the GUI. See the Partner section of the documentation.
13	Self deliver paper invoices	none	This is part of the branding component and editable through the GUI. See the System section of the documentation.
14	Show notes in invoices	none	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
15	Days for order notification 1	none	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
16	Days for order notification 2	none	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
17	Days for order notification 3	none	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
18	Invoice prefix	none	This is part of the invoices component and editable through the GUI. See the Invoices section of the documentation.
19	Invoice number	none	This is part of the invoices component and editable through the GUI. See the Invoices section of the documentation.

20	Invoice delete	1	If it is possible to deleted invoices or not. A '1' would allow this to be done (by users with the right role or permission). Otherwise the option won't be available to any user.
21	Use invoice reminders	0	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
22	Number of days between invoice generation and first reminder	none	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
23	Number of days between subsequent invoice reminders	none	This is part of the notifications component and editable through the GUI. See the Notifications section of the documentation.
24	Use Italian special rules	0	<i>Only applicable to Italian users.</i>
25	Use overdue penalties (interest)	0	If set to '1', the batch process that follows the billing process will go over overdue invoices calculating interests. This preference is only a switch (on/off), the actual calculations (if this preference is '1') will happen in a plug-in.
26	Page size	20	This is a user preference. It is the number of rows to be displayed per page in any list in the system. It is easy to change from the GUI.
27	Use order anticipation	0	If to use 'order anticipation' for the invoice generation. If set to '1', a new field is considered for orders that indicates a number of months to invoice in advance. This has to be configured along with the right plug-in: "OrderFilterAnticipatedTask"
28	Paypal account	none	The account to use with PayPal.
29	Paypal button URL	<a href="https://www.paypal.com/en_US/i/btn/x-click-">https://www.paypal.com/en_US/i/btn/x-click-</a>	A URL where the graphic of the PayPal button is. The button is displayed to customers when they

		but6.gif	are about to pay. The default is usually the best option, except when other language is needed.
30	URL for HTTP callback	none	This is part of the ageing component and editable through the GUI. See the System section of the documentation.
31	Continuous date	2000-01-01	If this preference is used, the system will make sure that all your invoices have their dates in a incremental way. Any invoice with a greater 'ID' will also have a greater (or equal) date. In other words, a new invoice can not have an earlier date than an existing (older) invoice.  To use this preference, set it as a string with the date where to start.
32	Attach PDF invoice to email	0	If '1', all the invoice emails will have as an attachment the PDF version of the invoice.
33	Order has to be in its own invoice	0	If set to '1', the system will show the field 'Include in separate invoice'. This is a flag that if set, will force the order to be included in one invoice, preventing it from being added with many other orders in the same invoice.
34	<i>This preference has been obsoleted</i>		
35	Add order ID to invoice lines	0	If set to '1', the ID of the order will be added as part of the text in the description of the resulting invoice line.  This can help to easily track which exact orders is responsible for a line in an invoice, considering that many orders can be included in a single invoice.
36	Customer contact edit	1	If to allow customers to edit their own contact information when they login to the jBilling GUI.



37	Hide credit card numbers	0	If '1', the system will never show a complete credit card number, not even to administrator users or in log files.
38	Link ageing ID to subscription status	1	If '1', the system will change the ageing status of a user when the subscription status changes.
39	Lock-out user on failed logins	0	If greater than zero, the system will change the password of a user if she fails to login after a number of retries. This number is the value of this preference.  The password will be changed to the value of <code>lockout_password</code> in the file <code>jbilling.properties</code> .
40	Expire user passwords	0	If greater than zero, it represents the number of days that a password is valid. After those days, the password is expired and the user is forced to change it.
41	Use 'main subscription' orders	0	If '1', then allow the usage of the 'main subscription' flag for orders This flag is read only by the mediation process when determining where to place charges coming from events.
42	Use Pro-Rating	0	If '1', your company will be using pro-rating to allow invoicing of fractions of a period. The 'cycle' attribute of orders is displayed. Note that you need to configure the corresponding plug-ins for this feature to be fully functional.
43	Use payment blacklist	0	If the payment blacklist feature is used, this is set to the id of the configuration of the <code>PaymentFilterTask</code> plug-in. See the Blacklist section of the documentation.
44	Allow negative payments	0	If '1', then negative payments (credits) are allowed to be sent to payment processors.

45	Delay negative invoice payments	0	If '1', then invoices created with a negative amount during the billing process have their payments delayed, causing them to be carried over to the next invoice. Invoices that have had negative balances from other invoices transferred to them are allowed to immediately make a negative payment (credit) if needed. Preference 44 & 46 usually also enabled.
46	Allow invoices without orders	0	If '1', allows invoices with negative balances to generate a new invoice that isn't composed of any orders, so that their balances will always get carried over to a new invoice for the credits to take place. Preference 44 & 45 usually also enabled.

Note that all preferences have a default value. This means that your company does not need to have an explicit value in the table preference to set every preference. If a row for that preference number does not exist in the table preference, then the default value is taken. Default values are located in the table preference\_type.