Open ERP, a modern approach to integrated business management

Release 1.0

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Part I

Foreword

Information Systems have played an increasingly visible role over the past several years in improving the competitiveness of business. More than just tools for handling repetitive tasks, they're used to guide and advance all of a company's' daily activities. Integrated management software is today very often a key source of significant competitive advantage.

The standard response to a need for responsiveness, reliability, and rapidly increasing expectations is to create an organization based on departments with a clear linear structure, integrated around your operating processes. To increase efficiency amongst salespeople, accountants, logistics staff and everyone else you should have a common understanding of your problems.

For this you need a common language for shared references, policies and communication. An ERP (Enterprise Resource Planning) system makes the ideal platform for this common reference point.

CHAPTER

ONE

OPEN SOURCE SOFTWARE AT THE SERVICE OF MANAGEMENT

Risks and integration costs are important barriers to all the advantages you gain from such systems. That's why, today, few small- and medium-sized companies use ERP. In addition, the larger ERP vendors such as SAP, Microsoft and Oracle haven't been able to reconcile the power and comprehensive cover of an ERP system with the simplicity and flexibility wanted by the users. But this is exactly what small and medium enterprises are looking for.

The development processes of open source software, and the new business models adopted by their developers, provide a new way of resolving such problems of cost and quality for this kind of enterprise software.

To make an ERP system fully available to small and medium enterprises, cost reduction is the first priority. Open source software makes it possible to greatly reduce development costs by aggressive reuse of open source software libraries; to eliminate intermediaries (the distributors), with all of their expensive sales overhead; to cut out selling costs by free publication of the software; and to considerably reduce the marketing overhead.

Since there is open interaction among thousands of contributors and partners working on the same project, the quality of the resulting software benefits greatly from the scrutiny. And you can't be everything at once: accountant, software developer, salesperson, ISO 9001 quality professional, specialist in agricultural products, expert in the customs and habits of pharmaceutical vendors, just as a start.

Faced with these wide-ranging requirements, what could be better than a world network of partners and contributors? Everyone adds their own contribution according to their professional competence. Throughout this book you'll see that the results exceed any reasonable expectations when such work is well organized.

But the real challenge of development is to make this solution simple and flexible, as well as complete. And to reach this level of quality you need a leader and co-ordinator who can organize all of these activities. So the development team of Tiny ERP, today called Open ERP, is responsible for most of the organization, synchronization and coherence of the software.

And Open ERP offers great performance in all these areas!

CHAPTER

TWO

THE OPEN ERP SOLUTION

Because of its modularity, collaborative developments in Open ERP have been cleanly integrated, enabling any company to choose from a large list of available functions. As with most open source software, accessibility, flexibility, and simplicity are important keywords for development. Experience has shown that there's no need to train users for several months on the system, because they can just download it and use it directly.

So you'll find the modules for all types of needs, allowing your company to build its customized system by simply grouping and configuring the most suitable modules. Hundreds of modules are available.

They range from specific modules like the EDI interface for agricultural products, which has been used to interface with Match and Leclerc stores, up to the generic demonstration automation module for ordering sandwiches, which can take care of the eating preferences of your staff.

The results are rather impressive. Open ERP (once called Tiny ERP when it started out) is management software that is downloaded more than any other in the world, with over 600 downloads per day. It's available today in 18 languages and has a world network of partners and contributors. More than 800 developers participate in the projects on the collaborative development system of Tiny Forge.

To our knowledge, Open ERP is the only management system which is routinely used not only by big companies but also by very small companies and independent companies. This diversity is an illustration of the software's flexibility: a rather elegant coordination between people's functional expectations of the software and great simplicity in its use.

And this diversity is also found in the various sectors and trades which use the software, including agricultural products, textiles, public auctions, IT, and trade associations.

Lastly, such software has arisen from the blend of high code quality, well-judged architecture and use of free technologies. In fact, you may be surprised (if you're an IT person) to find that the download size of Open ERP is only around 6 MB. When that's expanded during installation its size is mostly attributable to all the official translations that are packaged with it, not the operating code. We've moved a long way from the days when the only people who could be expected to benefit from ERP were the owners of a widget factory on some remote industrial estate.

2.1 Why this book?

Many books set out to tell readers about the management of enterprise, and equally many aim to instruct the reader in the use of a piece of specialized software. We're not aiming to add to those lists because our approach is intended to be different.

Having restructured and reorganized many businesses, we wanted our management experience to generate a work that is both instructive and practical. It was important for us not to write a manual about Open ERP, but instead a work that deals with advanced management techniques realized through these IT tools. You'll see what management practices might be useful, what's possible, and then how you could achieve that in Open ERP.

It's this that we'll consider Open ERP for: not as an end in itself but just the tool you use to put an advanced management system into place.

2.2 Who's it for?

Written by two CEOs who have been successful with new technologies, this book is aimed at directors and managers who have an ambition to improve the performance of their whole company's management team. They're likely already to have significant responsibilities and possess the influence to get things done in their company.

It's likely that most readers will come from small- and medium-sized enterprises (up to a few hundred staff), and independent companies, because of the breadth of functions that need to be analyzed and involved in change. The same principles also apply to larger companies, however.

CHAPTER

THREE

STRUCTURE OF THIS BOOK

Part One, *First steps with Open ERP*, starts with the installation of Open ERP. If you have already installed Open ERP you can directly take your first steps on a guided tour in the *Guided Tour* chapter. If you're already familiar with Open ERP or Tiny ERP you can use the *Developing a real case* chapter to find out how to create a new workflow from scratch in an empty database with nothing to distract you. Or you can skip directly to the *Customer Relationship Management* chapter in the *Managing Customer Relationships* part, to start with details of Open ERP's functional modules.

Part Two, *Managing Customer Relationships*, deals with Supplier and Customer Relationship Management (SRM & CRM). You'll find the elements necessary for managing an efficient sales department there, and automating tasks to monitor performance.

Part Three, *General Accounting*, is devoted to general accounting and its key role in the management of the whole enterprise.

Part Four, *Effective Management of Operations*, handles all the operational functions of enterprise management: Human Resources for managing projects, through financial analyses supplied by analytic (or cost) accounts. You'll see how using Open ERP can help you to optimize your leadership of an enterprise.

Part Five, *Stock and Manufacturing*, describes the physical movement of Stocks and their Manufacture (the transformation or products and services into other products).

Part Six, *Sales and Purchasing*, deals with Purchasing and Selling goods and services.

Part Seven, *Process and Document Management*, is focused on the Process description and Documentation handling that Open ERP manages.

Finally Part Eight, *System Administration and Implementation*, structured in two chapters, explains first how to administer and configure Open ERP then provides a methodology for implementing Open ERP in the enterprise.

Note: About the authors

Fabien Pinckaers

Fabien Pinckaers was only eighteen years old when he started his first company. Today, over ten years later, he has founded and managed several new technology companies, all based on Free / Open Source software.

He originated Tiny ERP, now Open ERP, and is the director of two companies including Tiny sprl, the editor of Open ERP. In three years he has grown the Tiny group from one to sixty-five employees without loans or external fund-raising, and while making a profit.

He has also developed several large scale projects, such as Auction-in-Europe.com, which become the leader in the art market in Belgium. Even today people sell more art works there than on ebay.be.

He is also the founder of the LUG (Linux User Group) of Louvain-la-Neuve, and of several free projects like OpenReport, OpenStuff and Tiny Report. Educated as a civil engineer (polytechnic), he has won several IT prizes in Europe such as Wired and l'Inscene.

A fierce defender of free software in the enterprise, he is in constant demand as a conference speaker and he is the author of numerous articles dealing with free software in the management of the enterprise.

Geoff Gardiner

Geoff has held posts as director of services and of IT systems for international companies and in manufacturing. He was Senior Industrial Research Fellow at Cambridge University's Institute for Manufacturing where he focused on innovation processes.

He founded Seath Solutions Ltd (http://www.seathsolutions.com/) to provide services in the use of Open Source software, particularly Open ERP, for business management.

Author of articles and books focusing on the processes and technology of innovation, Geoff is also an active contributor to the Open ERP project. He holds an MBA from Cranfield School of Management and an MA in Engineering and Electrical Sciences from Trinity Hall, Cambridge. He is a member of the Institution of Engineering and Technology and of the Society of Authors.

Having observed, suffered, and led process implementation projects in various organizations, he has many thoughts to share on the successful adoption of an effective management automation tool.

CHAPTER

FOUR

DEDICATION

From Geoff Gardiner

My gratitude goes to my co-author, Fabien Pinckaers, for his vision and tenacity in developing Tiny ERP and Open ERP, and the team at Tiny for its excellent work on this.

Open ERP relies on a philosophy of Open Source and on the technologies that have been developed and tuned over the years by numerous talented people. Their efforts are greatly appreciated.

Thanks also to my family for their encouragement, their tolerance and their constant presence.

From Fabien Pinckaers

I address my thanks to all of the team at Tiny for their hard work in preparing, translating and re-reading the book in its various forms. My particular thanks to Laurence Henrion and my family for supporting me throughout all this effort.

Part II

First steps with Open ERP

Open ERP is an impressive software system, being simple to use and yet providing great benefits in helping you manage your company. It's easy to install under both Windows and Linux compared with other enterprise-scale systems, and offers unmatched functionality.

The objective of this first part of the book is to help you to start discovering it in practice.

The first chapter, *Installation and Initial Setup*, gives detailed guidance for installing it. Next, in *Guided Tour*, you're taken on a step-by-step guided tour using the information in its demonstration database. Then in *Developing a real case* you can try out a real case, from scratch in a new database, by developing a complete business workflow that runs from purchase to sale of goods.

CHAPTER

FIVE

INSTALLATION AND INITIAL SETUP

Installing Open ERP under Windows or Linux for familiarization use should take you only half an hour or so and needs only a couple of operations.

The first operation is installation of the application and database server on a server PC (that's a Windows or Linux or Macintosh computer).

You've a choice of approaches for the second operation: either install a web server (most probably on the original server PC) to use with standard web clients that can be found on anybody's PC, or install application clients on each intended user's PC.

When you first install Open ERP you'll set up a database containing a little functionality and some demonstration data to test the installation.

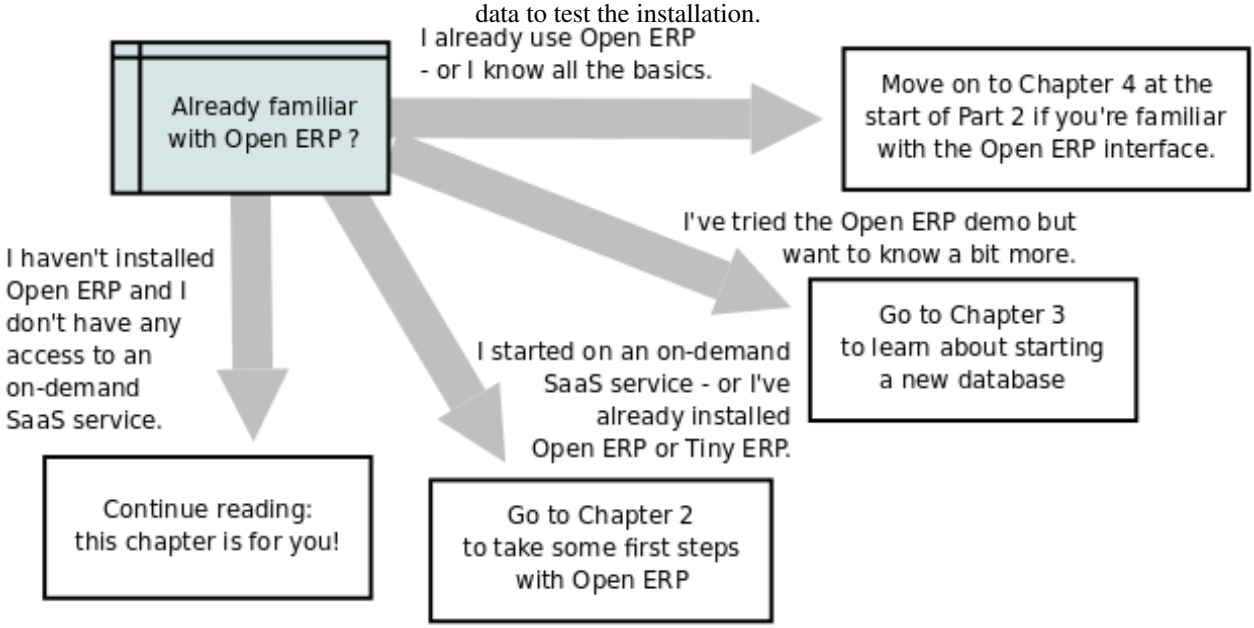


Figure 5.1: *Options for reading this part of the book*

This chapter, *Installation and Initial Setup*, focuses on the installation of Open ERP so that you can begin to familiarize yourselves with its use. If you're not a systems administrator, or if you've already installed Open ERP, or if you're planning to use an online SaaS provider, then you can skip this chapter and move straight to the next chapter, *Guided Tour*. If you've already used Open ERP (or Tiny ERP) a bit then you can move past that to the third chapter in this part of the book, *Developing a real case*.

Note: *Renaming from Tiny ERP to Open ERP*
Tiny ERP was renamed to Open ERP early in 2008 so somebody who's already used Tiny ERP should be equally at home with Open ERP. The two names refer to the same software, so there's no functional difference between versions 4.2.X of Open ERP and 4.2.X of Tiny ERP. This book applies to versions of Open ERP from 5.0.0 onwards, with references to earlier versions from time to time.

Note: *The SaaS, or "on-demand", offer*
SaaS (Software as a Service) is delivered by a hosting supplier and paid in the form of a monthly subscription that includes hardware (servers), system maintenance, provision of hosting services, and support.
You can get a month's free trial on Tiny's http://ondemand.openerp.com, which enables you to get started quickly without incurring costs for integration or for buying computer systems. Many of Tiny's partner companies will access this, and some may offer their own similar service.
This service should be particularly useful to small companies that just want to get going quickly and at low cost. It gives them immediate access to an integrated management system that's been built on the type of enterprise architecture used in banks and other large organizations. Open ERP is that system, and is described in detail throughout this book.

Whether you want to test Open ERP or to put it into full production, you have at least two starting points:

- evaluate it on line at http://www.openerp.com and ask Tiny for an SaaS trial hosted at http://ondemand.openerp.com, or the equivalent service at any of Tiny's partner companies,
- install it on your own computers to test it in your company's systems environment.

There are some differences between installing Open ERP on Windows and on Linux systems, but once installed, it gives the same functions from both so you won't generally be able to tell which type of server you're using.

Note: *Linux, Windows, Mac*
Although this book deals only with installation on Windows and Linux systems, the same versions are also available for the Macintosh on the official website of Open ERP.

Note: *Web sites for Open ERP*

- *Main Site: http://www.openerp.com,*
- *SaaS or "on-demand" Site: http://ondemand.openerp.com,*
- *Documentation Site: http://doc.openerp.com/,*
- *Community discussion forum where you can often receive informed assistance: http://www.openobject.com/forum.*

Tip: *Current documentation*
The procedure for installing Open ERP and its web server are sure to change and improve with each new version, so you should always check each release's documentation – both packaged with the release and on the website – for exact installation procedures.

Once you've completed this installation, create and set up a database to confirm that your Open ERP installation is working. You can follow these early chapters in this part of the book to achieve this.

5.1 The architecture of Open ERP

To access Open ERP you can:

- use a web browser pointed at the Open ERP client-web server, or

- use an application client (the GTK client) installed on each computer.

The two methods of access give very similar facilities, and you can use both on the same server at the same time. It's best to use the web browser if the Open ERP server is some distance away (such as on another continent) because it's more tolerant of time delays between the two than the GTK client is. The web client is also easier to maintain, because it's generally already installed on users' computers.

Conversely you'd be better off with the application client (called the GTK client because of the technology it's built with) if you're using a local server (such as in the same building). In this case the GTK client will be more responsive, so more satisfying to use.

Note: *Web client and GTK client*
The main functional difference between the two Open ERP clients is the presence of the calendar view in the web client, which doesn't exist in the GTK client at present (versions 4.x and 5.0). Apart from that you will find that there are small differences in their general usability.
When you're changing the structure of your Open ERP installation (adding and removing modules, perhaps changing labels) you'll find the web client to be irritating because of its use of ***caching****.*
Caching speeds it all up by keeping a copy of data somewhere between the server and your client, which is usually good. But you may have made changes to your installation that you cannot immediately see in your browser. Many apparent faults are caused by this! The workaround is to use the GTK client during development and implementation where possible.
The Tiny company will continue to support two clients for the foreseeable future, so you can use whichever client you prefer.

An Open ERP system is formed from three main components:

- the PostgreSQL database server, which contains all of the databases, each of which contains all data and most elements of the Open ERP system configuration,
- the Open ERP application server, which contains all of the enterprise logic and ensures that Open ERP runs optimally,
- the web server, a separate application called the Open Object client-web, which enables you to connect to Open ERP from standard web browsers and is not needed when you connect using a GTK client.

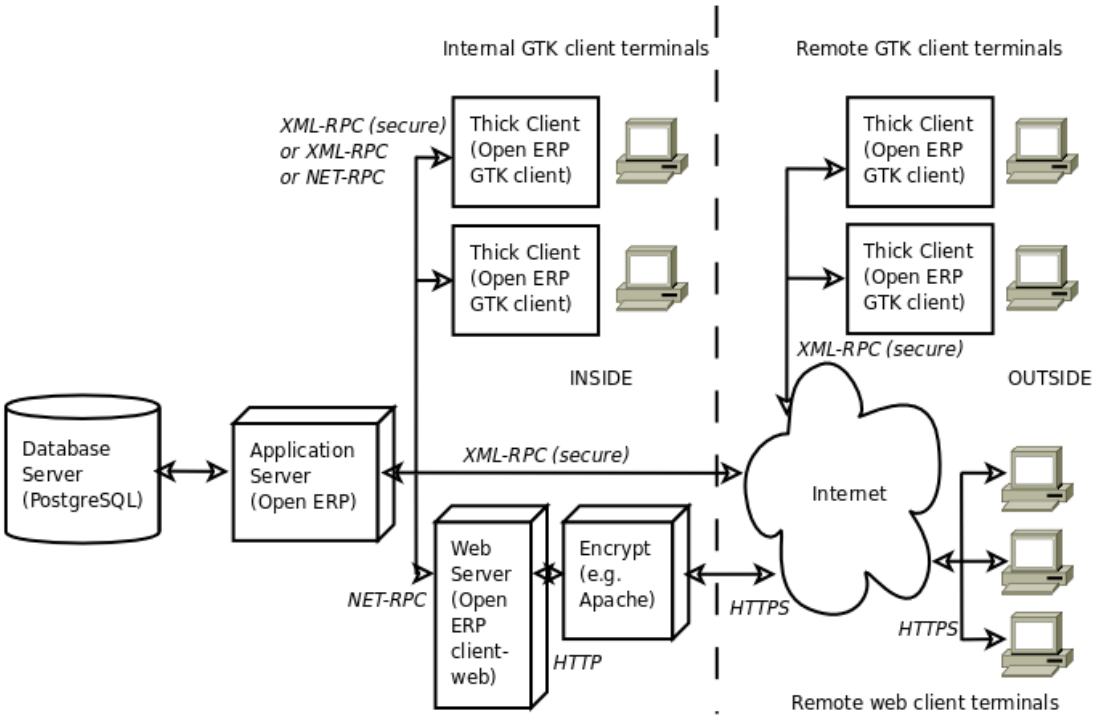


Figure 5.2: *The architecture of Open ERP*

Note: *Terminology: client-web – server or client?*
The client-web component can be thought of as a server or a client depending on your viewpoint.
It acts as a web server to an end user connecting from a web browser, but it also acts as a client to the Open ERP application server just as a GTK application client does.
So in this book its context will determine whether the client-web component is referred to as a server or a client.

Note: *eTiny*
The web application used to be known as "eTiny". Its name changed to "client-web" as Tiny ERP was renamed to Open ERP, but its characteristics have generally stayed the same.

Note: *PostgreSQL, the relational and object database management system.*
It's a free and open-source high-performance system that compares well with other database management systems such as MySQL and FirebirdSQL (both free), Sybase, DB2 and Microsoft SQL Server (all proprietary). It runs on all types of Operating System, from Unix/Linux to the various releases of Windows, via Mac OS X, Solaris, SunOS and BSD.

These three components can be installed on the same server or can be distributed onto separate computer servers if performance considerations require it.

If you choose to run only with GTK clients you won't need the third component – the client-web server – at all. In this case Open ERP's GTK client must be installed on the workstation of each Open ERP user in the company.

5.2 The installation of Open ERP

Whether you're from a small company investigating how Open ERP works, or on the IT staff of a larger organization and have been asked to assess Open ERP's capabilities, your first requirement is to install it or to find a working installation.

The table below summarizes the various installation methods that will be described in the following sections.

Table 5.1: Comparison of the different methods of installation on Windows or Linux

Method	Average Time	Level of Complexity	Notes
All-in-one Windows Installer	A few minutes	Simple	Very useful for quick evaluations because it installs all of the components pre-configured on one computer (using the GTK client).
Independent installation on Windows	Half an hour	Medium	Enables you to install the components on different computers. Can be put into production use.
Ubuntu Linux packages	A few minutes	Simple	Simple and quick but the Ubuntu packages aren't always up to date.
From source, for all Linux systems	More than half an hour	Medium to slightly difficult	This is the method recommended for production environments because it's easy to keep it up to date.

Each time a new release of Open ERP is made, Tiny supplies a complete Windows auto-installer for it. This contains all of the components you need – the PostgreSQL database server, the Open ERP application server and the GTK application client.

This auto-installer enables you to install the whole system in just a few mouse-clicks. The initial configuration is set up during installation, making it possible to start using it very quickly as long as you don't want to change the underlying code. It's aimed at the installation of everything on a single PC, but you can later connect GTK clients from other PCs, Macs and Linux boxes to it as well.

The first step is to download the Open ERP installer. At this stage you must choose which version to install – the stable version or the development version. If you're planning to put it straight into production you're strongly advised to choose the stable version.

Note: *Stable versions and development versions*
Open ERP development proceeds on two parallel tracks: stable versions and development versions.
New functionality is integrated into the development branch. This branch is more advanced than the stable branch, but it can contain undiscovered and unfixed faults. A new development release is made every month or so, and Tiny have made the code repository available so you can download the very latest revisions if you want.
The stable branch is designed for production environments. Releases of new functionality there are made only about once a year after a long period of testing and validation. Only fault fixes are released through the year on the stable branch.

To download the version of Open ERP for Windows, follow these steps:

1. Navigate to the site http://openerp.com.
2. Click *Downloads* on the menu at the left then, under **Windows Installers**, *All in One*.
3. This brings up the demonstration version Windows installer, currently **openerp-allinone-setup-5.0.0-3**.
4. Save the file on your PC - it's quite a substantial size because it downloads everything including the PostgreSQL database system, so will take some time.

To install Open ERP and its database you must be signed in as an Administrator on your PC. Double- click the installer file to install it and accept the default parameters on each dialog box as you go.

If you had previously tried to install the all-in-one version of Open ERP, you have to uninstall that first because various elements of a previous installation could interfere with your new installation. Make sure that all Tiny ERP, Open ERP and PostgreSQL applications are removed: you're likely to have to restart your PC to finish removing all traces of them.

The Open ERP client can be opened, ready to use the Open ERP system, once you have completed the all–in-one installation. The next step consists of setting up the database, and is covered in the final section of this chapter *Creating the database*.

5.2.1 Independent installation on Windows

System administrators can have very good reasons for wanting to install the various components of a Windows installation separately. For example, your company may not support the version of PostgreSQL or Python that's installed automatically, or you may already have PostgreSQL installed on the server you're using, or you may want to install the database server, application server and web server on separate hardware units.

For this situation you can get separate installers for the Open ERP server and client from the same location as the all-in-one auto-installer. You'll also have to download and install a suitable version of PostgreSQL independently.

You must install PostgreSQL before the Open ERP server, and you must also set it up with a user and password so that the Open ERP server can connect to it. Tiny's web-based documentation gives full and current details.

Connecting users on other PCs to the Open ERP server

To connect other computers to the Open ERP server you must set the server up so that it's visible to the other PCs, and install a GTK client on each of the those PCs:

1. Make your Open ERP server visible to other PCs by opening the Windows Firewall in the Control Panel, then asking the firewall to make an exception of the Open ERP server. In the **Exceptions** tab of Windows Firewall click on **Add a program...** and choose **Open ERP Server** in the list provided. This step enables other computers to see the Open ERP application on this server.
2. Install the Open ERP client (**openerp-client-5.X.exe**), which you can download in the same way as you downloaded the other Open ERP software, onto the other PCs.

Tip: *Version matching*
You must make sure that the version of the client matches that of the server. The version number is given as part of the name of the downloaded file. Although it's possible that some different revisions of client and server will function together, there's no certainty about that.

To run the client installer on every other PC you'll need to have administrator rights there. The installation is automated, so you just need to guide it through its different installation steps.

To test your installation, start by connecting through the Open ERP client on the server machine while you're still logged in as administrator.

Note: *Why sign in as a PC Administrator?*
You'd not usually be signed on as a PC administrator when you're just running the Open ERP client, but if there have been problems in the installation it's easier to remain as an administrator after the installation so that you can make any necessary fixes than to switch user as you alternate between roles as a tester and a software installer.

Start the GTK client on the server through the Windows Start menu there. The main client window appears, identifying the server you're connected to (which is `localhost` – your own server PC – by default). If the message **No database found, you must create one** appears then you've **successfully connected** to an Open ERP server containing, as yet, no databases.

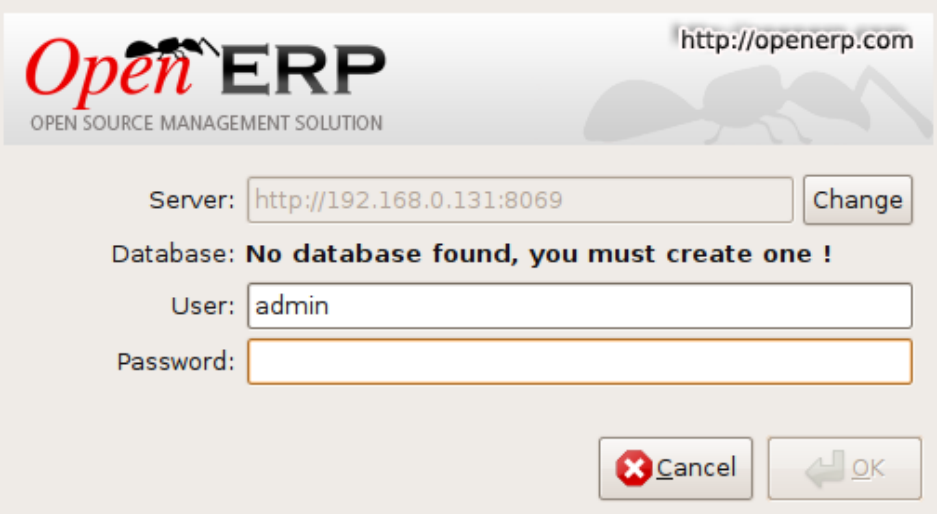


Figure 5.3: *Dialog box on connecting a GTK client to a new Open ERP server*

Note: *Connection modes*
In its default configuration at the time of writing, the Open ERP client connects to port 8069 on the server using the XML-RPC protocol (from Linux) or port 8070 using the NET-RPC protocol instead (from Windows). You can use either protocol from either operating system. NET-RPC is quite a bit quicker, although you may not notice that on the GTK client in normal use. Open ERP can run XML-RPC, but not NET-RPC, as a secure connection.

The all-in-one installer also provides a web server, but this was not yet working at the time of writing.

Resolving errors with a Windows installation

If you can't get Open ERP to work after installing your Windows system you'll find some ideas for resolving this below:

1. Is the Open ERP application working? Signed in to the server as an administrator, stop and restart the service using **Stop Service** and **Start Service** from the menu *Start → Programs → OpenERP Server* .
2. Is the Open ERP application server set up correctly? Signed in to the server as Administrator, open the file `openerp-server.conf` in `C:\Program Files\OpenERP AllInOne` and check its content. This file is generated during installation with information derived from the database. If you see something strange it's best to entirely reinstall the server from the demonstration installer rather than try to work out what's happening.

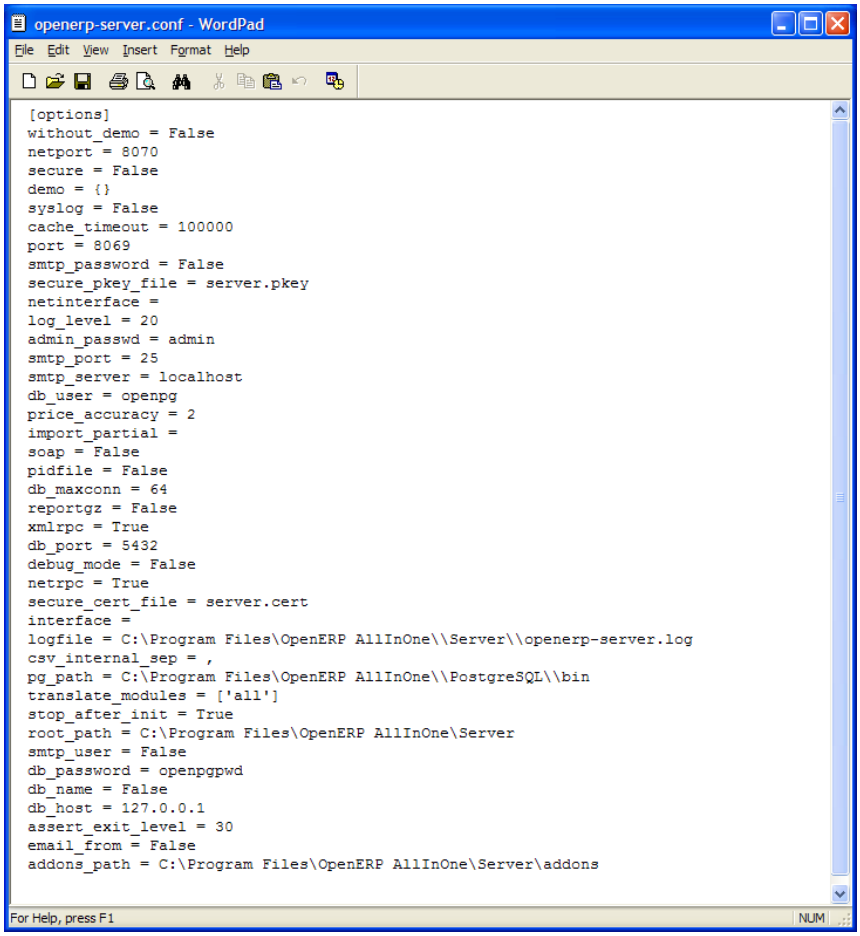


Figure 5.4: *Typical Open ERP configuration file*

3. Is your PostgreSQL server running? Signed in as administrator, select **Stop Service** from the menu *Start* → *Programs* → *PostgreSQL*. If, after a couple of seconds, you can read **The PostgreSQL4OpenERP service has stopped** then you can be reasonably sure that the database server was working. Restart PostgreSQL.

4. Does PostgreSQL work at all? Still in the PostgreSQL menu, start the pgAdmin III application which you can use to explore the database. Double-click on the `PostgreSQL4OpenERP` connection. You can find the password in the Open ERP server configuration file. If the database server is working you'll be able to see some information about the empty database. If it's not then an error message will appear.

5. Are your client programs correctly installed? If your Open ERP GTK clients haven't started then the swiftest approach is to reinstall them.

6. Can remote client computers see the server computer at all? Check this by opening a command prompt window (enter `cmd` in the window *Start* → *Run...*) and enter `ping <address of server>` there (where `<address of server>` represents the IP address of the server). The server should respond with a reply.

7. Have you changed any of the server's parameters? At this point in the installation the port number of the server must be 8069 using the protocol XML-RPC.

8. Is there anything else in the server's history that can help you identify the problem? Open the file `openerp-server.log` in `C:\Program Files\OpenERP AllInOne`(which you can only do when the server is stopped) and scan through the history for ideas. If something looks strange there, contributors to the Open ERP forums can often help identify the reason.

5.2.2 Installation on Linux (Ubuntu)

This section guides you through installing the Open ERP server and client on Ubuntu, one of the most popular Linux distributions. It assumes that you're using a recent release of Desktop Ubuntu with its graphical user interface on a desktop or laptop PC.

Note: *Other Linux distributions*
Installation on other distributions of Linux is fairly similar to installation on Ubuntu. Read this section of the book so that you understand the principles, then use the online documentation and the forums for your specific needs on another distribution.

For information about installation on other distributions, visit the documentation section by following *Product → Documentation* on http://www.openerp.com. Detailed instructions are given there for different distributions and releases, and you should also check if there are more up to date instructions for the Ubuntu distribution as well.

Installation of Open ERP from packages

At the time of writing this book, Ubuntu hadn't yet published packages for Open ERP, so this section describes the installation of version 4.2 of Tiny ERP. This is very similar to Open ERP and so can be used to test the software.

Here's a summary of the procedure:

1. Start Synaptic Package Manager, and enter your root password as required.
2. Check that the repositories `main` `universe` and `restricted` are enabled.
3. Search for a recent version of PostgreSQL, for example `postgresql-8.3`then select it for installation along with its dependencies.
4. Search for `tinyerp` then select `tinyerp-client` and `tinyerp-server` for installation along with their dependencies. Click **Update Now** to install it all.
5. Close Synaptic Package Manager.

Installing PostgreSQL results in a database server that runs and restarts automatically when the PC is turned on. If all goes as it should with the tinyerp-server package then tinyerp-server will also install, and restart automatically when the PC is switched on.

Start the Tiny/Open ERP GTK client by clicking its icon in the *Applications* menu, or by opening a terminal window and typing `tinyerp-client` . The Open ERP login dialog box should open and show the message **No database found you must create one!**.

Although this installation method is simple and therefore an attractive option, it's better to install Open ERP using a version downloaded from http://openerp.com. The downloaded revision is likely to be far more up to date than that available from a Linux distribution.

Note: *Package versions*
Maintaining packages is a process of development, testing and publication that takes time. The releases in Open ERP (or Tiny ERP) packages are therefore not always the latest available. Check the version number from the information on the website before installing a package. If only the third digit group differs (for example 5.0.1 instead of 5.0.2) then you may decide to install it because the differences may be minor – fault fixes rather than functionality changes between the package and the latest version.

Manual installation of the Open ERP server

In this section you'll see how to install Open ERP by downloading it from the site http://openerp.com, and how to install the libraries and packages that Open ERP depends on, onto a desktop version of Ubuntu. Here's a summary of

the procedure:

1. Navigate to the page http://openerp.com with your web browser,
2. Click *Downloads* on the left menu,
3. Download the client and server files from the *Sources (Linux)* section into your home directory (or some other location if you've defined a different download area).

To download the PostgreSQL database and all of the other dependencies for Open ERP from packages:

1. Start Synaptic Package Manager, and enter the root password as required.
2. Check that the repositories `main` `universe` and `restricted` are enabled.
3. Search for a recent version of PostgreSQL (such as `postgresql-8.3` then select it for installation along with its dependencies.
4. Select all of Open ERP's dependences, an up-to-date list of which should be found in the installation documents on Tiny's website, then click **Update Now** to install them.

Note: *Python programming language*
Python is the programming language that's been used to develop Open ERP. It's a dynamic, non-typed language that is object-oriented, procedural and functional. It comes with numerous libraries that provide interfaces to other languages and has the great advantage that it can be learnt in only a few days. It's the language of choice for large parts of NASA's, Google's and many other enterprises' code.
For more information on Python, explore http://www.python.org.

Once all these dependencies and the database are installed, install the server itself using the instructions on the website.

Open a terminal window to start the server with the command `sudo -i -u postgres openerp-server`, which should result in a series of log messages as the server starts up. If the server is correctly installed, the message **[...] waiting for connections...** should show within 30 seconds or so, which indicates that the server is waiting for a client to connect to it.

```
File  Edit  View  Terminal  Tabs  Help
gsg@u804srv1:~$ sudo -i -u postgres openerp-server
[sudo] password for gsg:
[2009-03-07 17:25:10,110] INFO:server:version - 5.0.0
[2009-03-07 17:25:10,111] INFO:server:addons_path - /usr/lib/python2.5/site-packages/openerp-server/addons
[2009-03-07 17:25:10,111] INFO:server:database hostname - localhost
[2009-03-07 17:25:10,112] INFO:server:database port - 5432
[2009-03-07 17:25:10,112] INFO:server:database user - postgres
[2009-03-07 17:25:10,113] INFO:objects:initialising distributed objects services
[2009-03-07 17:25:10,422] INFO:web-services:starting XML-RPC services, port 8069
[2009-03-07 17:25:10,423] INFO:web-services:starting NET-RPC service, port 8070
[2009-03-07 17:25:10,424] INFO:web-services:the server is running, waiting for connections...
```

Figure 5.5: *Open ERP startup log in the console*

Manual installation of Open ERP GTK clients

To install an Open ERP GTK client, follow the steps outline on the website installation document for your particular operating system.

Tip: *Survey: Don't Cancel!*
When you start the GTK client for the first time, a dialog box appears asking for various details that are intended to help the Tiny company assess the prospective user base for its software.
*If you click the **Cancel** button, the window goes away – but Open ERP will ask the same questions again next time you start the client. It's best to click **OK**, even if you choose to enter no data, to prevent that window reappearing next time.*

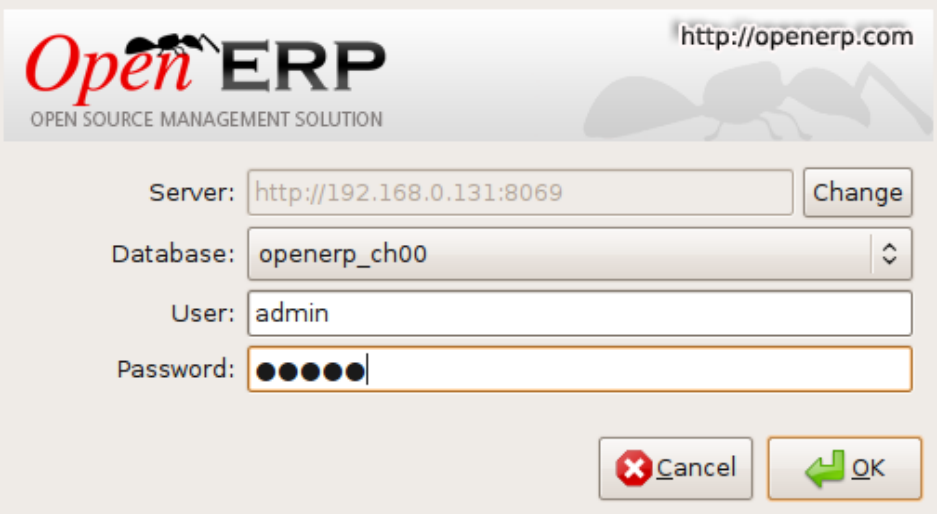


Figure 5.6: *Open ERP client at startup*

Open a terminal window to start the client using the command openerp-client. When you start the client on the same Linux PC as the server you'll find that the default connection parameters will just work without needing any change. The message **No database found, you must create one!** shows you that the connection to the server has been successful and you need to create a database on the server.

Creating the database

You can connect other GTK clients over the network to your Linux server. Before you leave your server, make sure you know its network address – either by its name (such as `mycomputer.mycompany.net`) or its IP address (such as `192.168.0.123`).

Note: *Different networks*
Communications between an Open ERP client and server are based on standard protocols. You can connect Windows clients to a Linux server, or vice versa, without problems. It's the same for Mac versions of Open ERP – you can connect Windows and Linux clients and servers to them.

To install an Open ERP client on a computer under Linux, repeat the procedure shown earlier in this section. You can connect different clients to the Open ERP server by modifying the connection parameters on each client. To do that, click the **Change** button on the connection dialog and set the following field as needed:

- **Server** : `name` or `IP address` of the server over the network,
- **Port** : the port, whose default is `8069` or `8070`,
- **Connection protocol** : `XML-RPC` or `NET-RPC` .

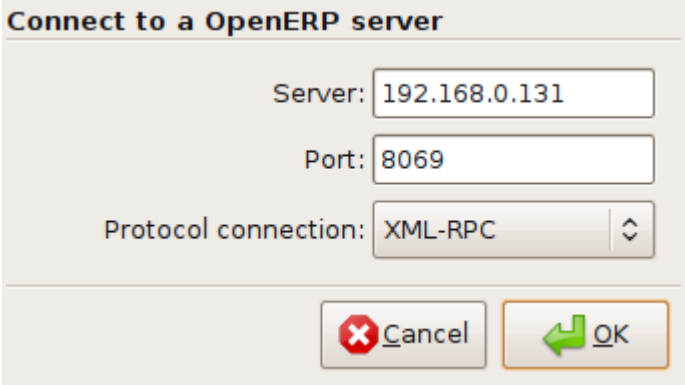


Figure 5.7: *Dialog box for defining connection parameters to the server*

It's possible to connect the server to the client using a secure protocol to prevent other network users from listening in, but the installation described here is for direct unencrypted connection.

If your Linux server is protected by a firewall you'll have to provide access to port `8069`or `8070`for users on other computers with Open ERP GTK clients.

Installation of an Open ERP web server

Just as you installed a GTK client on a Linux server, you can also install the Open ERP client-web server. You can install it from sources after installing its dependencies from packages as you did with the Open ERP server, but Tiny have provided a simpler way to do this for eTiny – using a system known as ez_setup.

Before proceeding, confirm that your Open ERP installation is functioning correctly with a GTK client. If it's not you'll need to go back now and fix it, because you need to be able to use it fully for the next stages.

To install client-web follow the up-to-date instructions in the installation document on the website.

Note: *Ez tool*
Ez is the packaging system used by Python. It enables the installation of programs as required just like the packages used by a Linux distribution. The software is downloaded across the network and installed on your computer by ez_install.
***ez_setup** is a small program that installs ez_install automatically.*

The Open ERP Web server connects to the Open ERP server in the same way as an Open ERP client using the NET-RPC protocol. Its default setup corresponds to that of the Open ERP server you've just installed, so should connect directly at startup.

1. At the same console as you've just been using, go to the Openerp web directory by typing **cd openerp-web-5.X**.
2. At a terminal window type **start-openerp-web** to start the Open ERP Web server.

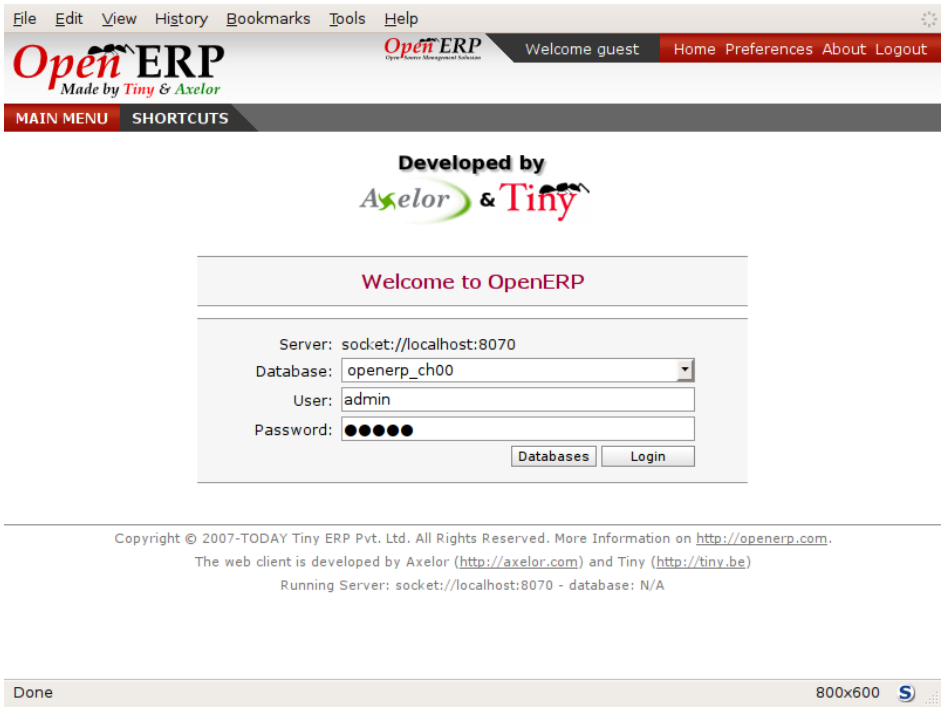


Figure 5.8: *Open ERP web client at startup*

You can verify the installation by opening a web browser on the server and navigating to http://localhost:8080 to connect to eTiny as shown in the figure *Open ERP web client at startup*. You can also test this from another computer connected to the same network if you know the name or IP address of the server over the network – your browser should be set to http://<server_address>:8080 for this.

Verifying your Linux installation

You've used default parameters so far during the installation of the various components. If you've had problems, or you just want to set this up differently, the following points provide some indicators about how you can set your installation up.

Tip: ***psql*** *and* ***pgAdmin*** *tools*
psql is a simple client, executed from the command line, that's delivered with PostgreSQL. It enables you to execute SQL commands on your Open ERP database.
If you prefer a graphical utility to manipulate your database directly you can install pgAdmin III (it is commonly installed automatically with PostgreSQL on a windowing system, but can also be found at `http://www.pgadmin.org/` *).*

1. The PostgreSQL database starts automatically and listens locally on port 5432 as standard: check this by entering `sudo netstat -anpt` at a terminal to see if port 5432 is visible there.
2. The database system has a default role of `postgres` accessible by running under the Linux postgres user: check this by entering `sudo su postgres -c psql` at a terminal to see the psql startup message – then type `\q` to quit the program.
3. Start the Open ERP server from the postgres user (which enables it to access the PostgreSQL database) by typing `sudo su postgres -c tinyerp-server`.
4. If you try to start the Open ERP server from a terminal but get the message `socket.error: (98, 'Address already in use')` then you might be trying to start Open ERP while an instance of

Open ERP is already running and using the sockets that you've defined (by default 8069 and 8070). If that's a surprise to you then you may be coming up against a previous installation of Open ERP or Tiny ERP, or something else using one or both of those ports.

Type `sudo netstat -anpt` to discover what is running there, and record the PID. You can check that the PID orresponds to a program you can dispense with by typing `ps aux | grep <PID>` and you can then stop the program from running by typing `sudo kill <PID>`. You need additional measures to stop it from restarting when you restart the server.

5. The Open ERP server has a large number of configuration options. You can see what they are by starting the server with the argument `-help` By efault the server configuration is stored in the file `.terp_serverrc` in the user's home directory (and for the postgres user that directory is `/var/lib/postgresql` .

6. You can delete the configuration file to be quite sure that the Open ERP server is starting with just the default options. It is quite common for an upgraded system to behave badly because a new version server cannot work with options from a previous version. When the server starts without a configuration file it will write a new one once there is something non-default to write to it – it will operate using defaults until then.

7. To verify that the system works, without becoming entangled in firewall problems, you can start the Open ERP client from a second terminal window on the server computer (which doesn't pass through the firewall). Connect using the XML-RPC protocol on port 8069 or NET-RPC on port 8070. The server can use both ports simultaneously. The window displays the log file when the client is started this way.

8. The client setup is stored in the file `.terprc` in the user's home directory. Since a GTK client can be started by any user, each user would have their setup defined in a configuration file in their own home directory.

9. You can delete the configuration file to be quite sure that the Open ERP client is starting with just the default options. When the client starts without a configuration file it will write a new one for itself.

10. The web server uses the NET-RPC protocol. If a GTK client works but the web server doesn't then the problem is either with the NET-RPC port or with the web server itself, and not with the Open ERP server.

Hint: *One server for several companies*
You can start several Open ERP application servers on one physical computer server by using different ports. If you have defined multiple database roles in PostgreSQL, each connected through an Open ERP instance to a different port, you can simultaneously serve many companies from one physical server at one time.

5.3 Database creation

Use the technique outlined in this section to create a new database, `openerp_ch01` . This database will contain the demonstration data provided with Open ERP and a large proportion of the core Open ERP functionality. You'll need to know your super administrator password for this – or you'll have to find somebody who does have it to create this seed database.

Note: *The super-administrator password*
Anyone who knows the super-administrator password has complete access to the data on the server – able to read, change and delete any of the data in any of the databases there.
After first installation, the password is `admin`*. You can change it through the GTK client from the menu* File → Databases → Administrator Password*, or through the web client by logging out (click the* ***Logout*** *link), clicking* ***Databases*** *on the login screen, and then clicking the* ***Password*** *button on the Management screen. This password is stored in a configuration file outside the database, so a server systems administrator can change it if you forget it.*

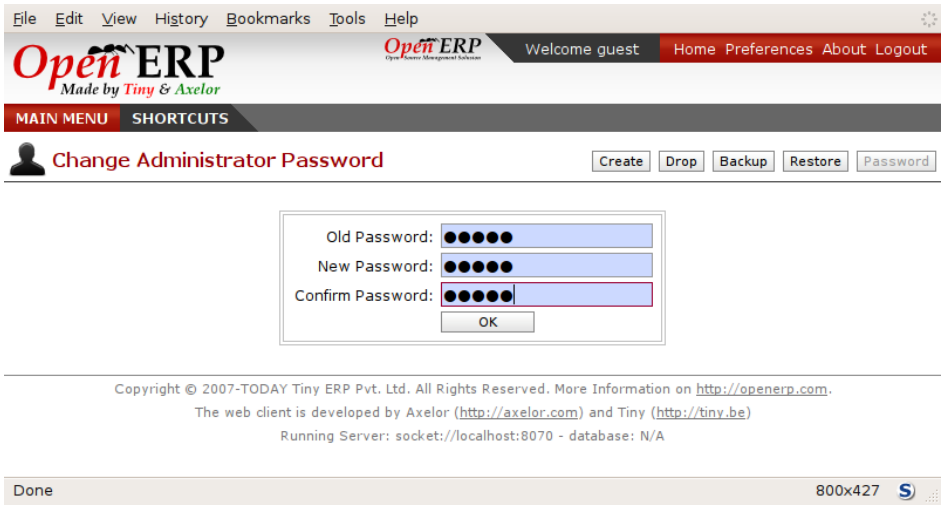


Figure 5.9: *Changing the super-administrator password through the web client*

5.3.1 Creating the database

If you're using the GTK client, choose *Files* → *Databases* → *New database* in the menu at the top left. Enter the super-administrator password, then the name of the new database you're creating.

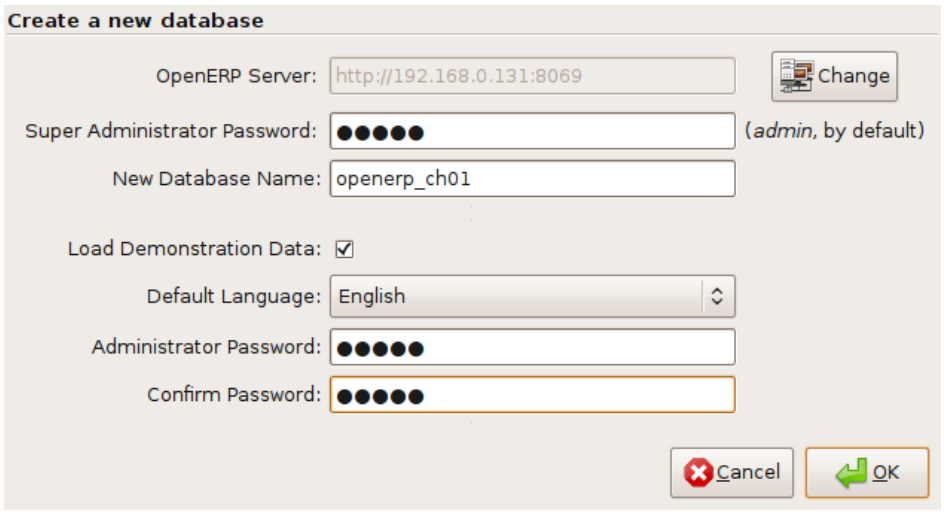


Figure 5.10: *Creating a new database through the GTK client*

If you're using the web client, click **Databases** on the login screen, then **Create** on the database management page. Enter the super-administrator password, and the name of the new database you're creating.

In both cases you'll see a checkbox that determines whether you load demonstration data or not. The consequences of checking this box or not affect the **whole use** of this database.

In both cases you'll also see that you can choose the Administrator password. This makes your database quite secure because you can ensure that it is unique from the outset. (In fact many people find it hard to resist `admin` as their password!)

5.3.2 Database openerp_ch01

Wait for the message showing that the database has been successfully created, along with the user accounts and passwords (`admin/XXXX` and `demo/demo`). Now you've created this seed database you can extend it without having to know the super-administrator password.

Tip: *User Access*
The combination of username/password is specific to a single database. If you have administrative rights to a database you can modify all users. Alternatively you can install the `users_ldap` module, which manages the authentication of users in LDAP (the Lightweight Directory Access Protocol, a standard system), and connect it to several Open ERP databases. Using this, many databases can share the same user account details.

Note: *Failure to create a database*
*How do you know if you've successfully created your new database? You're told if the database creation has been unsuccessful. If you have entered a database name using prohibited characters (or no name, or too short a name) you will be alerted by the dialog box **Bad database name!** explaining how to correct the error. If you've entered the wrong super-administrator password or a name already in use (some names can be reserved without your knowledge), you'll be alerted by the dialog box **Error during database creation!**.*

Connect to the database `openerp_ch01` that you just created, using the default administrator account.

If this is the first time you've connected to this database you'll be asked a series of questions to define the database parameters:

1. **Select a profile** : select `Minimal Profile` and click **Next**.
2. **Company Details** : replace the proposed default of `Tiny sprl` by your own company name, complete as much of your address as you like, and add some lines about your company, such as a slogan and any statutory requirements, to the header and footer fields. Click **Next**.
3. **Summary** : check the information and go back to make any modifications you need before installation. Then click **Install**.
4. **Installation Completed** : click **Ok**.

Once configuration is complete you're connected to your Open ERP system. Its functionality is very limited because you've selected a minimal installation, but this is sufficient to demonstrate that your installation is working.

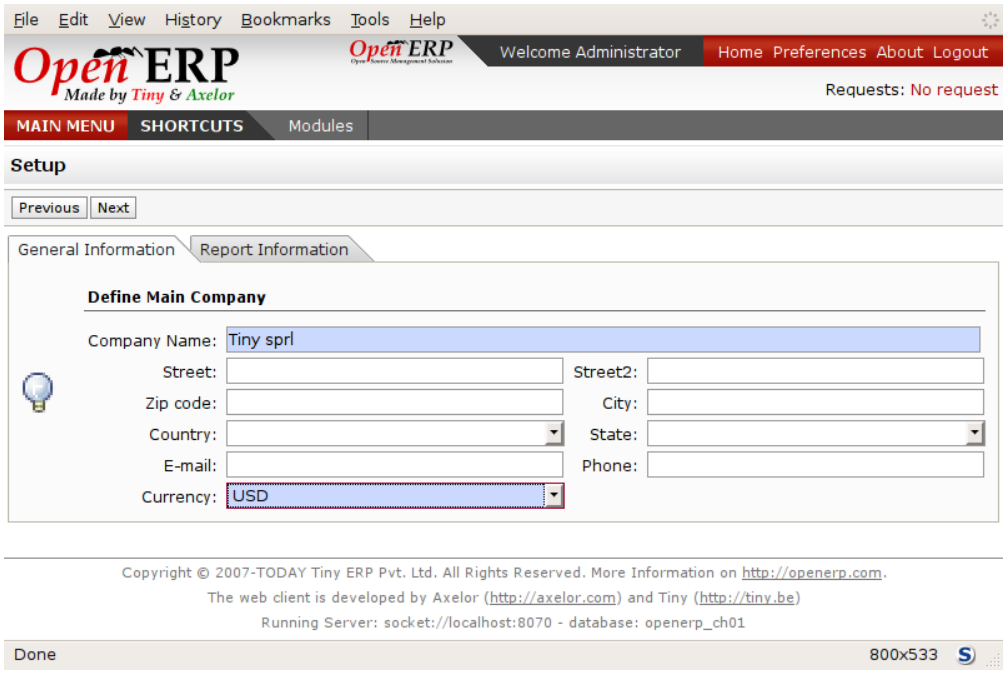


Figure 5.11: *Defining your company during initial database configuration*

5.3.3 Managing databases

As a super-administrator you've not only got rights to create new databases, but also to:

- delete databases,
- backup databases,
- restore databases.

All of these operations can be carried out from the menu *File* → *Databases...* → *Backup databases* in the GTK client, or from the **Database** button in the web client's **Login** screen.

Tip: *Duplicating a database*
To duplicate a database you can:

1. *make a backup file on your PC from this database.*
2. *restore this database from the backup file on your PC, giving it a new name as you do so.*

This can be a useful way of making a test database from a production database. You can try out the operation of a new configuration, new modules, or just the import of new data.

A system administrator can configure Open ERP to restrict access to some of these database functions so that your security is enhanced in normal production use.

You are now ready to use databases from your installation to familiarize yourself with the administration and use of Open ERP.

5.4 New Open ERP functionality

The database you've created and managed so far is based on the core Open ERP functionality that you installed. The core system is installed in the file system of your Open ERP application server, but only installed into an Open ERP database as you require it, as is described in the next chapter, *Guided Tour*.

What if want to update what's there, or extend what's there with additional modules?

- To update what you have, you'd install a new instance of Open ERP using the same techniques as described earlier in this section, *Database creation*.
- To extend what you have, you'd install new modules in the `addons` directory of your current Open ERP installation. There are several ways of doing that.

In both cases you'll need briefly to be a `root` user or `Administrator` of your Open ERP application server.

5.4.1 Extending Open ERP

To extend Open ERP you'll need to copy modules into the `addons` directory. That's in your server's `openerp-server` directory (which differs between Windows, Mac and some of the various Linux distributions and not available at all in the Windows all-in-one installer). If you look there you'll see existing modules such as `product` and `purchase`. A module can be provided in the form of files within a directory or a a zip-format file containing that same directory structure.

You can add modules in two main ways – through the server, or through the client. To add new modules through the server is a conventional systems administration task. As `root`user or other suitable user, you'd put the module in the `addons` directory and change its permissions to match those of the other modules.

To add new modules through the client you must first change the permissions of the `addons`directory of the server, so that it is writable by the server. That will enable you to install Open ERP modules using the Open ERP client (a task ultimately carried out on the application server by the server software).

Tip: *Changing permissions*
A very simple way of changing permissions on the Linux system you're using to develop an Open ERP application is to execute the command sudo chmod 777 <path_to_addons> (where <path_to_addons> is the full path to the addons directory, a location like /usr/lib/python2.5/site-packages/openerp- server/addons).

Any user of Open ERP who has access to the relevant administration menus can then upload any new functionality, so you'd certainly disable this capability for production use. You'll see examples of this uploading as you make your way through this book.

CHAPTER

SIX

GUIDED TOUR

Starting to discover Open ERP, using demonstration data supplied with the system, is a good way to familiarize yourself with the user interface. This guided tour provides you with an introduction to many of the available system features.

You'd be forgiven a flicker of apprehension when you first sit at your computer to connect to Open ERP, since ERP systems are renowned for their complexity and for the time it takes to learn how to use them. These are, after all, Enterprise Resource Planning systems, capable of managing most elements of global enterprises, so they should be complicated, shouldn't they? But even if this is often the case for proprietary software, Open ERP is a bit of an exception in the class of management software.

Despite its comprehensiveness, Open ERP's interface and workflow management facilities are quite simple and intuitive to use. For this reason Open ERP is one of the few software packages with reference customers in both very small businesses (typically requiring simplicity) and large accounts (typically requiring wide functional coverage).

A two-phase approach provides a good guide for your first steps with Open ERP:

1. Using a database containing demonstration data to get an overview of Open ERP's functionality (described in this chapter, *Guided Tour*)
2. Setting up a clean database to configure and populate a limited system for yourself (described in the next chapter, *Developing a real case*).

To read this chapter effectively, make sure that you have access to an Open ERP server. The description in this chapter assumes that you're using the Open ERP web client unless it states otherwise. The general functionality differs little from one client to the other.

6.1 Database creation

Use the technique outlined in *Installation and Initial Setup* to create a new database, `openerp_ch02` . This database will contain the demonstration data provided with Open ERP and a large proportion of the core Open ERP functionality. You'll need to know your super administrator password for this – or you'll have to find somebody who does have it to create this seed database.

Start the database creation process from the **Welcome** page by clicking **Databases** and then completing the following fields on the **Create new database** form:

- **Super admin password** : by default it's `admin` , if you or your system administrator haven't changed it,
- **New database name** : `openerp_ch02` ,
- **Load Demonstration data** checkbox: `checked` ,

- **Default Language** : `English` ,
- **Administrator password** : `admin` (because it's easiest to remember at this stage, but obviously completely insecure),
- **Confirm password** : `admin` .

6.2 To connect to Open ERP

Since this is the first time you've connected to it you'll have to go through the Setup wizard in steps:

1. **Select a profile** : select `Minimal Profile` and click **Next**.
2. At the **Define Main Company** step you should select your own **Company Name** and **Currency**, and address details on the first tab **General Information**; and add more details on the second tab **Report Information** including a logo, if you have one, that appears on reports. Click **Next**.
3. At the **Summary** page you can go back to change details if you need. Click the **Install** button.
4. Finally, at the **Installation done** page, click **Start Configuration**.

Configuration consists of a set of wizards that help you through options for the installed modules. Hardly anything is installed so this is a very simple process at the moment.

1. At the first screen click **Continue** to go into the first wizard. Choose **View Mode** : **Simplified Interface** and then click **Set** to save it.
2. Click **Skip Step** to step over the next wizard, which would enable you to add other users.
3. You've now reached the end of the configuration so click **Continue** to start using the system as the Administrator.

Once you're displaying the main menu you're able to see the following screen items, as shown in screenshot *The Main Menu of the openerp_ch02 database*:

- the **Preferences** toolbar to the top right, showing the user name, links to the **Home** page, **Preferences**, **About** and **Logout**,
- just below you'll find information about the **Request** system,
- links to the **MAIN MENU** and the **SHORTCUTS**,
- information about copyright and the database you're logged into at the bottom of the page,
- the main contents of the window with by the menu toolbar to the left: links generally line up on the right but there are none to show at the moment.

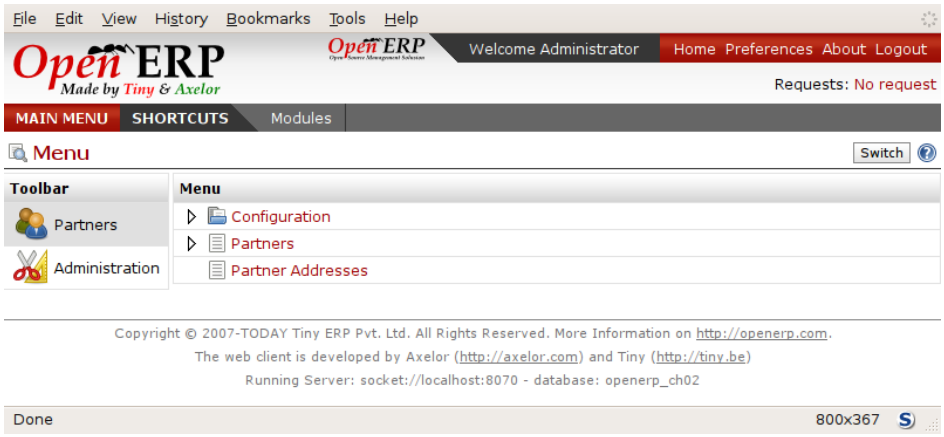


Figure 6.1: *The Main Menu of the openerp_ch02 database*

Two menus are available on the left:

- *Partners*,
- *Administration*.

6.2.1 Preferences toolbar

When you're connected to Open ERP the Preferences toolbar indicates which user you're connected as. So it should currently be showing **Welcome Administrator** (unless you logged in as another user and it's reflecting the name of that user instead).

You'll find a link to the **Home** page to its right. This takes you to either the dashboard or the available menus, depending on the user configuration. In the case of the `openerp_ch02`database so far the Home page is the Main Menu. But in general each user of the system is presented with a dashboard that's designed to show performance indicators and urgent documents that are most useful to someone of the user's position in the company. You'll see how to assign dashboards to different users in a later chapter, *Configuration & Administration*.

Tip: *Multi-nationals and time zones*
If you have users in different countries, they can configure their own timezone. Timestamp displays are then adjusted by reference to the user's own localization setting.
So if you have a team in India and a team in England, the times will automatically be converted. If an Indian employee sets her working hours from 9 to 6 that will be converted and saved in the server's timezone. When the English users want to set up a meeting with an Indian user, the Indian user's available time will be converted to English time.

The next element in the Toolbar is a link to **Preferences**. By clicking that link you reach a page where the current user can set their password, a timezone, a working language, and a signature:

- The **Password** field gives the user the opportunity to change their own password. You should take steps (perhaps written policies) to prevent users making these too trivial.
- The **Language** field enables the user's working language to be changed. But first the system must be loaded with other languages for the user to be able to choose an alternative, which is described in the next subsection of this chapter. This is a mandatory field, although might initially be set as blank.
- The **Timezone** setting indicates the user's location to Open ERP. This can be different from that of the server. All of the dates in the system are converted to the user's timezone automatically.
- The **Signature** field gives the user a place for the signature attached to messages sent from within Open ERP.

The **About** link gives information about the development of the Open ERP software and various links to other information.

The **Logout** link enables you to logout and return to the original login page. You can then login to another database, or to the same database as another user. This page also gives you access to the super-administrator functions for managing databases on this server.

The **Requests** link sits just below this toolbar. It is only visible if you're logged into a database. If your database is new it will say **No request**. You can click on that link to look at requests that have been sent to you at any time.

Installing a new language

Each user of the system can work in his or her own language. More than twenty languages are currently available besides English. Users select their working language using the Preferences link. You can also assign a language to a partner (customer or supplier), in which case all the documents sent to that partner will be automatically translated into that language.

Attention:

More information about languages
The base version of Open ERP is translated into the following languages: English, German, Chinese, Spanish, Italian, Hungarian, Dutch, Portuguese, Romanian, Swedish and Czech.
But other languages are also available: Arabic, Afghan, Austrian, Bulgarian, Indonesian, Finnish, Thai, Turkish and Vietnamese..

As administrator you can install a new main working language into the system.

1. Select *Administration* in the Menu Toolbar and click *Translations → Load an Official Translation* in the main menu window,
2. Select the language to install, `French` for example, and click on **Start Installation**,
3. When the message **Installation done** appears in the **Language file loaded** window, click **OK** to return to the menu. (Your system will actually need the French locale loaded to be able to do this, so you may not be successful here.)

To see the effects of this installation change the preferences of your user to change the working language (you may first need to ensure that you have explicitly selected English as your language, rather than keep the default, before you're given the French option). The main menu is immediately translated in the selected language. If you're using the GTK client you'll first have to close the menu then open a new main menu to start seeing things in the new language.

Note: *Navigating the menu*
From this point in the book navigation from the main menu is written as a series of menu entries connected by the → character. Instead of seeing " Select Administration in the Menu toolbar then click Translations > Load an Official Translation " you'll just get " use menu Administration → Translations → Load an Official Translation *".*

Requests as a mechanism for internal communication

Requests are a powerful communication mechanism between users of the system. They're also used by Open ERP itself to send system messages to users.

They have distinct advantages over traditional emails:

- requests are linked to other Open ERP documents,
- an event's history is attached to the request,

- you can monitor events effectively from the messages they've sent.

Open ERP uses this mechanism to inform users about certain system events. For example if there's a problem concerning the procurement of a product a request is sent by Open ERP to the production manager.

Send a request to get an understanding of its functionality:

1. Click on the **Requests** link that should currently be showing **No Requests**. This opens a window that lists all of your waiting requests.
2. Click **New** to create and send a new request.
3. Complete the subject of the request, such as `How are things?` then give a description of the enquiry in the field.
4. Click the **Search** button to the right of the **To** field and select **Administrator** in the window that opens (that's the user that you're already connected as).
5. You can then link this request to other system documents using the **References** field, which could, for example, be a partner or a quotation or a disputed invoice.
6. Click **Send** to send the request to the intended recipient – that's yourself in this case. Then click **MAIN MENU** to return to the original screen.

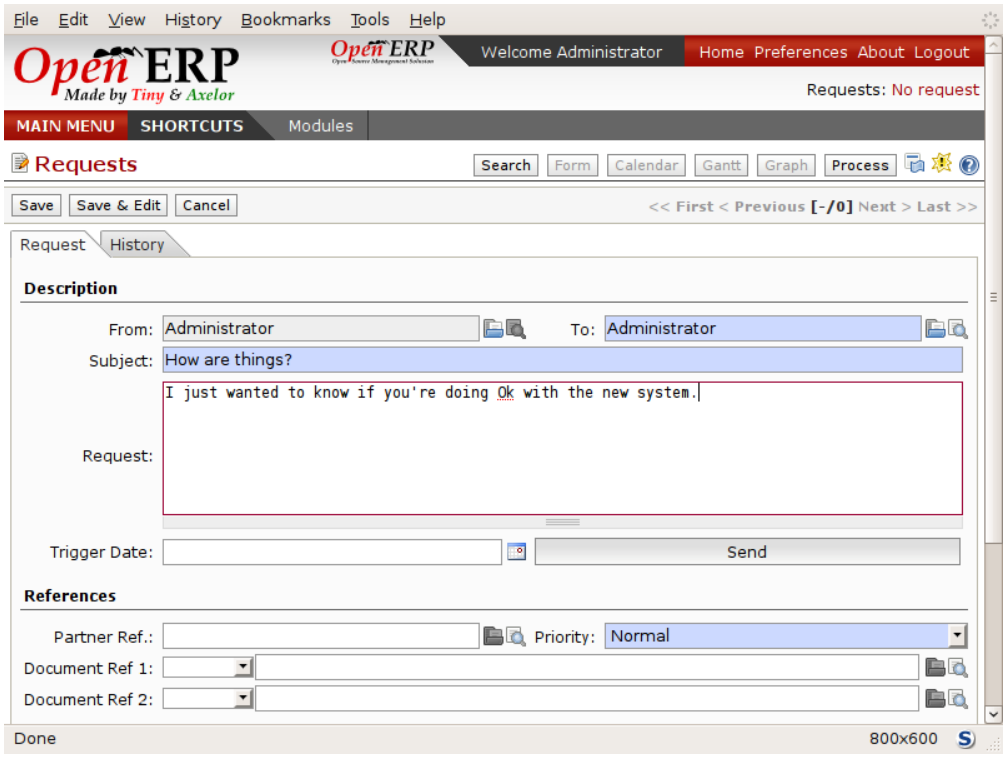


Figure 6.2: *Creating a new request*

To check your requests:

1. Click on the link to the right of the **Requests** label to open a list of your requests. (It's possible that you'll still see the statement **No Requests** because this information is updated periodically ather than instantly.) The list of requests then opens and you can see the requests you've been sent there.

2. Click the **Edit** icon, represented by a pencil, at the right hand end of the request line. That opens the request in edit mode.
3. You can then click the **Reply** button and make your response in the **Request** field that appears in place of the original message.
4. Click **Send** to save your response and send it to the original sender.

Note: *Requests vs. email*
The advantage of an Open ERP request compared with a set of emails about one thread of discussion is that a request contains all of the conversation in one place. You can easily monitor a whole discussion with the appropriate documents attached, and quickly review a list of incomplete discussions with the history within each request.

Look at the request and its history, then close it.

1. Click on the **History** tab in the **Request** form to see the original request and all of the responses. By clicking on each line you could get more information on each element.
2. Return to the first tab, **Request** and click **End of Request** to set it to `closed`. This then appears greyed out.

The request is no longer active. It's not visible to searches and won't appear in your list of waiting requests.

Tip: *Trigger dates*
You can send a request with a future date. This request won't appear in the recipient's waiting list until the indicated date. This mechanism is very useful for setting up alerts before an important event.

6.2.2 Configuring Users

The database you created contains minimal functionality but can be extended to include all of the potential functionality available to Open ERP. About the only functions actually available in this minimal database are Partners and Currencies – and these only because the definition of your main company required this. And because you chose to include demonstration data, both Partners and Currencies were installed with some samples. Because you logged in as Administrator, you have all the access you need to configure users. Click *Administration → Users → Users* to display the list of users defined in the system. A second user, `Demo User` , is also present in the system as part of the demonstration data. Click the `Demo User` name to open a non-editable form on that user.

Click the **Security** tab to see that the demo user is a member of only the `Employee` group, has no roles and is subject to no specialized rules. The `admin` user is different, as you can see if you follow the same sequence to review the its definition. It's a member of the `admin` group, which gives it more advanced rights to configure new users.

Tip: *Roles, Groups and Users*
Users and groups provide the structure for specifying access rights to different documents. Their setup answers the question "Who has access to what?"
Roles are used in business processes for permitting or blocking certain steps in the workflow of a given document. For example you can assign the role of approving an invoice. Roles answer the question "Who should do what?"

Click *Administration → Users → Groups* below the main menu to open the list of groups defined in the system. If you open the form view of the `admin` group by clicking its name in the list, the first tab give you the list of all the users who belong to this group.

Click the Security tab and it gives you details of the access rights for that group. These are detailed later in *Configuration & Administration*, but you can already see there further up in the window, the list of menus reserved for the admin group. By convention, the `admin` in Open ERP has rights of access to the *Configuration* menu in each section. So `Partners / Configuration` is found in the list of access rights but `Partners` isn't found there because it's accessible to all users.

You can create some new users to integrate them into the system. Assign them to predefined groups to grant them certain access rights. Then try their access rights when you login as these users. Management defines these access rights as described in *Configuration & Administration*.

Note: *Changes to default access rights*
New versions of Open ERP differ from earlier versions of Open ERP and Tiny ERP in this area: many groups have been predefined and access to many of the menus and objects are keyed to these groups by default. This is quite a contrast to the rather liberal approach in 4.2.2 and before, where access rights could be defined but were not activated by default.

6.2.3 Managing partners

In Open ERP, a partner represents an entity that you do business with. That can be a prospect, a customer, a supplier, or even an employee of your company.

List of partners

Click *Partners* → *Partners* in the main menu to open the list of partners. Then click the name of the first partner to get hold of the details – a form appears with several tabs on it:

- the **General** tab contains the main information about the company, such as its corporate name, its primary language, your different contacts at that partner and the categories it belongs to.
- the **Sales & Purchases** tab contains information that's slightly less immediate.
- the *History* tab contains the history of all the events that the partner has been involved in. These events are created automatically by different system documents: invoices, orders, support requests and so on, from a list that can be configured in the system. These give you a rapid view of the partner's history on a single screen.
- the *Notes* tab is an area for free text notes.

To the right of the form is a list of Reports, Actions and Links related to a partner. Click some of them to get a feel for their use.

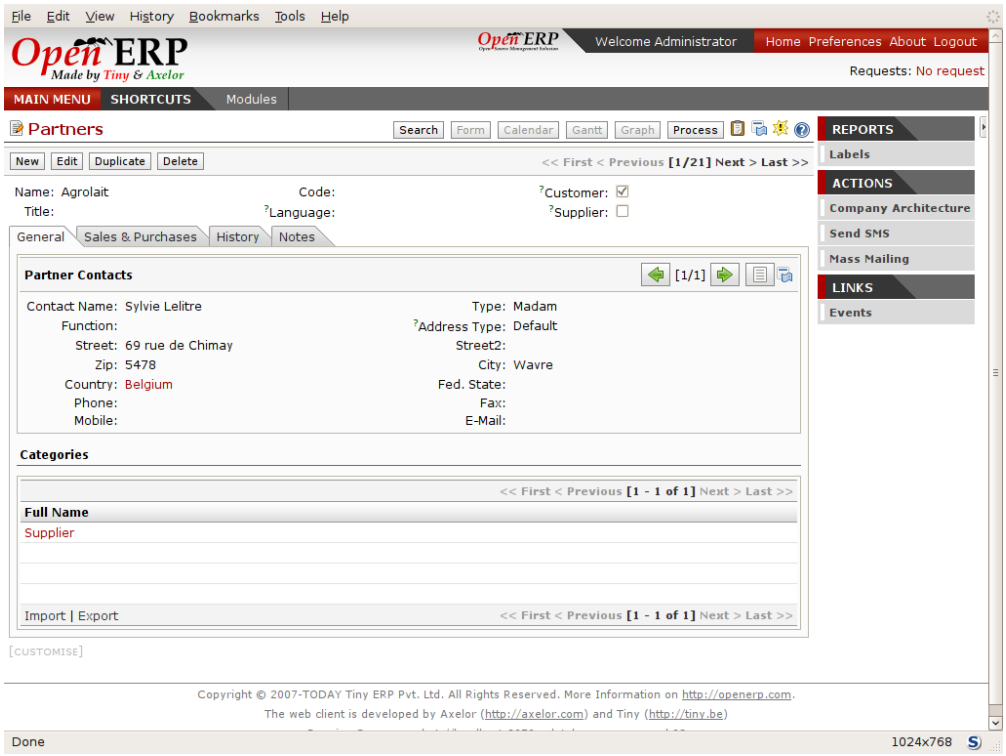


Figure 6.3: *Partner form*

Tip: *Partner Categories*
Partner Categories enable you to segment different partners according to their relation with you (client, prospect, supplier, and so on). A partner can belong to several categories – for example it may be both a customer and supplier at the same time.
But there are also Customer, Supplier and Rental checkboxes on the partner form, which are different. These checkboxes are designed to enable Open ERP to quickly select what should appear on some of the system drop-down selection boxes. They, too, need to be set correctly.

Partner Categories

You can list your partners by category using the menu *Partners → Partners by category* . This opens a hierarchical structure of categories where each category can be divided into sub-categories. Click a category to obtain a list of partners in that category. For example, click all of the partners in the category *Supplier* or *Supplier → Components Supplier*. You'll see that if a company is in a subcategory (such as **Components Supplier**) then it will also show up when you click the parent category (such as **Supplier**).

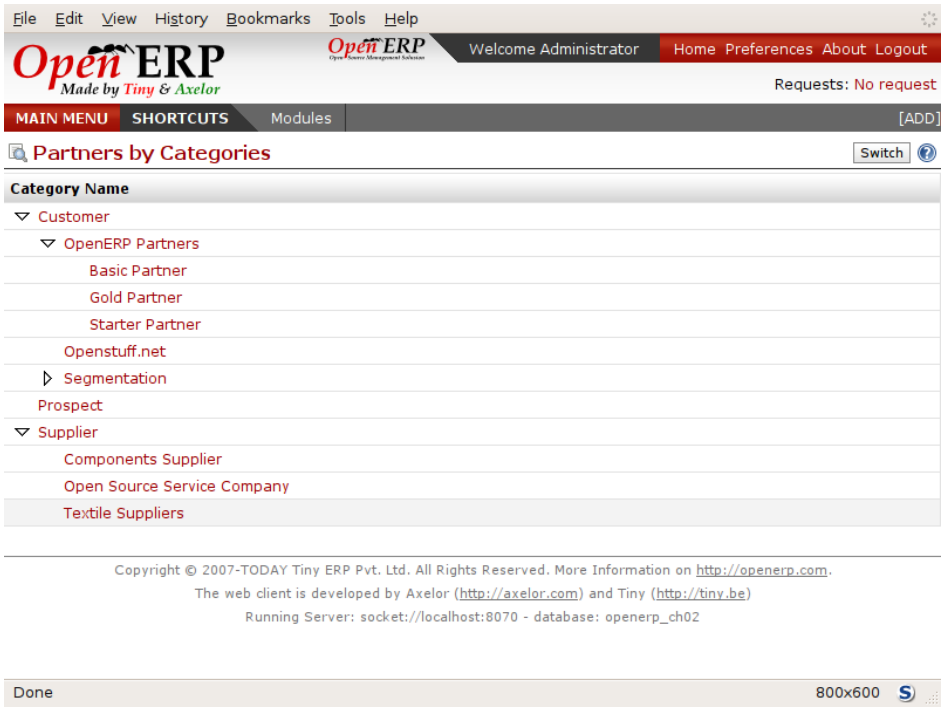


Figure 6.4: *Categories of partner in a hierarchical structure, for example Customer, Prospect, Supplier*

The administrator can define new categories. So you'll create a new category and link it to a partner:

1. Use *Partners → Configuration → Partner Categories* to reach a list of the same categories as above but in a list view rather than a hierarchical tree structure.
2. Click **New** to open an empty form for creating a new category
3. Enter `My Prospects` in the field **Name of Category**. Then click on the **Search** icon to the right of the **Parent Category** field and select `Prospect` in the list that appears.
4. Then save your new category using the **Save** button.

Tip: *Required Fields*
Fields colored blue are required. If you try to save the form while any of these fields are empty the field turns red to indicate that there's a problem. It's impossible to save the form until you've completed every required field.

You can review your new category structure using *Partners → Partners by category*. You should see the new structure of `Prospects / My Prospects` there.

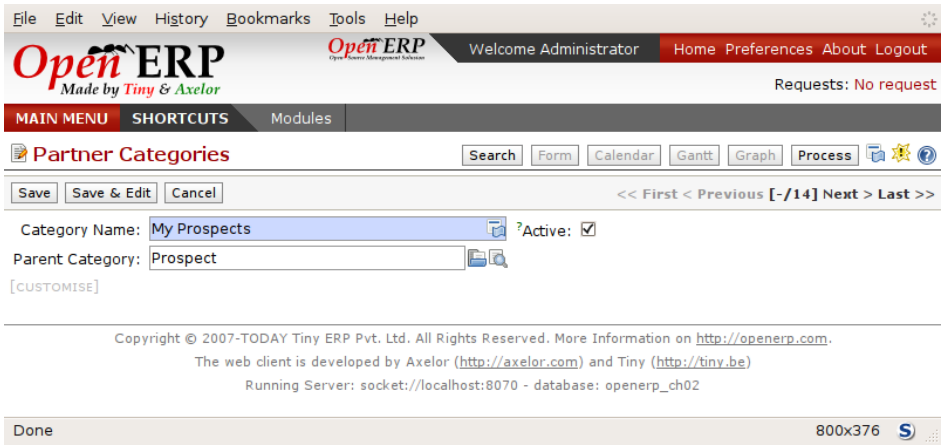


Figure 6.5: *Creating a new partner category*

To create a new partner and link it to this new category open a new partner form to modify it.

1. In the **General** tab, type `New Partner` into the **Name** field.
2. Then click on the search icon to the right of the **Categories** field and select your new category from the list that appears: `Prospect / My Prospects`
3. Then save your partner by clicking **Save** The partner now belongs in the category `Prospect / My prospects`.
4. Monitor your modification in the menu *Partners* → *Partners by category*. Select the category **My Prospect**. The list of partners opens and you'll find your new partner there in that list.

Tip: *Searching for documents*
If you need to search through a long list of partners it's best to use the available search criteria rather than scroll through the whole partner list. It's a habit that'll save you a lot of time in the long run as you search for all kinds of documents.

Note: *Example Categories of partners*
A partner can be assigned to several categories. These enable you to create alternative classifications as necessary, usually in a hierarchical form.
Here are some structures that are often used:

- *geographical locations,*
- *interest in certain product lines,*
- *subscriptions to newsletters,*
- *type of industry.*

6.3 Installing new functionality

All of Open ERP's functionality is contained in its many and various modules. Many of these, the core modules, are automatically loaded during the initial installation of the system and can be updated online later. Although they're mostly not installed in your database at the outset, they're available on your computer for immediate installation. Additional modules can also be loaded online from the official Open ERP site http://openerp.com. These modules are inactive when they're loaded into the system, and can then be installed in a separate step.

You'll start by checking if there are any updates available online that apply to your initial installation. Then you'll install a CRM module to complete your existing database.

6.3.1 Updating the Modules list

Click *Administration → Modules Management → Update Modules List* to start the updating tool. The **Scan for new modules** window opens showing the addresses that Open ERP will look in for downloading new modules (known as the repositories), and updating existing ones.

Tip: *Remote module repositories*
If the repository list doesn't reflect your needs then you can edit it from Administration → Modules Management → Repository List*. There you can link to new repositories by adding their URLs and disable listed ones by unchecking their* ***Active*** *checkbox. If you're not connected to the Internet then you probably want to disable anything there.*
Your Open ERP installation must be configured with its `addons` *directory as writable for you to be able to download anything at all. If it hasn't been, then you may need the assistance of a systems administrator to change your server's settings so that you can install new modules.*

Click **Check New Modules** to start the download from the specified locations. When it's complete you'll see a **New Modules** window indicating how many new modules were downloaded and how many existing modules were updated. Click **OK** to return to the updated list.

It won't matter in this chapter if you can't download anything, but some of the later chapters refer to modules that aren't part of the core installation and have to be obtained from a remote repository.

Note: *Modules*
All the modules available on your computer can be found in the addons directory of your Open ERP server. Each module there is represented by a directory carrying the name of the module or by a file with the module name and .zip appended to it. The file is in ZIP archive format and replicates the directory structure of unzipped modules.

Tip: *Searching through the whole list*
The list of modules shows only the first available modules. In the web client you can search or follow the First / Previous / Next / Last links to get to any point in the whole list, and you can change the number of entries listed by clicking the row number indicators between ***Previous*** *and* ***Next*** *and selecting a different number from the default of 20.*
If you use the GTK client you can search, as you would with the web client, or use the + icon to the top left of the window to change the number of entries returned by the search from its default limit of 80, or its default offset of 0 (starting at the first entry) in the whole list.

6.3.2 Installing a module

You'll now install a module named `product`, which will enable you to manage the company's products. This is part of the core installation, so you don't need to load anything to make this work, but isn't installed in the Minimal Profile.

Open the list of uninstalled modules from *Administration → Modules Management → Modules → Uninstalled modules*. Search for the module by entering the name `product` in the search screen then clicking it in the list that appears below it to open it. The form that describes the module gives you useful information such as its version number, its status and a review of its functionality. Click **Schedule for Installation** and the status of the module changes to **To be installed**.

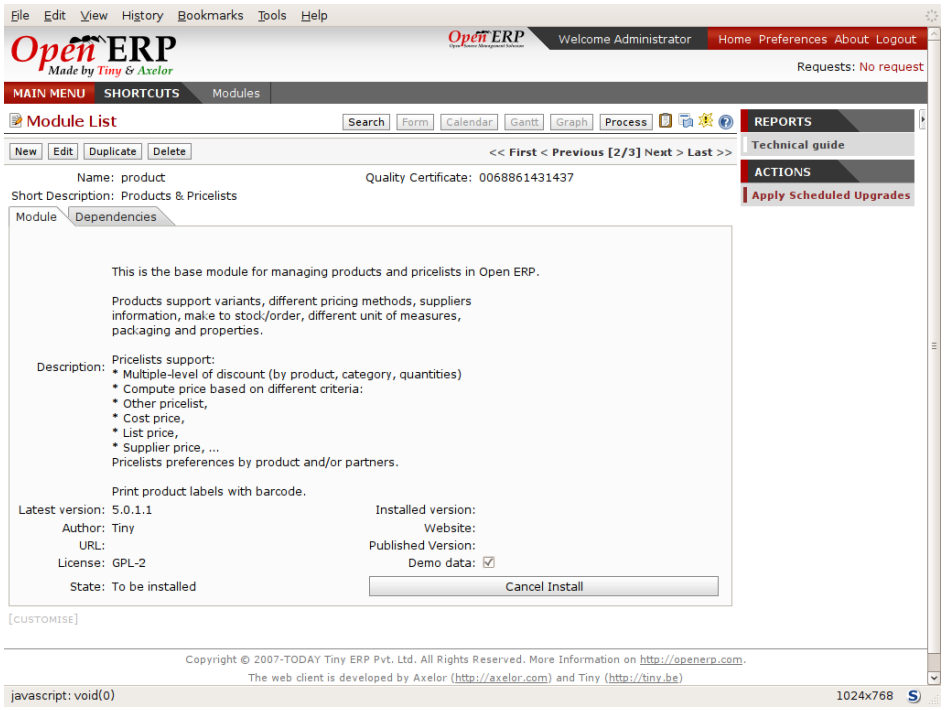


Figure 6.6: *Installation of the product module*

Tip: *Technical Guide*
If you select a module in any of the module lists by clicking on a module line and then on ***Technical Guide*** *at the top right of the window, Open ERP produces a technical report on that module. It's helpful only if the module is installed, so the menu* Administration → Modules Management → Modules → Installed Modules *produces the most fruitful list. This report comprises a list of all the objects and all the fields along with their descriptions. The report adapts to your system and reflects any modifications you've made and all the other modules you've installed.*

Click **Apply Scheduled Upgrades** then **Start Upgrade** on the **System Upgrade** form that appears. Close the window when the operation has completed. Return to the main menu you'll see the new menu *Products* has become available.

Tip: *Refreshing the menu in the GTK client*
After an update in the GTK client you'll have to open a new menu to refresh the content – otherwise you won't see the new menu item. To do that use the window menu Form → Refresh/Cancel.

6.3.3 Installing a module with its dependencies

Now install the CRM module (Customer Relationship Management) using the same process as before. Start from *Administration → Modules Management → Modules → Uninstalled modules*.

1. Get the list of modules to install, and search for the `crm` module in that list.
2. Schedule the module for installation by clicking **Schedule for Installation**.
3. Do the same for `account`.
4. Click **Apply Scheduled Upgrades** on the action toolbar to the right.
5. Click **Start Upgrade** to install both modules.
6. After a wait, when the installation is complete, click **Start Configuration**.

7. Accept the defaults for accounts setup and select `None` for the chart of accounts.

8. You'll see details of all the features installed by the modules on a new **Features** tab on the module form.

When you return to the main menu you'll find the new customer relationship management menu *CRM & SRM*. You'll also see all the accounting functions that are now available in the *Financial Management* menu.

There is no particular relationship between the modules installed and the menus added. Most of the core modules add complete menus but some also add submenus to menus already in the system. Other modules add menus and submenus as they need. Modules can also add additional fields to existing forms, or simply additional demonstration data or some settings specific to a given requirement.

Note: *Dependencies between modules*
The module form shows two tabs before it's installed. The first tab gives basic information about the module and the second gives a list of modules that this module depends on. So when you install a module, Open ERP automatically selects all the necessary dependencies to install this module.
That's also how you develop the profile modules: they simply define a list of modules that you want in your profile as a set of dependencies.

Although you can install a module and all its dependencies at once, you can't remove them in one fell swoop – you'd have to uninstall module by module. Uninstalling is more complex than installing because you have to handle existing system data.

Note: *Uninstalling modules*
Although it works quite well, uninstalling modules isn't perfect in Open ERP. It's not guaranteed to return the system exactly to the state it was in before installation.
So it's recommended that you make a backup of the database before installing your new modules so that you can test the new modules and decide whether they're suitable or not. If they're not then you can return to your backup. If they are, then you'll probably still reinstall the modules on your backup so that you don't have to delete all your test data.
If you wanted to uninstall you would use the menu Administration → Modules Management → Modules → Installed Modules *and then uninstall them in the inverse order of their dependencies:* `crm`, `account`, `product`.

6.3.4 Installing additional functionality

To discover the full range of Open ERP's possibilities you can install many additional modules. Installing them with their demonstration data provides a convenient way of exploring the whole core system. When you build on the `openerp_ch02` database you'll automatically include demonstration data because you checked the **Load Demonstration Data** checkbox when you originally created the database. Click *Administration → Modules Management → Modules → Uninstalled modules* to give you an overview of all of the modules available for installation.

To test several modules you won't have to install them all one by one. You can use the dependencies between modules to load several at once. For example, try loading the following modules:

- `profile_accounting`,
- `profile_crm`,
- `profile_manufacturing`,
- `profile_service`.

To find these quickly, enter the word `profile` in the **Name** field of the search form and click **Filter** to search for the relevant modules. Then install them one by one or all at once.

As you update you'll see thirty or so modules to be installed. Move on from the **System upgrade done** form by clicking **Start configuration** and then accepting the default crm configuration and picking configuration in turn.

Finally install the additional modules **Analytic Accounting** and **Document Management** when you're offered that configuration option. Don't install any more - you now have quite a fully-loaded system to look at.

Click **Home** and you'll be returned to a dashboard, not the main menu you had before. To get to the main menu, use the **MAIN MENU** link.

6.4 Guided Tour of Open ERP

You'll now explore the database `openerp_ch02` with these profile modules installed to give you an insight into the coverage of the core Open ERP software.

Tip: *Translating new modules*
When you've installed a new module and are using additional languages to English you have to reload the translation file. New terms introduced in these modules aren't translated by default. To do this use Administration → Translations → Load an Official Translation.

Depending on the user you're connected as the page appears differently from the Main Menu that showed before. Using the installation sequence above, certain dashboards may be assigned as various users' home pages. They show a summary of the information required to start the day effectively. A project dashboard might contains:

- a list of the next tasks to carry out,
- a list of the next deadlines,
- public notes about projects,
- a planning chart of hours required,
- the timesheet.

Each of the lists can be reordered by clicking on the heading of a column – first in ascending then in descending order as you click repeatedly. To get more information about any particular entry click on the name in the first column, or if you want to show a particular panel click **Zoom** above it.

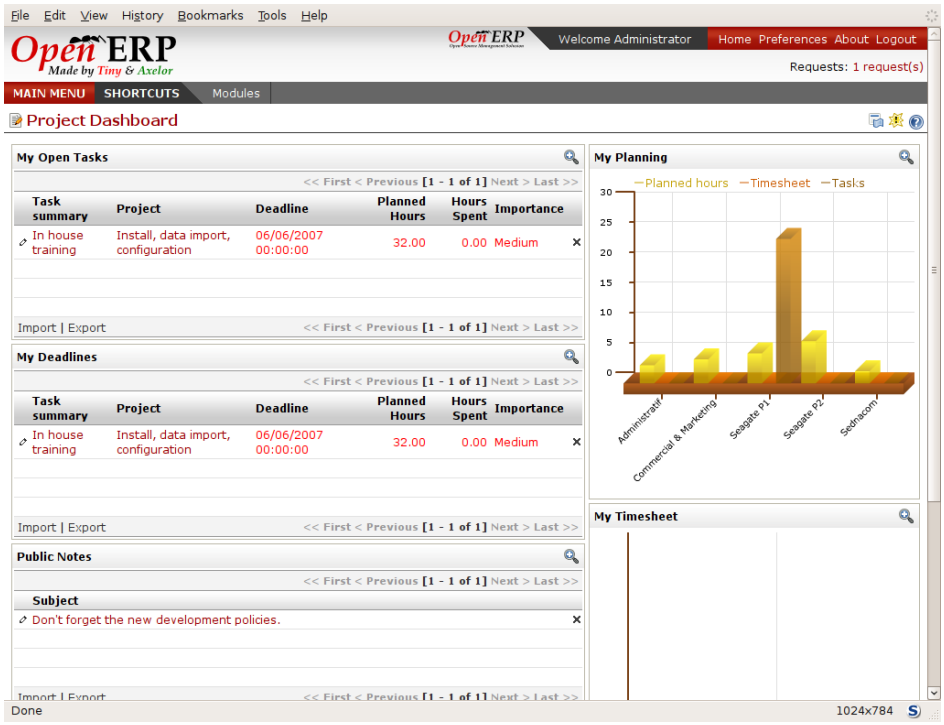


Figure 6.7: *Project Dashboard*

Users' home pages are automatically reassigned during the creation or upgrading of a database. It's usual to assign a dashboard to someone's home page but any Open ERP screen can be assigned to the home page of any user.

Tip: *Creating shortcuts*
Each user has access to many menu items throughout all of the available menu hierarchy. But in general an employee uses only a small part of the system's functions.
So you can define shortcuts for the most-used menus. These shortcuts are personal for each user. To create a new shortcut open the select menu and click on the ***Add*** *link to the far right of* ***SHORTCUTS****.*
To change or replace a link click ***SHORTCUTS****. Open ERP then opens a list of editable shortcuts.*

The following sections present an overview of the main functions of Open ERP. Some areas are covered in more detail in the following chapters of this book and you'll find many other functions available in the optional modules. Functions are presented in the order that they appear on the main menu.

6.4.1 Partners

To familiarize yourself with Open ERP's interface, you'll start work with information about partners. Clicking *Partners → Partners* brings up a list of partners that were automatically loaded when you created the database with **Load Demonstration Data** checked.

Search for a partner

Above the partner list you'll see a search form that enables you to quickly filter the partners. Two tabs are available for searching – **Basic Search** and **Advanced Search**. The latter simply shows more fields to narrow your selection.

If you've applied no filter, the list shows every partner in the system. For space reasons this list shows only the first few partners. If you want to display other records you can search for them or navigate through the whole list using the **First**, **Previous**, **Next**, **Last** arrows.

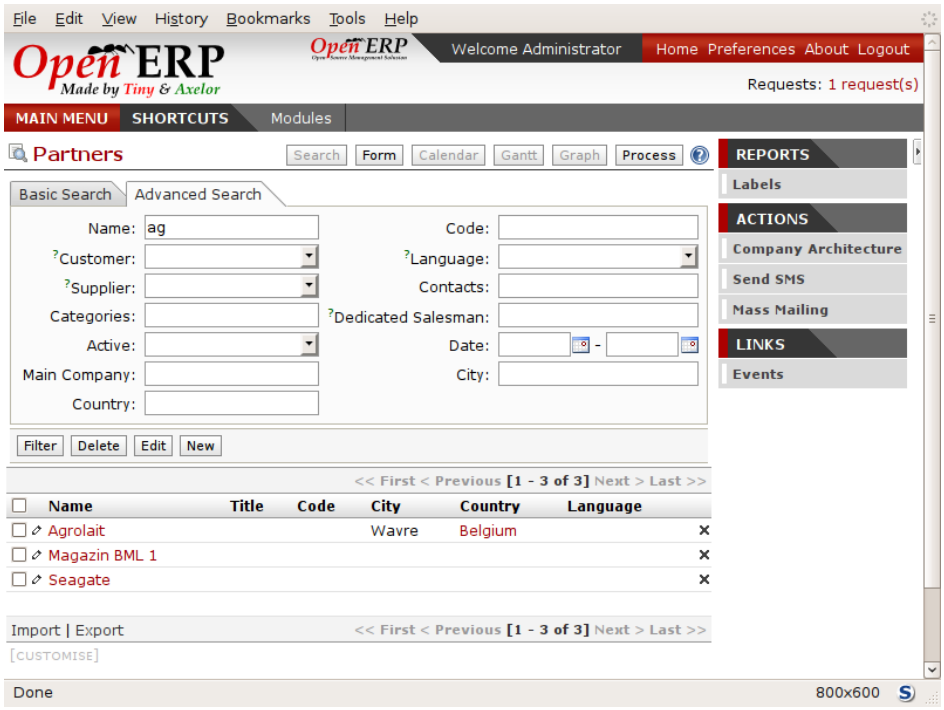


Figure 6.8: *Standard partner search*

Note: *List limits*
By default the list in the GTK client shows only the first 80 records, to avoid overloading the network and the server. But you can change that limit by clicking the + icon to the left of the search criteria, and you can change the offset so that it starts further down the whole list than the first entry.
Similarly the list in the web client shows only the first 20, 40, 60, 80 or 100 records.
The actual number can be switched by clicking on the number and selecting one of the other limits, but you can't select any other limit (so, unlike the GTK client you can't select hundreds or thousands).

If you click on the name of a partner the form view corresponding to that partner opens in Read-Only mode. In the list you could alternatively click the pencil icon to open the same form in Edit mode. Once you have a form you can toggle between the two modes by clicking **Save** or **Cancel** when in Edit mode and **Edit** when in Read-Only mode.

When you're in Read-Only mode you can navigate through the whole list you selected, as though you were in the List view. In Read-Only mode you can also click **Search** to see the form in List view again.

Partner form

The partner form contains several tabs, all referring to the current record:

- **General**,
- **Suppliers & Customers**,
- **History**,
- **Notes**.

The fields in a tab aren't all of the same type – some (such as **Name**) contain free text, some (such as the **Language**) enable you to select a value from a list of options, others give you a view of another object (such as **Partner Contacts** – because a partner can have several contacts) or a list of link to another object (such as **Categories**). There are

checkboxes (such as the **Active** field in the **Suppliers & Customers** tab), numeric fields (such as **Credit Limit**) and date fields (such as **Date**).

The **History** tab gives a quick overview of things that have happened to the partner – an overview of useful information such as orders, open invoices and support requests. Events are generated automatically by Open ERP from changes in other documents that refer to this partner.

It's possible to add events manually, such as a note recording a phone call. To add a new event click **Create new record.** to the right of the **Partner Events** field. That opens a new **Partner Events** dialog box enabling an event to be created and added to the current partner.

Actions possible on a partner

To the right of the partner form is a toolbar containing a list of possible **Reports** , **Actions**, and quick **Links** about the partner displayed in the form.

You can generate PDF documents about the selected object (or, in list view, about one or more selected objects) using certain buttons in the **Reports** section of the toolbar:

- **Labels** : print address labels for the selected partners,

Certain actions can be started by the following buttons in the **Actions** section of the toolbar:

- **Company Architecture** : opens a window showing the partners and their children in a hierarchical structure.
- **Send SMS** : enables you to send an SMS to selected partners. This system uses the bulk SMS facilities of the Clickatell® company http://clickatell.com.
- **Mass Mailing** : enables you to send an email to a selection of partners.

Tip: *Reports, Actions and Links in the GTK client*
When you're viewing a form in the GTK client, the buttons to the right of the form are shortcuts to the same Reports, Actions and Links as described in the text. When you're viewing a list (such as the partner list) those buttons aren't available to you. Instead, you can reach Reports and Actions through two of the buttons in the toolbar at the top of the list – Print and Action.

Partners are used throughout the Open ERP system in other documents. For example, the menu *Sales Management → Sales Orders → All Sales Orders* brings up all the Sales Orders in list view. Click the name of a partner rather than the order number on one of those lines and you'll get the Partner form rather than the Sales Order form.

Tip: *Right clicks and shortcuts*
In the GTK client you don't get hyperlinks to other document types. Instead, you can right-click in a list view to show the linked fields (that is fields having a link to other forms) on that line.
In the web client you'll see hyperlink shortcuts on several of the fields on a form that's in Read- Only mode, so that you can move onto the form for those entries. When the web form is in Edit mode, you can instead hold down the control button on the keyboard and right-click with the mouse button in the field, to get all of the linked fields in a pop-up menu just as you would with the GTK client.
You can quickly try this out by going to any one of the sales orders in Sales Management → Sales Order → All Sales Orders *and seeing what you can reach from the* ***Customer*** *field on that sales order form using either the web client with the form in both read-only and in edit mode, or with the GTK client.*

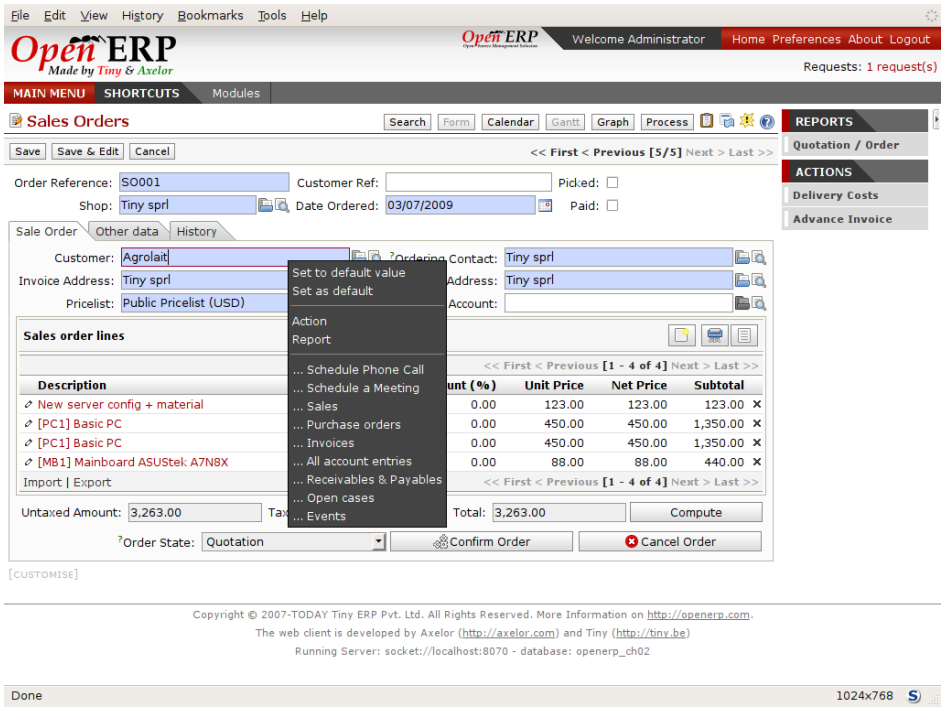


Figure 6.9: *Links for a partner appear in an order form*

Before moving on to the next module, take a quick look into the *Partners → Configuration* menu, particularly *Partner Categories* and *Localisation* menus. They contain some of the demonstration data that you installed when you created the database.

6.4.2 Financial Management

The chapters in *General Accounting* in this book are dedicated to general and analytic accounting. A brief overview of the functions provided by these modules is given here as an introduction.

Accounting is totally integrated into all of the company's functions, whether it's general, analytic, budgetary or auxiliary accounting. Open ERP's accounting function is double-entry and supports multiple company divisions and multiple companies, as well as multiple currencies and languages.

Accounting that's integrated throughout all of the company's processes greatly simplifies the work of entering accounting data, because most of the entries are generated automatically while other documents are being processed. You can avoid entering data twice in Open ERP, which is commonly a source of errors and delays.

So Open ERP's accounting isn't just for financial reporting – it's also the anchorpoint for many of a company's management processes. For example if one of your accountants puts a customer on credit hold then that will immediately block any other action related to that company's credit (such as a sale or a delivery).

Open ERP also provides integrated analytical accounting, which enables management by business activity or project and provides very detailed levels of analysis. You can control your operations based on business management needs, rather than on the charts of accounts that generally meet only statutory requirements.

6.4.3 Dashboards

Dashboards give you an overview of all the information that's important to you on a single page. The *Dashboards* menu gives you access to predefined boards for *Financial Management*, *Manufacturing* and *Project Management*.

Note: *Dashboards*
Unlike most other ERP systems and classic statistically-based systems, Open ERP can provide dashboards to all of the system's users, and not just to a select few such as directors and accountants.
Users can each have their own dashboard, adapted to their needs, to enable them to manage their own work effectively. For example a developer using the ***Project Dashboard*** *can see such information as a list of the next tasks, task completion history and an analysis of the state of progress of the relevant projects.*

Dashboards are dynamic, which lets you navigate easily around the whole information base. Using the icons above a graph, for example, you can filter the data or zoom into the graph. You can click on any element of the list to get detailed statistics on the selected element.

Dashboards are adaptable to the needs of each user and each company.

Note: *Construction of dashboards*
Open ERP contains a dashboard editor. It lets you construct your own dashboard to fit your specific needs using only a few clicks.

6.4.4 Products

In Open ERP, product means a raw material, a stockable product, a consumable or a service. You can work with whole products or with templates that separate the definition of products and variants.

For example if you sell t-shirts in different sizes and colors:

- the product template is the "T-shirt" which contains information common to all sizes and all colors,
- the variants are "Size:S" and "Color:Red", which define the parameters for that size and color,
- the final product is thus the combination of the two – t-shirt in size S and color Red.

The value of this approach for some sectors is that you can just define a template in detail and all of its available variants briefly rather than every item as an entire product.

Note: Example Product templates and variants
A product can be defined as a whole or as a product template and several variants. The variants can be in one or several dimensions, depending on the installed modules.
For example, if you work in textiles, the variants on the product template for "T-shirt" are:

- *Size (S, M, L, XL, XXL),*
- *Colour (white, grey, black, red),*
- *Quality of Cloth (125g/m2, 150g/m2, 160g/m2, 180g/m2),*
- *Collar (V, Round).*

This separation of variant types requires the optional module `product_variant_multi`*. Using it means that you can avoid an explosion in the number of products to manage in the database. If you take the example above it's easier to manage a template with 15 variants in four different types than 160 completely different products. This module is available in the* `addons-extra` *list (it had not been updated, at the time of writing, to work in release 5.0 of Open ERP).*

The *Products* menu gives you access to the definition of products and their constituent templates and variants, and to price lists.

Tip: *Consumables*
In Open ERP a consumable is a physical product which is treated like a stockable product except that stock management isn't taken into account by the system. You could buy it, deliver it or produce it but Open ERP will always assume that there's enough of it in stock. It never triggers a procurement exception.

Open a product form to see the information that describes it. Several different types of product can be found in the demonstration data, giving quite a good overview of the possible options.

Price lists (*Products → Pricelists*) determine the purchase and selling prices and adjustments derived from the use of different currencies. The *Default Purchase Pricelist* uses the product's **Cost** field to base a Purchase price on. The *Default Sale Pricelist* uses the product's **List Price** field to base a Sales price on when issuing a quote.

Price lists are extremely flexible and enable you to put a whole price management policy in place. They're composed of simple rules that enable you to build up a rule set for most complex situations: multiple discounts, selling prices based on purchase prices, price reductions, promotions on whole product ranges and so on.

You can find many optional modules to extend product functionality through the Open ERP website, such as:

- `membership` : for managing the subscriptions of members of a company,
- `product_electronic` : for managing electronic products,
- `product_extended` : for managing production costs,
- `product_expiry` : for agro-food products where items must be retired after a certain period,
- `product_lot_foundry` : for managing forged metal products.

6.4.5 Human Resources

Open ERP's Human Resources Management modules provide such functionality as:

- management of staff and the holiday calendar,
- management of employment contracts,
- benefits management,
- management of holiday and sickness breaks,
- managing claims processes,
- management of staff performance,
- management of skills and competencies.

Most of these functions are provided from optional modules whose name starts with `hr_`rather than the core `hr` module, but they're all loaded into the main *Human Resources* menu.

The different issues are handled in detail in the fourth part of this book *Effective Management of Operations*, dedicated to internal organization and to the management of a services business.

6.4.6 Stock Management

The various sub-menus under *Stock Management* together provide operations you need to manage stock. You can:

- define your warehouses and structure them around locations and layouts of your choosing,
- manage inventory rotation and stock levels,
- execute packing orders generated by the system,
- execute deliveries with delivery notes and calculate delivery charges,

- manage lots and serial numbers for traceability,
- calculate theoretical stock levels and automate stock valuation,
- create rules for automatic stock replenishment.

Packing orders and deliveries are usually defined automatically by calculating requirements based on sales. Stores staff use picking lists generated by Open ERP, produced automatically in order of priority.

Stock management is, like accounting, double-entry. So stocks don't appear and vanish magically within a warehouse, they just get moved from place to place. And, just like accounting, such a double-entry system gives you big advantages when you come to audit stock because each missing item has a counterpart somewhere.

Most stock management software is limited to generating lists of products in warehouses. Because of its double-entry system Open ERP automatically manages customer and suppliers stocks as well, which has many advantages: complete traceability from supplier to customer, management of consigned stock, and analysis of counterpart stock moves.

Furthermore, just like accounts, stock locations are hierarchical, so you can carry out analyses at various levels of detail.

6.4.7 Customer and Supplier Relationship Management

Open ERP provides many tools for managing relationships with partners. These are available through the *CRM & SRM* menu.

Tip: ***CRM & SRM***
`CRM` stands for Customer Relationship Management, a standard term for systems that manage client and customer relations. `SRM` stands for Supplier Relationship Management, and is commonly used for functions that manage your communications with your suppliers.

The concept of a "case" is used to handle arbitrary different types of relationship, each derived from a generic method. You can use it for all types of communication such as order enquiries, quality problems, management of a call center, record tracking, support requests and job offers.

Open ERP ensures that each case is handled effectively by the system's users, customers and suppliers. It can automatically reassign a case, track it for the new owner, send reminders by email and raise other Open ERP documentation and processes.

All operations are archived, and an email gateway lets you update a case automatically from emails sent and received. A system of rules enables you to set up actions that can automatically improve your process quality by ensuring that open cases never escape attention.

As well as those functions, you've got tools to improve the productivity of all staff in their daily work:

- a document editor that interfaces with OpenOffice.org,
- interfaces to synchronize your contacts and Outlook Calendar with Open ERP,
- an Outlook plugin enabling you to automatically store your emails and their attachments in a Document Management System integrated with Open ERP,
- a portal for your suppliers and customers that enables them to access certain data on your system.

You can implement a continuous improvement policy for all of your services, by using some of the statistical tools in Open ERP to analyze the different communications with your partners. With these, you can execute a real improvement policy to manage your service quality.

The management of customer relationships is detailed in the second section of this book (see *Managing Customer Relationships*).

6.4.8 Purchase Management

Purchase management enables you to track your suppliers' price quotations and convert them into Purchase Orders as you require. Open ERP has several methods of monitoring invoices and tracking the receipt of ordered goods.

You can handle partial deliveries in Open ERP, so you can keep track of items that are still to be delivered on your orders, and you can issue reminders automatically.

Open ERP's replenishment management rules enable the system to generate draft purchase orders automatically, or you can configure it to run a lean process driven entirely by current production needs.

6.4.9 Project Management

Open ERP's project management tools enable you to handle the definition of tasks and the specification of requirements for those tasks, efficient allocation of resources to the requirements, project planning, scheduling and automatic communication with partners.

All projects are hierarchically structured. You can review all of the projects from the menu *Project Management* → *All Projects*. To view a project's plans, select a project line and then click **Print**. Then select **Gantt diagram** to obtain a graphical representation of the plan.

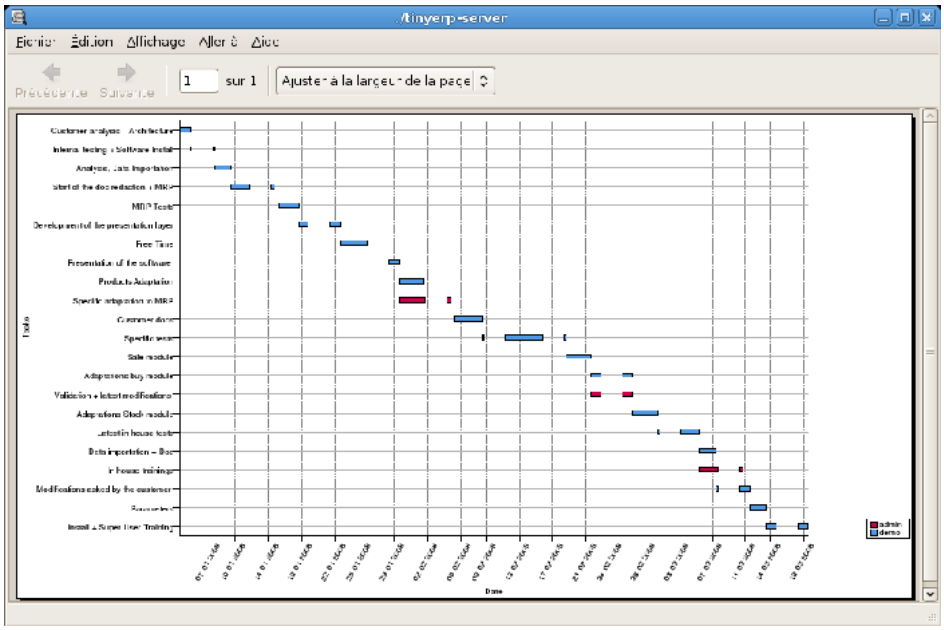


Figure 6.10: *Project Planning*

You can run projects related to Services or Support, Production or Development – it's a universal module for all enterprise needs.

Project Management is described in *Internal Organization and Project Management*.

6.4.10 Manufacturing

Open ERP's production management capabilities enable companies to plan, automate, and track manufacturing and product assembly. Open ERP supports multi-level bills of materials and lets you substitute subassemblies dynamically, at the time of sales ordering. You can create virtual sub- assemblies for reuse on several products with phantom bills of materials.

Note: *BoMs, routing, workcenters*
These documents describe the materials that make up a larger assembly. They're commonly called Bills of Materials or BoMs.
They're linked to routings which list the operations needed to carry out the manufacture or assembly of the product. Each operation is carried out at a workcenter, which can be a machine, a tool, or a person.

Production orders based on your company's requirements are scheduled automatically by the system, but you can also run the schedulers manually whenever you want. Orders are worked out by calculating the requirements from sales, through bills of materials, taking current inventory into account. The production schedule is also generated from the various lead times defined throughout, using the same route

The demonstration data contains a list of products and raw materials with various classifications and ranges. You can test the system using this data.

6.4.11 Sales Management

The *Sales Management* menu gives you roughly the same functionality as the *Purchase Management* menu – the ability to create new orders and to review the existing orders in their various states – but there are important differences in the workflows.

Confirmation of an order triggers delivery of the goods, and invoicing timing is defined by a setting in each individual order.

Delivery charges can be managed using a grid of tariffs for different carriers.

6.4.12 Document Management

Open ERP integrates a complete document management system that not only carried out the functions of a standard DMS, but also integrates with all of its system-generated documents such as Invoices and Quotations. What's more it keeps all of this synchronized.

6.4.13 Process Management

Many documents have a workflow of their own, and also take part in cross-functional processes. Take a document that could be expected to have a workflow, such as a Sales Order, and then click the **Process** button above its form to see the full process.

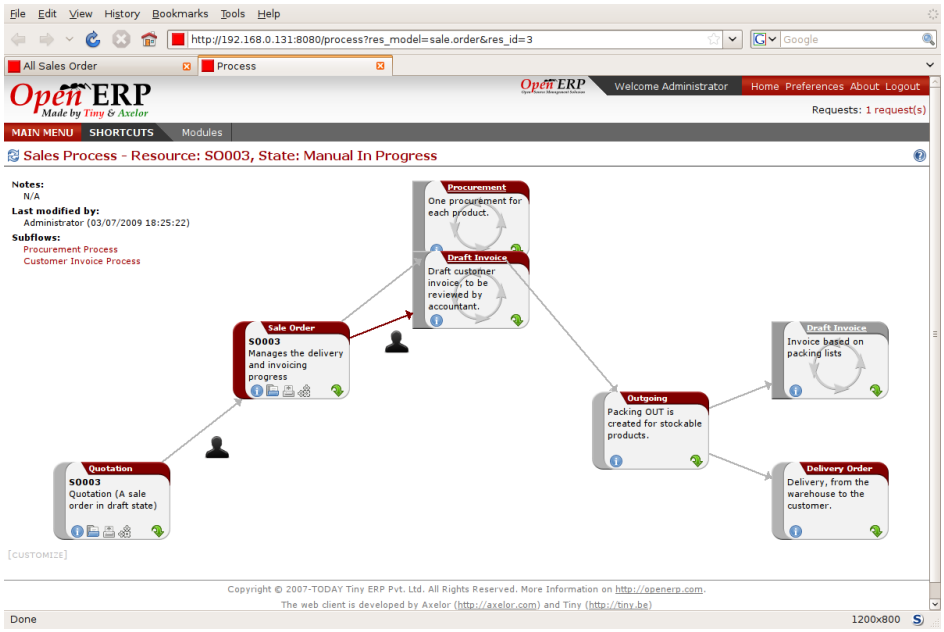


Figure 6.11: *Process for a Sales Order*

You can see the position of that particular document in its process, if you have selected a single document, by the solid bar on one of the process nodes. You also link to documents and menus for each of the stages.

There is a clear distinction between a cross-functional process (that is currently only shown in the web client) and the detailed document workflow (that is shown in both the web client from a process node, and the GTK client from the *Plugins* > *Execute a Plugin...* menu and clicking either the **Print Workflow** or the the **Print Workflow (Complex)** option.

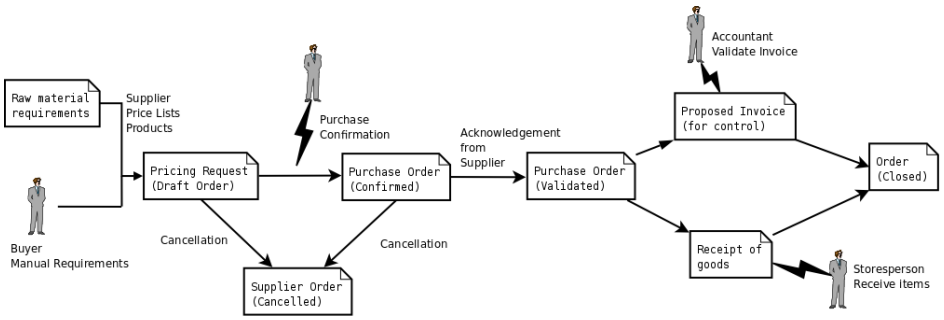


Figure 6.12: *Workflow for a Purchase Order*

Alongside the document management system, the process visualization features make Open ERP far better for documentation than similar systems.

6.4.14 Other functions

You've been through a brisk, brief overview of many of the main functional areas of Open ERP. Some of these – a large proportion of the core modules – are treated in more detail in the following chapters.

You can use the menu *Administration* → *Modules Management* → *Modules* → *Uninstalled modules* to find the remaining modules that have been loaded into your installation but not yet installed in your database. Some modules have only minor side-effects to Open ERP (such as `base_iban`), some have quite extensive effects (such as the various charts of accounts), and some make fundamental additions (such as `multi_company`).

But there are now more than three hundred modules available. If you've connected to the Internet, and if your `addons` directory is writable as described at the beginning of this chapter, you can download new modules using the menu *Administration → Modules Management → Update Modules List*.

A brief description is available for each module, but the most thorough way of understanding their functionality is to install one and try it. So, pausing only to prepare another test database to try it out on, just download and install the modules that appear interesting.

CHAPTER

SEVEN

DEVELOPING A REAL CASE

Now that you've discovered some of the many possibilities of Open ERP from a tour of the demonstration database, you'll develop a real case. An empty database provides the starting point for testing a classic workflow from product purchase to sale, completing your guided tour and your familiarization with Open ERP.

A database loaded with demonstration data is very useful for understanding Open ERP's general capabilities. But to explore Open ERP through a lens of your own company's needs you should start with an empty database. You'll work in this chapter on a minimal database containing no demonstration data so that there is no confusion about what you created. And you'll keep the database you've created so that you can build on it throughout the rest of this book if you want to.

You'll develop a real case through the following phases:

1. Specify a real case.
2. Describe the functional needs.
3. Configure the system with the essential modules.
4. Carry out the necessary data loading.
5. Test the system with your database.

The case is deliberately extremely simple to provide you with a foundation for the more complex situations you'll handle in reality. Throughout this chapter it's assumed that you're accessing Open ERP through its web interface.

7.1 Use case

Configure a system that enables you to:

- buy products from a supplier,
- stock the products in a warehouse,
- sell these products to a customer.

The system should support all aspects of invoicing, payments to suppliers and receipts from customers.

7.2 Functional requirements

For working out the business case you'll have to model:

- the suppliers,
- the customers,
- some products,
- inventory for despatch,
- a purchase order,
- a sale order,
- invoices,
- payments.

To test the system you'll need at least one supplier, one customer, one product, a warehouse, a minimal chart of accounts and a bank account.

7.3 Database creation

Use the technique outlined in *Database creation* to create a new database, `openerp_ch03` . This database will be free of data and contain the least possible amount of functionality as a starting point. You'll need to know your super administrator password for this – or you'll have to find somebody who does have it to create this seed database. You won't be able to use the `openerp_ch1` or `openerp_ch2` databases that you might have created so far in this book because they both contain demonstration data.

Start the database creation process from the **Welcome** page by clicking **Databases** and then completing the following fields on the **Create new database** form, as shown in *Creating a blank database*:

- **Super admin password** : by default it's `admin` , if you or your system administrator haven't changed it,
- **New database name** : `openerp_ch03` ,
- **Load Demonstration data** checkbox: `not checked` (**this step is very important, but catches out many people**),
- **Default Language** : `English` ,
- **Administrator password** : `admin` (because it's easiest to remember at this stage, but obviously completely insecure),
- **Confirm password** : `admin` .

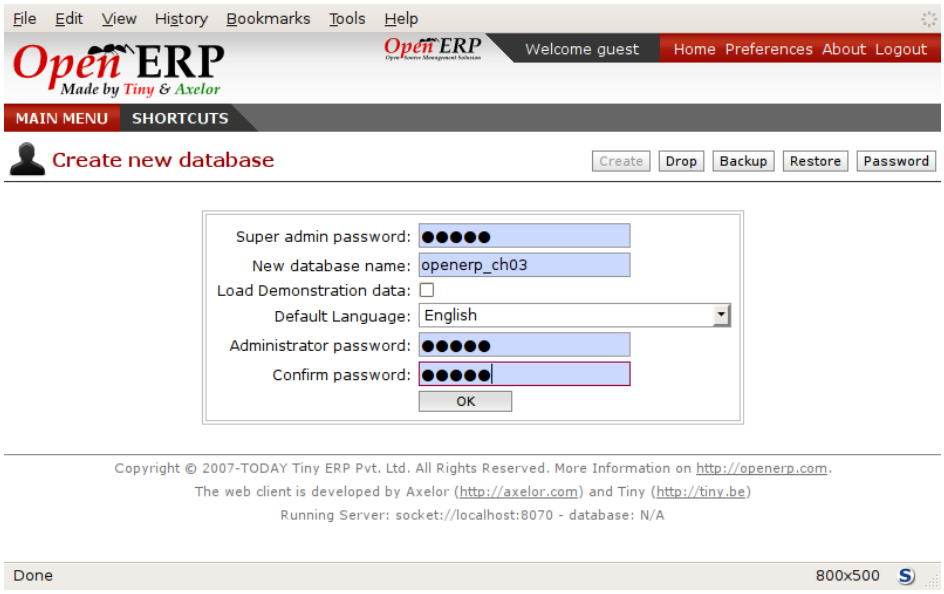


Figure 7.1: *Creating a blank database*

Then click **OK** to create the database and move to the setup screen *Setting up a blank database - first screen*.

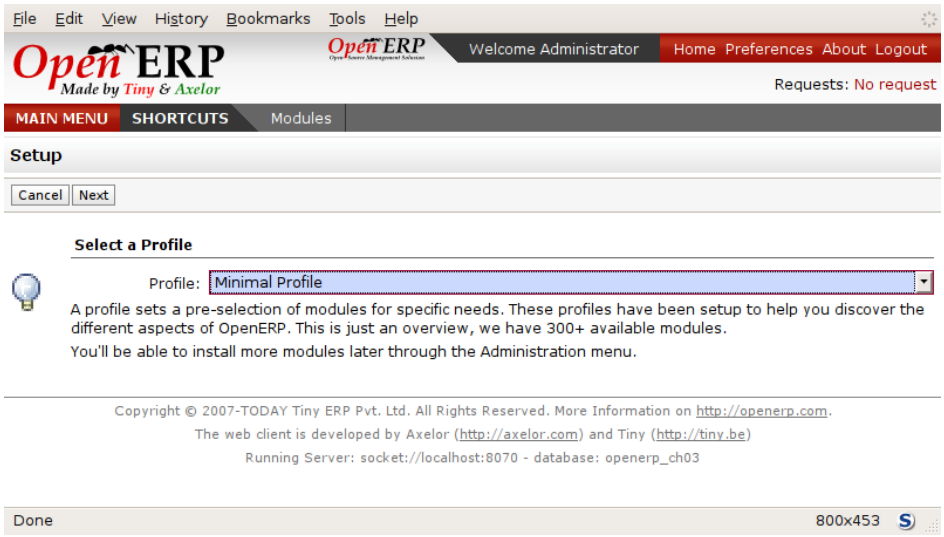


Figure 7.2: *Setting up a blank database - first screen*

After a short delay you are connected to the new `openerp_ch03` database as user `admin`with the password you gave it. You'll have to go through the Setup wizard in steps:

1. **Select a profile** : select `Minimal Profile` and click **Next**.
2. At the **Define Main Company** step you could select your own **Company Name** and **Currency**, and address details on the first tab **General Information**; and you can add more details on the second tab **Report Information** including a logo that would appear on reports. In this test you should leave everything untouched for the moment and just click **Next**: you'll change them later.
3. At the **Summary** page you can go back to change details if you need. Click the **Install** button.
4. Finally, at the **Installation done** page, click **Start Configuration**.

Configuration consists of a set of wizards that help you through options for the installed modules. Since you chose the minimal database hardly anything is installed so this is a very simple process at the moment, starting with the menu layout *Configuring a minimal database - first screen* .

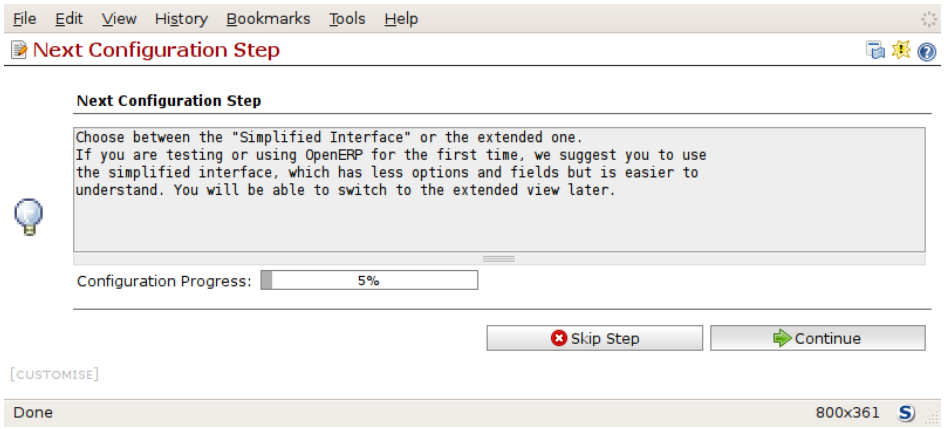


Figure 7.3: *Configuring a minimal database - first screen*

1. At the first screen click **Continue** to go into the first wizard. Choose **View Mode** : **Extended Interface** so that you can see everything and then click **Set** to save it.
2. Click **Skip Step** to step over the next wizard, which would enable you to add other users.
3. You've now reached the end of the configuration so click **Continue** to start using the system as the Administrator as shown in the screenshot *Starting the minimal database*.

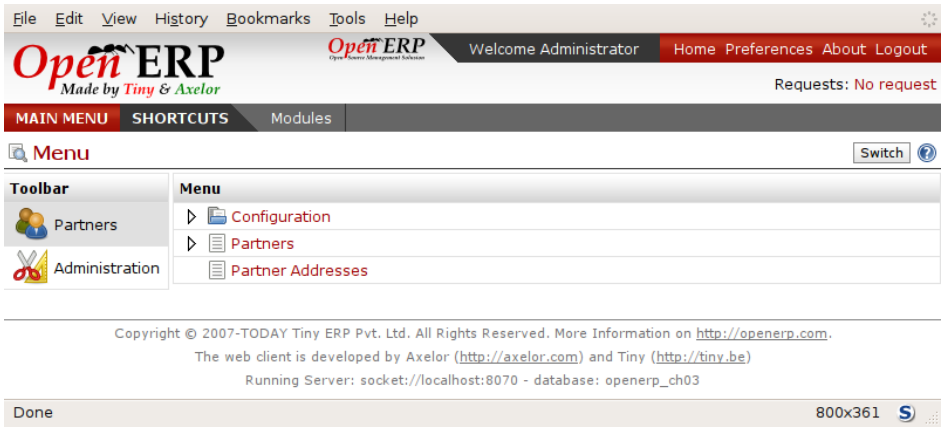


Figure 7.4: *Starting the minimal database*

7.4 Installing and configuring modules

All of the functional needs are provided by core modules from Open ERP:

- product management (the `product` module),
- inventory control (the `stock` module),
- accounting and finance (the `account` module),
- purchase management (the `purchase` module),

- sales management (the `sale` module).

Use the menu *Administration → Modules Management → Modules → Uninstalled modules* to show the list of all modules that are registered within Open ERP but as yet uninstalled. Then:

1. Enter `product` into the **Name** field and click **Filter** to list the `product` module.
2. Click the name `product` in the list to display the product module in form view, rather than the list view that a search displays.
3. Click the **Schedule for Installation** button on the product module form.
4. Click the **Search** button at the top of the form to toggle back to the list view with search selection fields on it.
5. Search for the `sale` module then select it, too, as you did with product, to show it in form view.
6. Click the **Dependencies** tab to see that you'll automatically be loading the `product`, `stock`, `mrp`, and `process` modules along with the `sale` module. `product` and `process` are both already marked for installation as a result of the first steps.
7. Return to the **Module** tab and then click its **Schedule for Installation** button.
8. Click **Apply Scheduled Upgrades** in the **Action** toolbar to the right.
9. When the **System Upgrade** form appears, review the list of Modules to update – it may be longer than you had expected, and now includes all the modules you need, because the dependencies themselves had their own dependencies.
10. Click **Start Upgrade**, wait for **System upgrade done** to be displayed, then click **Start Configuration** on that form.

Configuration is required for both the accounts setup and the sales defaults.

1. Accept the defaults for the **Fiscal Year** and choose the **Charts of Account** to be **None** then click **Continue**.
2. The sales defaults are shown in the screenshot *The module form once a module is installed*. The selections you make determine how Open ERP's processes work by setting its default behaviour (although you can override any of them for any sales order, so you are not strictly bound by these defaults). Accept the initial set by clicking **Set default behaviour**.
3. You've reached the end of this configuration stage so click **Continue** to continue using the system as the Administrator. You first reach a new tab **Features** that lists the new menus and views as shown in the figure *The module form once a module is installed*. Each of the modules that were installed has its own new tab - it's not only the one you see displayed in front of you. Click **Next** and **Previous** to move between them.
4. The main menu now displays all of the menu items that were loaded by the modules you installed. Click **MAIN MENU** to see this, shown in the screenshot *Continuing with the database after installing new modules*.

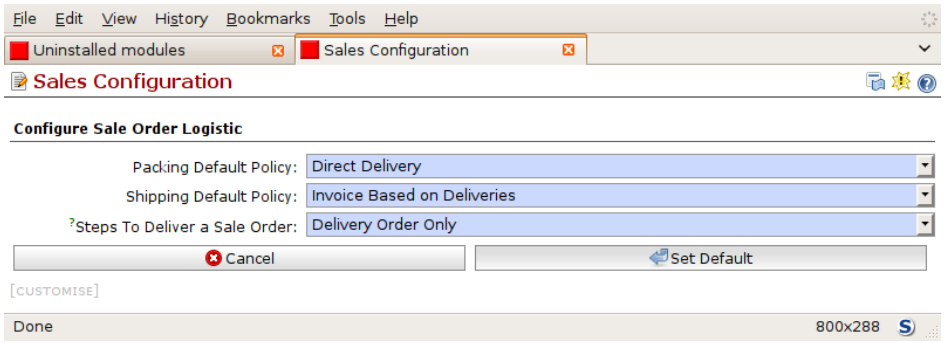


Figure 7.5: *The module form once a module is installed*

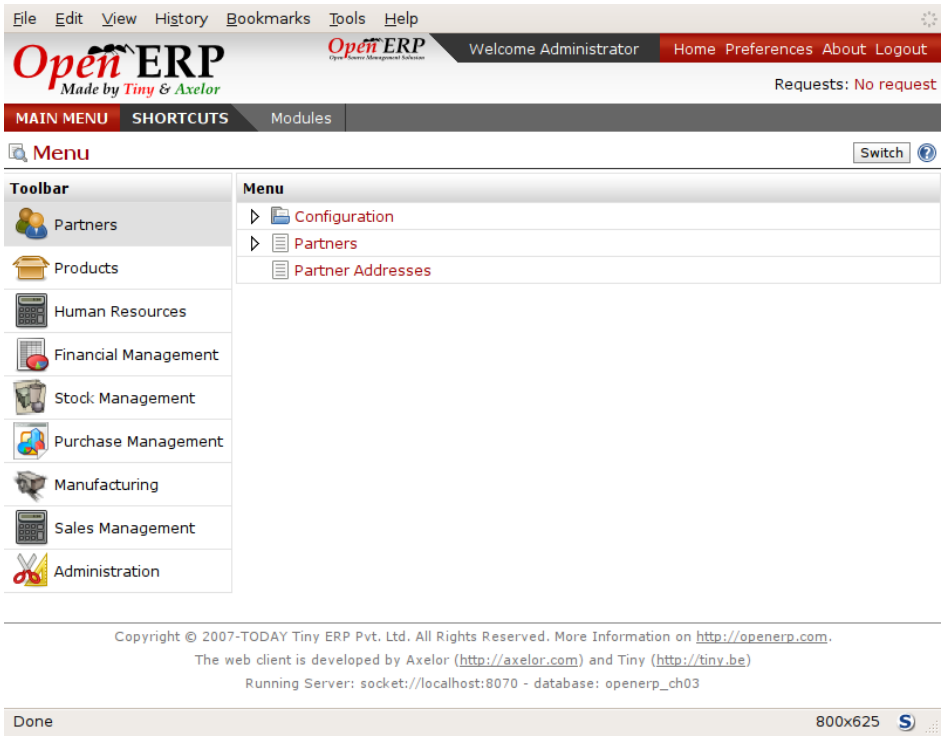


Figure 7.6: *Continuing with the database after installing new modules*

7.5 Database setup

You'll create all the elements in the database that you need to carry out the use case. These are specified in the functional requirements.

7.5.1 Configuring Accounts

You need to start off with a minimal set of accounts, and to do that you will need a couple of account types. You can structure your accounts into a chart at any time (and, in fact, you can structure them into several additional charts at the same time as you'll see in the chapter *Configuring Accounts from A to Z*), so you don't need to be concerned unduly about structure.

Account Types

Create account types using *Financial Management* → *Configuration* → *Financial Accounting* → *Financial Accounts* → *Account Types* and then clicking the **New** button. You'll need the following four types, the first of which is shown in figure *New Account Type*.

Table 7.1: Defining Account Types

Acc. Type Name	Code	Sequence	Sign on Reports	Deferral Method	Partner Account
View	view	5	Positive	None	unchecked
Income	income	5	Positive	Unreconciled	unchecked
Expense	expense	5	Positive	Unreconciled	unchecked
Cash	cash	5	Positive	Balance	unchecked

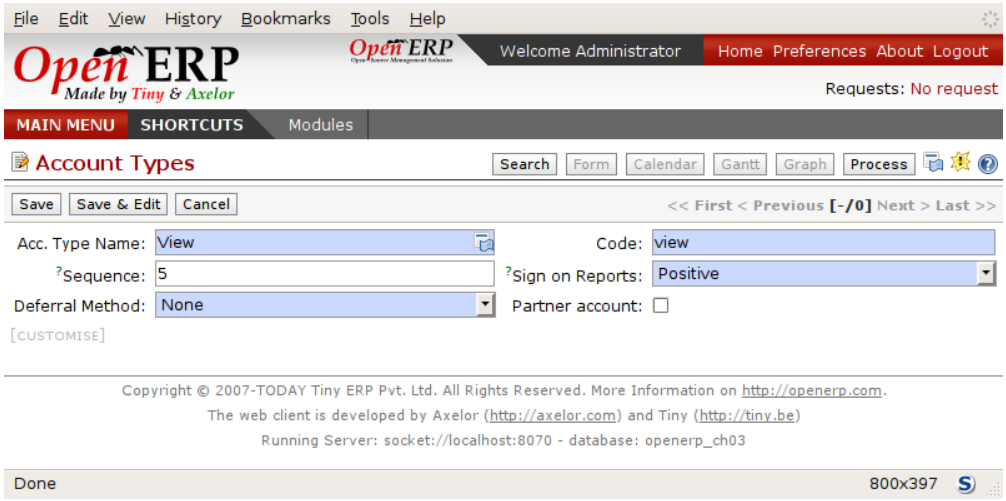


Figure 7.7: *New Account Type*

Accounts

Create accounts using *Financial Management* → *Configuration* → *Financial Accounting* → *Financial Accounts* → *List of Accounts* and then clicking the **New** button.

You need accounts to handle the purchase and sales orders that haven't yet been paid, two more for the receipt and shipping of goods, and one for the payment and receipt of funds. And one 'organizing' account that's just a view of the other five. So you'll need the following six accounts, one of which is shown in *New Account*.

Table 7.2: Defining Accounts

Name	Code	Internal Type	Parent	Account Type	Reconcile
Minimal Chart	0	View		View	unchecked
Payable	AP	Payable	0 Minimal Chart	Expense	checked
Receivable	AR	Receivable	0 Minimal Chart	Income	checked
Cash	C	Others	0 Minimal Chart	Cash	unchecked
Purchases	P	Others	0 Minimal Chart	Expense	unchecked
Sales	S	Others	0 Minimal Chart	Income	unchecked

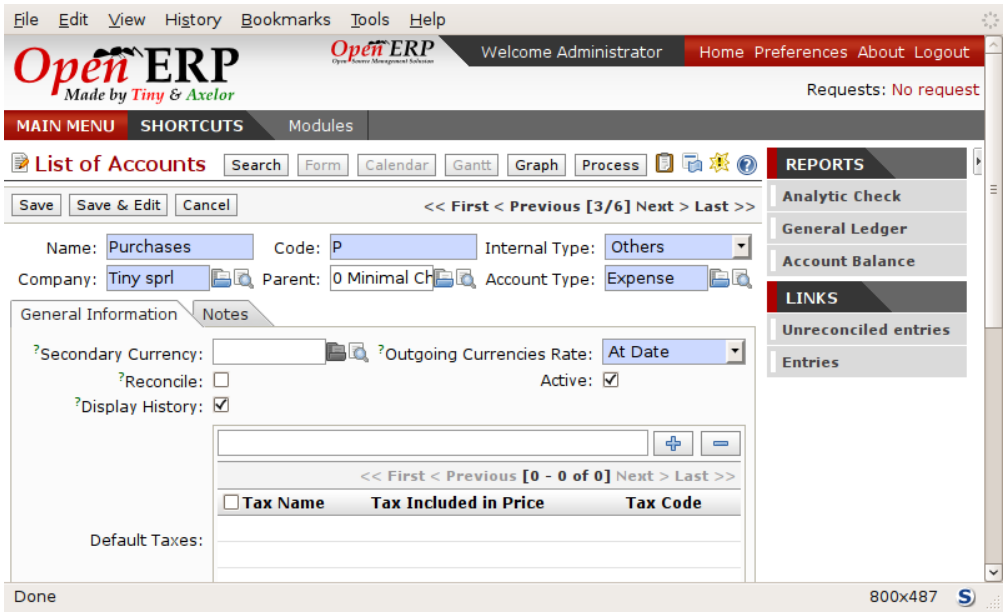


Figure 7.8: *New Account*

The **Account Type** entry is taken from the list of types that you just created. Although it looks a bit like a text box, it doesn't behave in quite the same way. A single `Del` or `Backspace` keystroke is all you need to delete the whole text, and when you type the name (or part of the name) you still need to associate that text with the entry by clicking the **Search** icon to the right of the field.

Properties

You now define some default properties so that you don't have to think about which account is used for which transaction every time you do something. The main new properties are the four that associate accounts payable and receivable to partners, and expenses and income to product categories.

Create properties using *Administration* → *Configuration* → *Properties* → *Default Properties* and then clicking the **New** button.

Table 7.3: Defining Properties

Name	Company	Fields	Value	Parent Resource
property_account_payable	Tiny sprl	Account Payable	(account.account) AP Payable	(None)
property_account_receivable	Tiny sprl	Account Receivable	(account.account) AR Receivable	(None)
property_account_expense_categ	Tiny sprl	Expense Account	(account.account) P Purchases	(None)
property_account_income_categ	Tiny sprl	Income Account	(account.account) S Sales	(None)

Tip: *Mistakes in configuring accounts and properties*
It's easy to make mistakes in configuring the accounts and their properties, but the consequences are not immediately obvious. You'll mostly discover mistakes when trying to make a Purchase or Sale Order (see later, for example, Purchase Order*), where the accounts are required fields or, if you're diligent, when you set up Partners.*
If you configure them correctly at this stage then fields will be completed automatically and you'll never know a thing. If you don't configure all this correctly then you won't be able to save the order form until you have corrected the problem or until you manually set the accounts.
Since this configuration is quite tedious you'd be best finding a certified Chart of Accounts that that has already been set up to meet your needs, if you can find one.

7.5.2 Configuring Journals

You'll also need to configure some journals, which are used to record the transactions from one account to another when invoices are raised and then paid. Create journals from the menu *Financial Management* → *Configuration* → *Financial Accounting* → *Financial Journals* and then clicking the **New** button.

Table 7.4: Defining Journals

Journal Name	Code	Type	View	Entry Sequence	Default Debit Account	Default Credit Account
Purchase Journal	PUJ	Purchase	Journal View	Purchase Journal	P Purchases	P Purchases
Sale Journal	SAJ	Sale	Journal View	Sale Journal	S Sales	S Sales
Bank Journal	BNK	Cash	Cash Journal View	Account Journal	C Cash	C Cash

Tip: *Mistakes in configuring journals*
It's easy to make mistakes in configuring the journals, too, and the consequences are also not immediately obvious. You'll mostly discover mistakes when creating an invoice (which happens at different points in the process depending on your configuration). In this example, validating a Purchase Order creates a draft invoice (see later, again for example, Purchase Order*), where a journal is required.*
As with accounts and properties, if you configure them correctly at this stage then the fields will be completed automatically and you'll never know a thing. If you don't configure all this correctly then there will be errors with the order form or corresponding draft invoice until you have corrected the problem or until you manually set the journal.

7.5.3 Configuring the Main Company

Start to configure your database by renaming the **Main Company** from its default of `Tiny sprl` to the name of your own company or (in this case) another example company. When you print standard documents such as quotations, orders and invoices you'll find this configuration information used in the document headers and footers.

To do this, click *Partners* → *Partners* and click the name of the only company there, which is `Tiny sprl` . This gives you a read-only view form view of the company, so make it editable by clicking the **Edit** button to the upper left of the form.

Tip: *Editable form in the web client*
When toggling from the list view to the form view of an item, you can generally click its name in the list view to show a non-editable view or the pencil icon by the left-hand edge of the line to open it in an editable view. You can toggle between editable and non-editable once you're in form view.

Change the following:

- **Name** : `Ambitious Plumbing Enterprises` ,

- **Contact Name** : `George Turnbull .`

Before you save this, look at the partner's accounting setup by clicking the fifth tab **Accounting**. The fields **Account Receivable** and **Account Payable** have account values in them that were taken from the account properties you just created. You don't have to accept those values: you can enter any suitable account you like at this stage, although Open ERP constrains the selection to ones that make accounting sense.

Back at the first tab, **General'change any other fields you like, such as the address and phone numbers, then :guilabel:'Save**. This changes one Contact for the Partner, which is sufficient for the example.

From the **MAIN MENU**, click *Administration* → *Users* → *Company Structure* → *Companies* and edit the only entry there:

- **Company Name** : `AmbiPlum ,`
- **Partner** : should already show `Ambitious Plumbing Enterprises ,`
- **Report Header** : `Ambitious Plumbing ,`
- **Report Footer 1** : `Best Plumbing Services, Great Prices ,`
- **Report Footer 2** : `Ambitious - our Registered Company Details .`

Figure *Changing company details* shows the effect of this. You can also change various other company-wide parameters for reports and scheduling in the other tabs, and you can upload a company logo of a specific size for the reports. Click **Save** to store this.

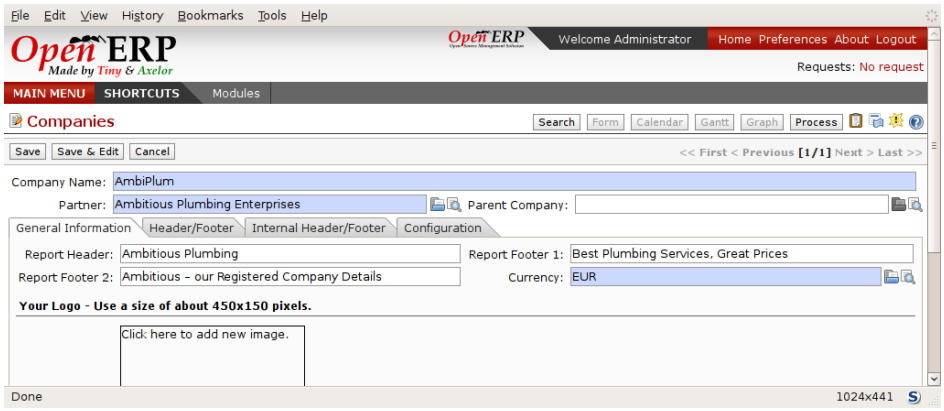


Figure 7.9: *Changing company details*

You can leave the currency at its default setting of `EUR`for this example. Or you can change it in this Company and the two default Pricelists (*Products* → *Pricelists* → *Pricelists*) if you feel compelled to do that.

Note: *Currency*
The examples in this book are in USD and EUR. You, the reader, could use your home currency (perhaps CAD, CNY, GBP, or IDR) in their place.

7.5.4 Creating partner categories, partners and their contacts

You'll now create a suppliers category and a customers category. Partner categories are useful for organizing groups of partners but have no special behavior that affects partners, so you can assign them as you like. Then you'll define one supplier and one customer, with a contact for each.

To do this use the menu *Partners → Configuration → Partner Categories'and click :guilabel:'New* to open a new form for defining **Partner Categories**. Define the two categories that follow by just entering their **Category Name** and saving them:

- `Suppliers`,
- `Customers`.

Then create two partners from the menu *Partners → Partners*. Click on the **New** button to open a blank form and then add the following data for the first partner first:

- **Name** : `Plumbing Component Suppliers`,
- **Customer** checkbox : `unchecked`,
- **Supplier** checkbox : `checked`,
- **Contact Name** : `Jean Poolley`,
- **Address Type** : `Default`,
- add `Suppliers` to the **Categories** field by selecting it from the Search List,
- then save the partner by clicking the **Save** button.

Figure *New Partner Form* shows the result.

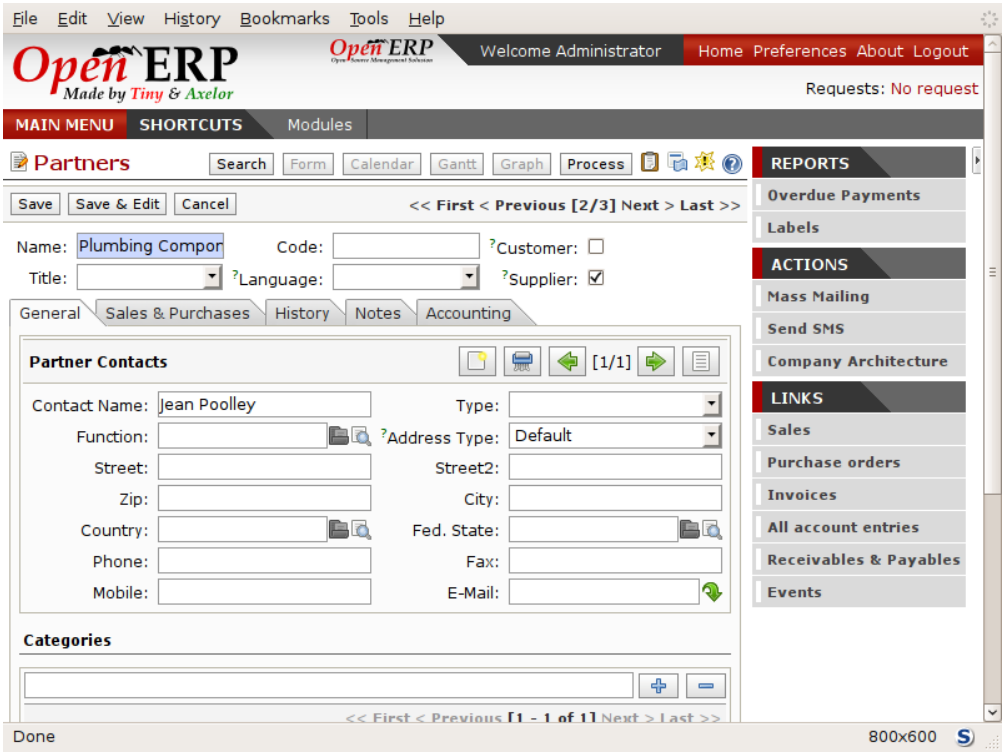


Figure 7.10: *New Partner Form*

Note: *Contact Types*
If you've recorded several contacts for the same partner you can specify which contact is used for various documents by specifying the Address Type.
For example the delivery address can differ from the invoice address for a partner. If the Address Types are correctly assigned, then Open ERP can automatically select the appropriate address during the creation of the document – an invoice is addressed to the contact that's been assigned the Address Type of Invoice, otherwise to the Default address.

For the second partner, proceed just as you did for the first, with the following data:

- **Name** : `Smith and Offspring`,
- **Customer** checkbox : `checked`,
- **Supplier** checkbox : `unchecked`,
- **Contact Name** : `Stephen Smith`,
- **Address Type** : `Default`.

Then add `Customers` in the **Categories** field. **Save** the form. To check your work you can go to the menu *Partners → Partner Categories* and click on each category in turn to see the companies in the category.

Note: *Multiple Partner Categories*
If this partner was also a supplier then you'd add Suppliers to the categories as well, but there's no need to do so in this example. You can assign a partner to multiple categories at all levels of the hierarchy.

7.5.5 Creating products and their categories

Unlike partner categories and their assigned partners, product categories do have an effect on the products assigned to them – and a product may belong to only one category. Select the menu *Products → Configuration → Product Categories* and click **New** to get an empty form for defining a product category.

Enter `Radiators` in the **Name** field. You'll see that other fields, specifically those in the **Accounting Properties** section, have been automatically filled in with values of accounts and journals. These are the values that will affect products – equivalent fields in a product will take on these values if they, too, are blank when their form is saved. Click **Save**.

Note: *Properties fields*
Properties have a rather unusual behavior. They're defined by parameters in the menus in Administration → Configuration → Properties*, and they update fields only when a form is saved, and only when the fields are empty at the time the form is saved. You can manually override any of these properties as you need.*
Properties fields are used all over the Open ERP system and particularly extensively in a multi- company environment. There, property fields in a partner form can be populated with different values depending on the user's company.
For example the payment conditions for a partner could differ depending on the company from which it's addressed.

Note: *UOM*
UOM is an abbreviation for Unit of Measure. Open ERP manages multiple units of measure for each product: you can buy in tons and sell in kgs, for example. The conversion between each category is made automatically (so long as you have set up the conversion rate in the product form first).

Tip: *Managing double units of measure*
The whole management of stock can be carried out with double units of measure (UOM and UOS – for Unit of Sale). For example an agro-food company can stock and sell ham by piece but buy and value it by weight. There's no direct relationship between these two units so a weighing operation has to be done.
This functionality is crucial in the agro-food industry, and can be equally important in fabrication, chemicals and many other industries.

Now create a new product:

1. Go to the *Products → Products* menu and click **New**.
2. Create a product – type `Titanium Alloy Radiator` in the **Name** field.
3. Click the **Search** icon to the right of the **Category** field to select the **Radiators** category.
4. The **Product Type** field should stay as `Stockable Product` its default value. The fields **Procure Method**, **Supply Method**, **Default UOM**, and **Purchase UOM** should also stay at their default values: in fact every other field in this tab remains untouched.

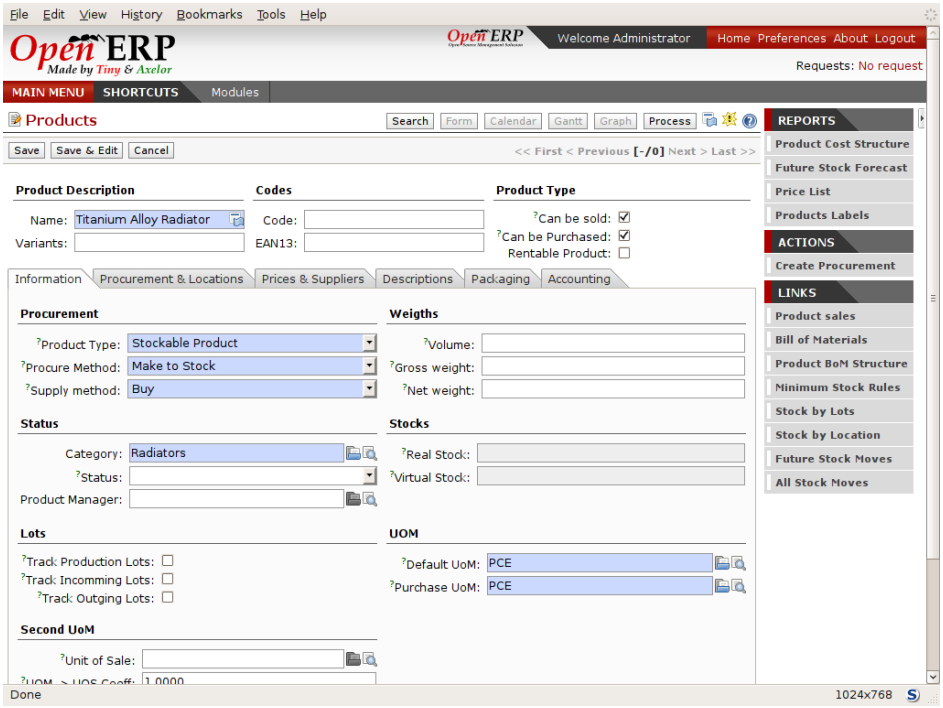


Figure 7.11: *Product Form*

5. Click on the **Prices & Suppliers** tab and enter `57.50` into the **Cost Price** field and `132.50` into the **Sale Price** field.
6. Click the **Accounting** tab, then click **Save** and observe that **Accounting Properties** here remain empty. When product transactions occur, the Income and Expense accounts that you've just defined in the Product Category are used by the Product unless an account is specified here, directly in the product, to override that.
7. Once the product is saved it changes to a non-editable state. If you had entered data incorrectly or left a required field blank, the form would have stayed editable and you'd need to click from tab to tab to find a field colored red, with an error message below it, that would have to be correctly filled in.

7.5.6 Stock locations

Click *Stock Management → Stock Locations Structure* to see the hierarchy of stock locations. These locations have been defined by the minimal default data loaded when the database was created. You'll use this default structure in this example.

Open ERP has three predefined top-level location types , `Physical Locations` and `Partner Locations` that act as their names suggest, and `Virtual Locations` that are used by Open ERP for its own purposes.

1. From the **Main Menu** click on *Stock Management → Configuration → Locations* to reach a list view of the locations (not the tree view).

2. Click on the name of a location, such as `Physical Locations/Tiny SPRL` to open a descriptive form view. Each location has a **Location type** and a **Parent Location** that defines the hierarchical structure. An **Inventory Account** can also be assigned to a location. While you're here you should change the location's name to Ambitious Plumbing Enterprises, since it was named before you changed the company name.

3. From the *Main Menu* click *Stock Management → Configuration → Warehouses* to view a list of warehouses. There's only the one at the moment, which should also be renamed from `Tiny SPRL` to `Ambitious Plumbing Enterprises`.

Tip: *Valuation of stock*
*If you want real-time stock valuation that tracks stock movements you must assign an account to each stock location. As product items are added to and taken from each location Open ERP generates an account entry for that location defined by the configuration of the product being moved – and a stock valuation based (in the current versions of Open ERP) on either **Cost Price** or **Average Price**.*
For example, if you assign an account to the Supplier location you'll be able see the value of stock that you've taken from the supplier. Its contents can be valued in your accounts and it can manage inventory on consignment.

A Warehouse contains an input location, a stock location and an output location for sold products. You can associate a warehouse with a partner to give the warehouse an address. That doesn't have to be your own company (although it can be): you can easily specify another partner who may be holding stock on your behalf.

Note: *Location Structure*
*Each warehouse is composed of three locations **Location Input**, **Location Output**, and **Location Stock**. Your available stock is given by the contents of the **Location Stock** and its child locations.*
*So the **Location Input** can be placed as a child of the **Location Stock**, which means that when **Location Stock** is interrogated for product quantities, it also takes account of the contents of the **Location Input**. **Location Input** could be used as a goods-in QC location. The **Location Output** must never be placed as a child of **Location Stock**, since items in **Location Output**, which can be considered to be packed ready for customer shipment, should not be thought of as available for sale elsewhere.*
In the default configuration, Open ERP uses the same `Stock` location for both Input and Output because it is easier to understand when you're starting out.

7.5.7 Setting up a chart of accounts

You can set up a chart of accounts during the creation of a database, but for this exercise you'll start with the minimal chart that you created (just a handful of required accounts without hierarchy, tax or subtotals).

A number of account charts have been predefined for Open ERP, some of which meet the needs of national authorities (the number of those created for Open ERP is growing as various contributors create and freely publish them). You can take one of those without changing it if it's suitable, or you can take anything as your starting point and design a complete chart of accounts to meet your exact needs, including accounts for inventory, asset depreciation, equity and taxation.

You can also run multiple charts of accounts in parallel – so you can put all of your transaction accounts into several charts, with different arrangements for taxation and depreciation, aggregated differently for various needs.

Before you can use any chart of accounts for anything you need to specify a Fiscal Year. This defines the different time periods available for accounting transactions. An initial Fiscal Year was created during the database setup so you don't need to do any more on this.

Click *Financial Management → Charts → Charts of Accounts* and then click **Open Charts** to open a new **Account charts** form where you define exactly what you want to see. Click **Open Charts** to accept the defaults and see a hierarchical structure of the accounts.

7.5.8 Make a backup of the database

If you know the super-administrator password, make a backup of your database using the procedure described at the very end of *Installation and Initial Setup*. Then restore it to a new database: `testing` .

This operation enables you to test the new configuration on `testing` so that you can be sure everything works as designed. Then if the tests are successful you can make a new database from `openerp_ch03` , perhaps called `live`or `production`, for your real work.

From here on, connect to this new `testing` database logged in as `admin` if you can. If you have to make corrections, do that on `openerp_ch03` and copy it to a new `testing` database to continue checking it.

Or you can just continue working with the `openerp_ch03` database to get through this chapter. You can recreate `openerp_ch03` quite quickly if something goes wrong and you can't recover from it but, again, you'd need to know your super-administrator password for that.

7.6 Testing a Purchase-Sale workflow

To familiarize yourself with the system workflow you'll test a purchase-sale workflow in two phases.

The first consists of product purchase, which requires the following operations:

1. Place a purchase order with Plumbing Component Suppliers for 10 Titanium Alloy Radiators at a unit price of 60.00.
2. Receive these products at your Goods In.
3. Generate a purchase invoice.
4. Pay your supplier.

Following this, you'll sell some of these products, using this sequence:

1. Receive a sales order for 6 Titanium Alloy Radiators from Smith and Sons, sold at a unit price of 130.00.
2. Despatch the products.
3. Invoice the customer.
4. Receive the payment.

7.6.1 Purchase Order

To place a Purchase Order with your supplier, use the menu *Purchase Management → New Purchase Order* for a new Purchase Order form.

Complete the following field:

- **Partner** : `Plumbing Component Suppliers` .

As you complete the **Partner** field, Open ERP automatically completes the **Address** field and the **Price List** field from information it takes out of the Partner record. Then click on the **Save Parent Record.** icon to the right of the **Order Line** field. This automatically saves the body of the **Purchase Order**, and changes to a **Create New Record.** icon. Click that to open the **Purchase Order Line** window.

Enter the following information

- **Product** : `Titanium Alloy Radiator` - type in part of this name then click the **Search** icon at the end of the line to complete it,

When you've selected a product on the product line, Open ERP automatically completes the following fields from information it finds in the Product record:

- **Product UOM** : the unit of measure for this product,
- **Description** : the detailed description of the product,
- **Scheduled date** : based on the product lead time,
- **Unit price** : the unit price of the product,
- **Analytic account** : if any account is specified then it will appear on the order line (it's not in this example),
- **Taxes** : applicable taxes defined in the partner, if specified, otherwise in the product, if specified (there aren't any in this example).

You can edit any of these fields to suit the requirements of the purchase order at the time of entry. Change the:

- **Quantity** : `10`,
- **Unit Price** to `56.00`.

Save the order line and close the **Purchase Order Line** window by clicking the **Close** button. You can then confirm the whole one-line order by clicking **Save**, which makes the form non-editable.

It's now in a state of `Request for Quotation`, so click **Confirm Purchase Order**, which corresponds to an approval from a manager or from Accounts within your own company and moves the order into `Confirmed`state. Finally click **Approved by Supplier** to indicate the supplier's acknowledgment of the order. The order becomes `Approved`.

If you click the **Delivery & Invoices** tab you'll see the delivery **Destination** is your own company's `Stock` location and that the invoice was created from the order and is `SI: PO001`. It's not entirely obvious at this stage, but the invoice is in a draft state so it can be edited and, crucially, has no accounting impact yet: it's just ready for your accounting group to activate it.

7.6.2 Receiving Goods

After confirming the order you'd wait for the delivery of the products from your supplier. Typically this would be somebody in Stores, who would:

1. Open the menu *Stock Management → Incoming Products → Packings to Process* using the expand/collapse icon.

   Note: *From the Purchase Order*
   *You could have clicked the **Packing** link to the right of the Purchase Order to reach the same screen, but this would confuse the purchasing role with the stores role. That link is very useful during testing and training, however.*

2. When the **Packing** window appears, select the name of the entry in the list (`PACK1` to display the Packing List itself – you'd usually do a search for the supplier name or order number in a list that was larger than this – then click **Validate** to load the **Make Packing** form.
3. Click **Make Picking** to indicate that you're receiving the whole quantity of 10 units.

At this point you've accepted 10 units into your company, in a location that you've already seen.

To check actual stock levels, use the menu *Stock Management → Location Structure*, find `Stock`in the hierarchy under **Physical Locations**, using the expand/collapse controls to make your way through the tree and click it. You'll next get a **View Stock of Products** screen, where you just click **Open Products** to select everything that the system knows.

You'll see that **Products: Stock** shows everything in the `Stock`location (and below it) with **Real stock** (the actual quantity recorded) and **Future stock** (the quantities expected in future when all receipts and despatches have been made) – both `10` in this case.

Alternatively you could have clicked the `Ambitious Plumbing Enterprises`line to highlight it (the line, not the `Ambitious Plumbing Enterprises`text itself), and then click the **Lots by Location** button in the **Reports** to the top right of the form. You'll see that you've now got `10` pieces of `Titanium Alloy Radiator`in the location `Stock`and also in the location `Ambitious Plumbing Enterprises`, its parent as shown in the figure *List of products and their stock levels*. If you explore further you'll also see you have `-10` pieces in the Partner Location `Suppliers`.

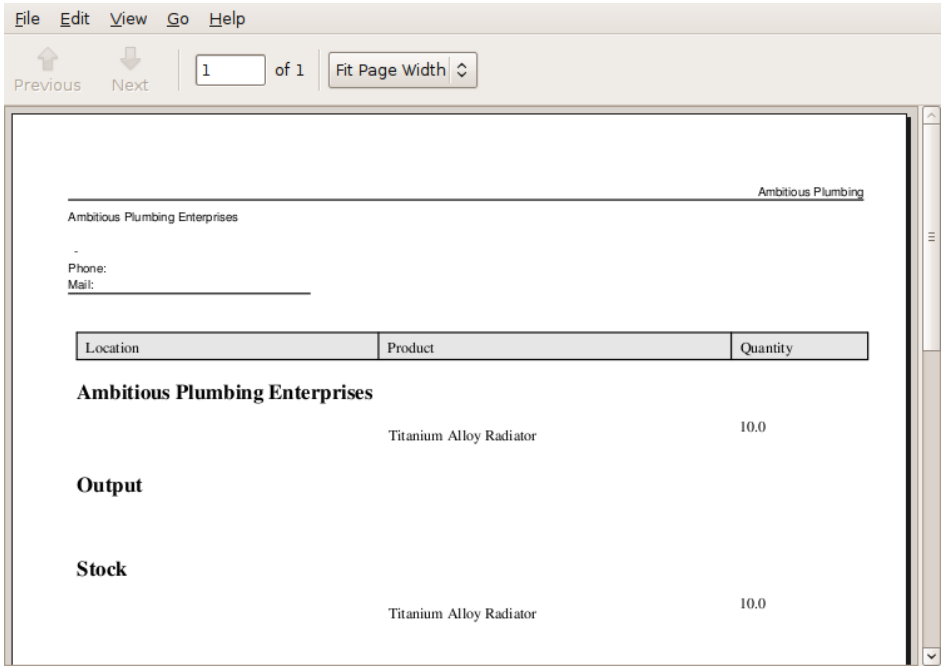


Figure 7.12: *List of products and their stock levels*

Tip: *Traceability in double-entry*
Open ERP operates a double-entry stock transfer scheme similar to double-entry accounting. Because of this you can carry out various analyses of stock levels in your warehouse, along with the corresponding levels in Partner Location at your Supplier. The double-entry system, analogous to that of accounting, enables you to keep track of stock movements quite easily, and to resolve any errors that occur.

7.6.3 Control of purchase invoices

When you've received an invoice from your supplier (which would usually be sent to your Accounts department) go to the menu *Financial Management → Invoices → Supplier Invoices → Draft Supplier Invoices* to open a list of supplier invoices waiting for receipt. These invoices enable your Accounts Department to match the the price and quantities ordered against the price and quantities on the supplier's invoice (and since it's not uncommon to receive an invoice showing details more favourable to the supplier than those agreed at the time of purchase, this is a useful function).

In this example, you created an invoice automatically when you confirmed the supplier's Purchase Order. That's because the **Invoicing Control** field on the order was set to `From Order`(the default option). Other options enable you to create invoices at the time of receiving goods or manually. The initial state of an invoice is `Draft` .

Now click the invoice for your order `PO001` to display its contents. You can compare the goods that you've recorded there with the invoice received from your supplier. If there's a difference it's possible to change the order lines to, for example, add a delivery charge. Click **Validate** to confirm the invoice and put it into the `Open` state.

Accounting entries are generated automatically once the invoice is validated. To see the effects on your chart of accounts, use the menu *Financial Management → Charts → Chart of Accounts* ,then click **Open Charts** at the **Account charts** page to see that you have a debit of `560.00` in the `Purchases` account and a credit of `560.00` in the `Payable` account.

7.6.4 Paying the supplier

Select the menu *Financial Management → Invoices → Supplier Invoices → Unpaid Supplier Invoices* for a list of supplier invoices that haven't yet been paid. Click the `PO001` text itself to open the invoice in read-only mode. In practice you'd search for the invoice by order number or, more generally, for invoices nearing their payment date.

Click **Pay Invoice** in the toolbar to the right of the form, which opens a **Pay invoice** window with a description of the payment. Type `Pay Supplier` in the **Entry Name** field, and select `Bank Journal` in the **Journal/Payment Mode** field. Then click **Full Payment** to the top left of the form, which carries out the payment action within Open ERP and returns you to the invoice. Although this invoice is still in the **Unpaid Invoices** screen, you can see it is actually paid because the **Paid/Reconciled** box is now checked and the **State** is now `Done` .

Note: *Payment of an invoice*
The method described here is for companies that don't use their accounting system to pay bills – just to record them. If you're using the `account` *module fully other, more efficient, methods let you manage payments, such as entering account statements, reconciling paperwork, using tools for preparing payments, interfacing with banks.*

You can monitor the accounting impact of paying the invoice through the chart of accounts available from the menu *Financial Management → Charts → Chart of Accounts*. Open ERP automatically creates accounting entries from the payment and can reconcile the payment to the invoice. You now have a new transaction that has debited the `Payable` account with `560.00` and credited the `Cash` account.

If you look in *Financial Management → Reporting → Journals* you'll see both accounting transactions, one in each of the `Purchase` Journal and `Bank` Journal in `Draft` state.

7.6.5 From Sales Proposal to Sales Order

In Open ERP, sales proposals and sales orders are managed using documents that are based on the same common functionality as purchase orders, so you'll recognize the following documents in general but see changes to their detail and to their workflows. To create a new sales proposal, use the menu *Sales Management → Sales Orders → New Quotation* which creates a new order in a state of `Quotation` , then:

1. Select the **Customer** `Smith and Offspring` . This has the effect of automatically completing several other fields: **Ordering Contact**, **Invoice Address**, **Shipping Address**, and the **Pricelist** `Default Sale Pricelist`. They're all only defaults so these fields can be modified as you need.

2. Click the **Save parent record.** icon to the right of the **Sales Order Lines** field. It saves the main order form and becomes a new **Create new record.** icon. Click that to open a **Sales Order Lines** window.

3. Select the product `Titanium Alloy Radiator` Although the **Product** field isn't itself required, it's used by Open ERP to select the specific product so that several other fields can be automatically completed on the order line of the proposal, such as **Description**, **Product UoM**, **Unit Price**, **Procure Method**, **Delivery Delay**, and **Taxes**.

4. Change the **Quantity** to `6` and the **Unit Price** to `130.00`Then click **Save** and the line appears on the quotation form. A blank order line form reappears so that you can enter another line, but it's enough now just to click **Close** to return to the order form.

5. On the **Other data** tab of this Sales Order select a **Packing Policy** of `Complete Delivery` and **Shipping Policy** of `Invoice on Order After Delivery` from their dropdown menu lists.

6. Return to the first tab **Sale Order** and validate the document by clicking guilabel:*Confirm Order* which calculates prices and the changes the order's state from `Quotation` to `In Progress`as shown in screenshot *Sales Order Form*. If you were in negotiation with the prospective customer you'd keep clicking **Compute** and **Save** keeping the document in `Quotation` state for as long as necessary.

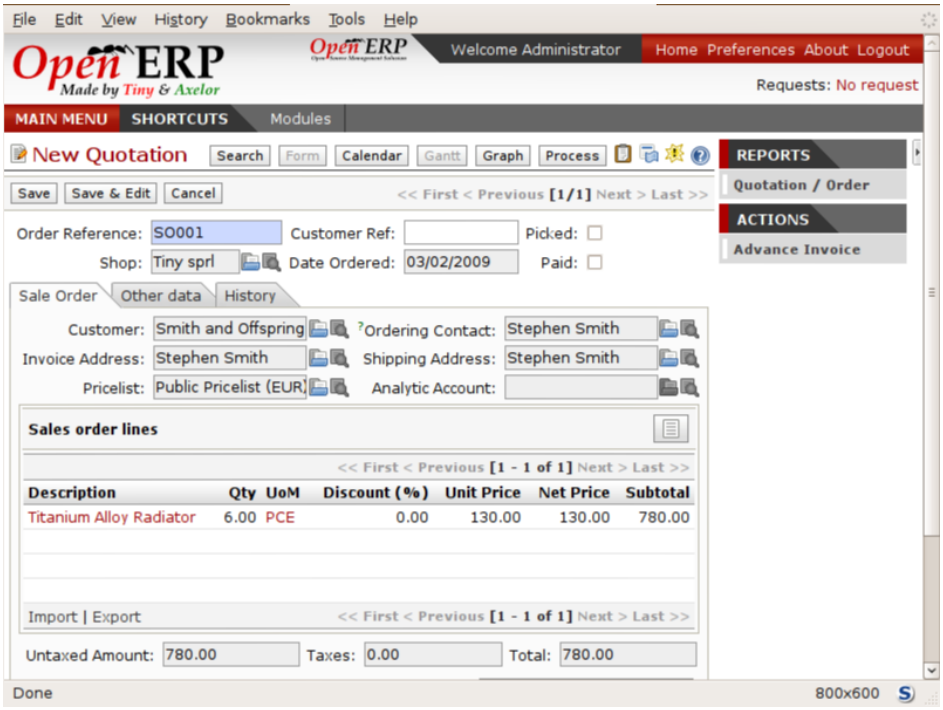


Figure 7.13: *Sales Order Form*

7. In the last tab of the order, **History** you can see the **Packing List** that's been created and you'll be able to see any invoices that relate to this order when they're generated.

From the **Main Menu** click *Products* → *Products* to display a list of products: just the one, `Titanium Alloy Radiator` , currently exists in this example. Its **Real Stock** still shows `10.00` but its **Virtual Stock** now shows `4.00` to reflect the new future requirement of 6 units for despatch.

7.6.6 Preparing goods for despatch to customers

The stores manager selects the menu *Stock Management* → *Outgoing Products* → *Confirmed Packing Awaiting Availability* to get a list of orders to despatch. In this example there's only one, `PACK2` , so click the text to open the **Confirmed Packing Waiting Availability** form.

Tip: *Running Schedulers*
At the moment your Sales Order is waiting for products to be reserved to fulfil it. A stock reservation activity takes place periodically to calculate the needs, which also takes customer priorities into account. The calculation can be started from the menu Manufacturing → Compute All Schedulers. *Running this automatically reserves products.*
If you don't want to have to work out your stock needs but have a lean workflow you can install the `mrp_jit` *(Just In Time) module.*

Although Open ERP has automatically been made aware that items on this order will need to be despatched, it has not yet assigned any specific items from any location to fulfil it. It's ready to move `6.00 Titanium Alloy Radiators` from the **Stock** location to the **Customers** location, so start this process by clicking **Check Availability**. The **Move** line has now changed from the `Confirmed` state to the `Available` state.

Then click the **Packing Done** button to reach the **Make Packing** window, where you click the **Make Picking** button to transfer the 6 radiators to the customer.

To analyze stock movements that you've made during these operations use *Stock Management → Locations Structure* to see that your stocks have reduced to 4 radiators and the generic `Customers` location has a level of 6 radiators.

7.6.7 Invoicing Goods

Use the menu *Financial Management → Invoices → Customer Invoices → Draft Customer Invoices* to open a list of Sales invoices generated by Open ERP. These are in the `Draft`state, which means that they don't yet have any presence in the accounting system. You'll find a draft invoice has been created for the order `SO001` once you have despatched the goods because you'd selected `Invoice on Order After Delivery.`

Once you confirm an invoice, Open ERP assigns it a unique number, and all of the corresponding accounting entries are generated. So open the invoice and click **Create** to do that and move the invoice into an `Open` state with a number of `2009/001`.

You can send your customer the invoice for payment at this stage. Click **Invoices** from the **Reports** section of the toolbar at the right of the form to get a PDF document that can be printed or emailed to the customer.

You can also attach the PDF document to the Open ERP invoice record. Save the PDF somewhere convenient on your PC (such as on your desktop). Then click the **Add an attachment to this resource** button to the top right of the invoice form (it looks like a clipboard). Browse to the file you just saved (`record.pdf` if you didn't change its name) from the **Attachments** dialog box that pops up, and **Close** the dialog box. This gives you a permanent non-editable record of your invoice on the Open ERP system.

Review your chart of accounts to check the impact of these activities on your accounting. You'll see the new revenue line from the invoice.

7.6.8 Customer Payment

Registering an invoice payment by a customer is essentially the same as the process of paying a supplier. From the menu *Financial Management → Invoices → Customer Invoices → Unpaid Customer Invoices*, click the name of the invoice that you want to mark as paid, or just check its checkbox in the list:

1. Use the **Pay Invoice** button in the **Action** section of the toolbar at the right to open a window that enables you to register the payment.
2. Select the **Entry Name** and type `Got paid by customer` and select the **Journal** to be `Bank Journal.`
3. Click **Full Payment**. The invoice is then marked as paid, with its **Paid/Reconciled** box checked as you can see if you select it again *Invoice Form*.

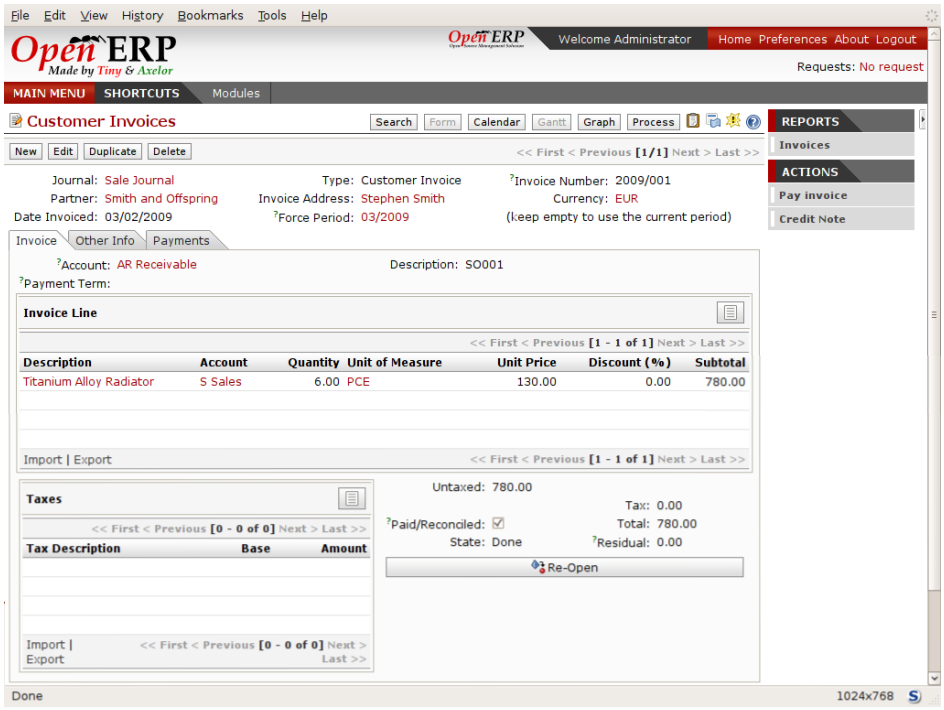


Figure 7.14: *Invoice Form*

Check your Chart of Accounts as before to see that you now have a healthy bank balance in the `Cash` account.

Part III

Managing Customer Relationships

The Sales department is the engine of your whole company. Sales success drives staff motivation and your company's general dynamism, which in turn enables you to keep innovating and lay the foundations for future success.

The key to continued Sales success is effective Customer Relationship Management (most often known as CRM). Open ERP's CRM capabilities are flexible and highly developed to assist you in managing all aspects of both supplier and customer relationships. Analytic tools help you understand your performance drivers, and the automation of data and processes drives new levels of efficiency.

Open ERP can share information through its interfaces to the most common office applications, minimizing disruption to your operations when you first install it. Your staff can build on their previous productivity by continuing to use their email and office systems, now connected to Open ERP, transferring to the Open ERP interface only if they need to.

CHAPTER

EIGHT

LEADS, BUSINESS OPPORTUNITIES AND CAMPAIGNS

This chapter introduces the pre-sales activities of managing leads and opportunities. You're introduced to a more complex set of relationships between partners and contacts than offered by the :mod:'base' module, and shown how to use the company calendar. You'll finish by discussing how a call center might use the Open ERP system.

8.1 Managing Contacts

The standard way of representing partners and contacts throughout Open ERP and many other enterprise systems (such as phone contact applications) is having a partner with multiple contacts. *Partner* is the word for any entity that you do business with - supplier, customer, etc. This representation may not be flexible enough for some uses, so Open ERP provides an alternative, which is brought into the system by installing the `base_contact` module.

The two figures *UML class diagram with base_contact module installed* and *UML class diagram with base_contact module not installed* show the structure of partners and contacts in the form of UML classes both with and without this `base_contact` module. For the non-programmer this diagram can be a bit of a brutal way of showing it, but it's the clearest way to illustrate the complexities that can be accomplished.

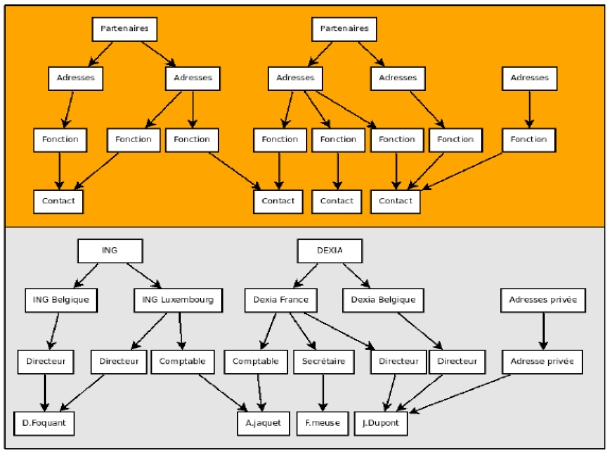


Figure 8.1: *UML class diagram with base_contact module installed*

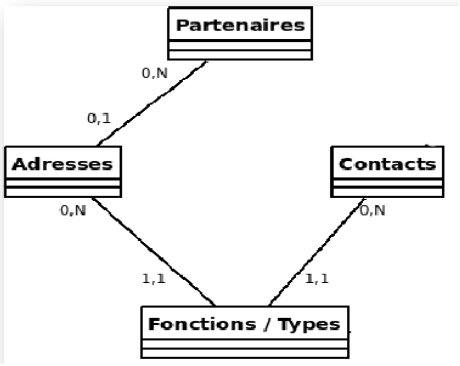


Figure 8.2: *UML class diagram with base_contact module not installed*

A concrete example may illustrate this concept of multiple relationships between contacts and partners (companies) better. The figure *Example of a structure with management of partners and contacts* shows two companies each having several addresses (places of business) and several contacts attached to these addresses.

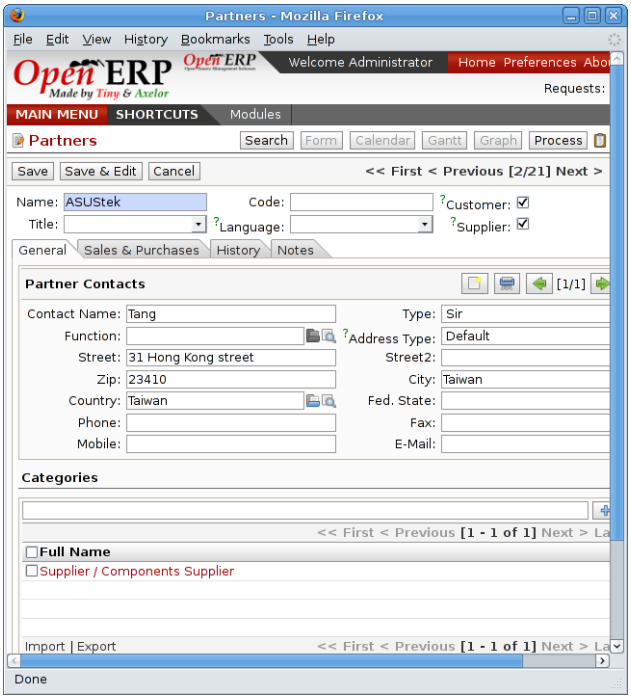


Figure 8.3: *Example of a structure with management of partners and contacts*

In this example you'll find the following elements:

- The ABC bank has two places of business, represented by the addresses of ABC Belgium and ABC Luxembourg,
- The addresses of Dexey France and Dexey Belgium belong to the Dexey company,
- At the office of ABC Luxembourg, you have the contacts of the director (D Fogerty) and the accountant (A. Jacket),
- Mr Jacket holds the post of accountant for ABC Luxembourg and Dexey France,
- Mr J Smith is director of Dexey France and Dexey Belgium and we also have his private address attached to no partner.

Depending on your needs, Open ERP provides three menus to access the same information:

- List of partners: *Partners* → *Partners*,
- List of contacts: *Partners* → *Contacts*,
- List of posts held by contacts at partners: *Partners* → *Contact's Jobs*.

The three menus above are only three different views on the same data. If you correct a contact name on the contact form, this will be modified on all the posts occupied in the different companies.

The screen above represents a partner form. You can see several possible address there and a list of contacts above each address. For each contact you see a name, a function, a phone number and an email.

Figure 8.4: *A partner form with the base_contact module installed*

If you click on the line you can get more detail about the function (such as start date, end date, and fax) or enter into the contact form (such as personal phone, different posts occupied, and personal blog).

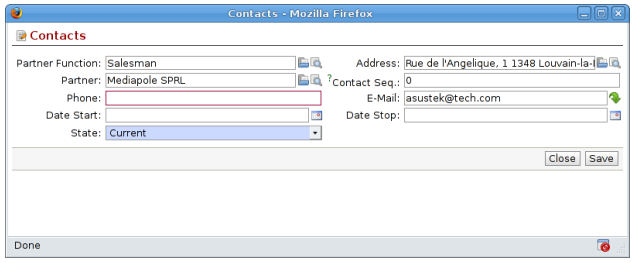


Figure 8.5: *Detail of a job post occupied by a contact at a partner*

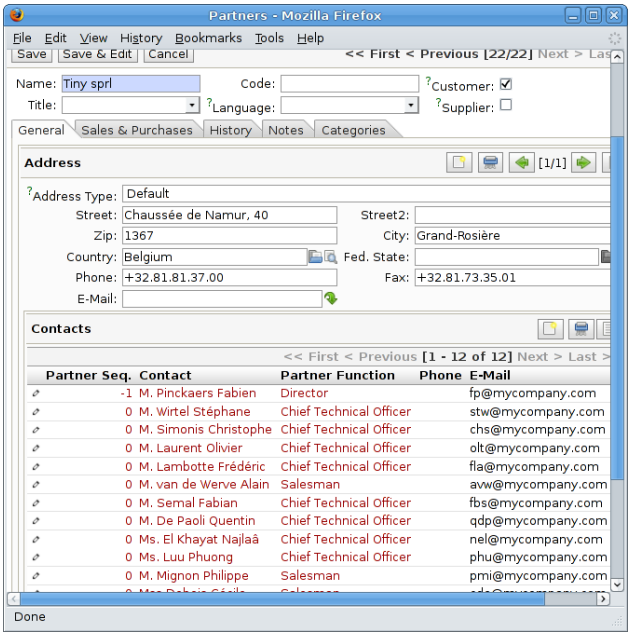


Figure 8.6: *Detail of a contact form for someone employed in several job posts*

Partner management is found in the Open ERP base modules. To manage partner relations you have to install the CRM modules. Then start by installing a CRM profile and configure the system to meet your needs.

For this chapter you should start with a fresh database that includes demo data, using the **CRM profile** and no particular chart of accounts configured. Open ERP's modularity enables you to install only the CRM module if your requirements are limited to customer relationships.

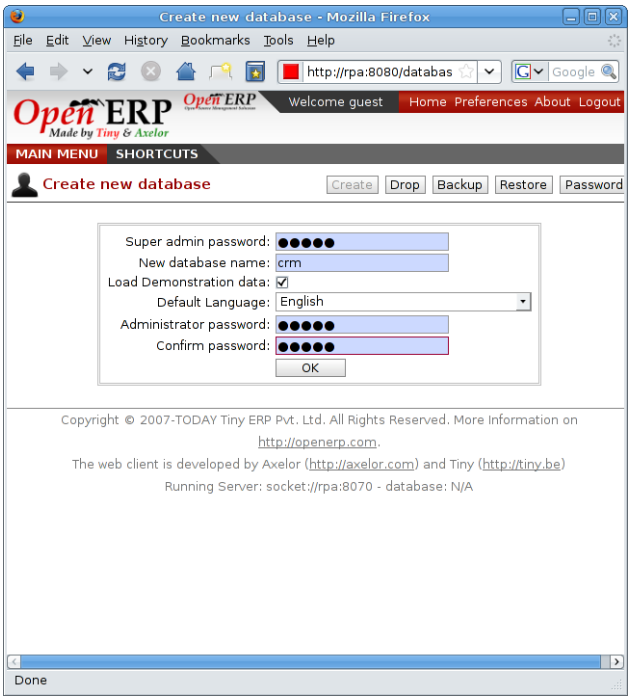


Figure 8.7: *Creating a new database*

Once the database is installed, Open ERP suggests that you configure it using a series of questions:

- Creating users: click **Skip**,
- Simplified or Extended mode: select simplified and click **Ok**,
- Select the CRM functionality to install.

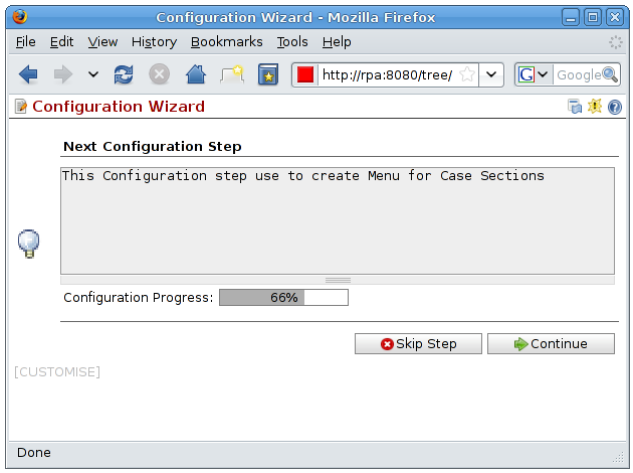


Figure 8.8: *Selecting the CRM functionality to install*

Note: *The CRM configuration module*
The pre-configuration of the management of customer relations to generate prospects, opportunities, and phone calls isn't supplied by the `crm` *module itself but by the* `crm_configuration` *module.*

If you install the modules separately don't forget to install the `crm_configuration` module. The `crm` module just contains the generic case management system.

Open ERP proposes a selection from pre-configured functions for CRM:

- managing a prospects database,
- managing and tracking opportunities,
- managing meetings and the company calendar,
- managing pre-sales,
- managing phone calls and/or a call center,
- managing after-sales service,
- managing employment offers,
- managing technical service,
- tracking bugs and new functional requests.

You see that Open ERP's CRM module isn't limited just to Customer relationships but is designed to generate all types of relations with a partner: such as suppliers, employees, customers, prospects. This book will describe just customer relationships. The other CRM functions are similar to use, so you shouldn't have huge problems with understanding those functions.

The following cases will be looked at for this chapter

- Prospect management,

- Opportunity management,
- Management of the company calendar,
- Management of phone calls.

The figure *Selecting parameters for CRM modules for the reader of this chapter* shows the CRM module configuration screen after selecting some functions to install.

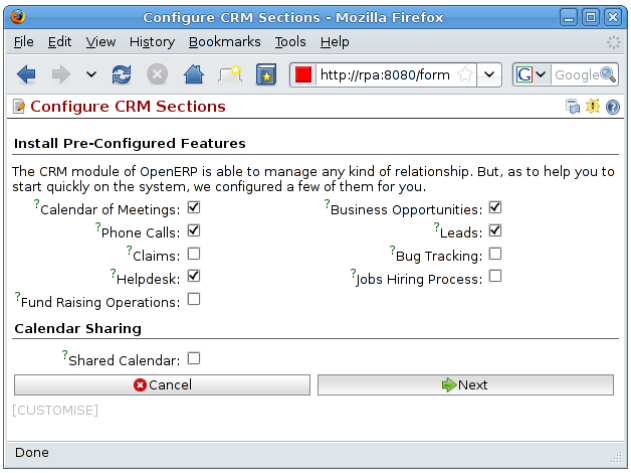


Figure 8.9: *Selecting parameters for CRM modules for the reader of this chapter*

8.1.1 Organizing Prospects

If you have installed the management of prospects and opportunities, Open ERP implements the following workflow for the qualification of prospects and future opportunities.

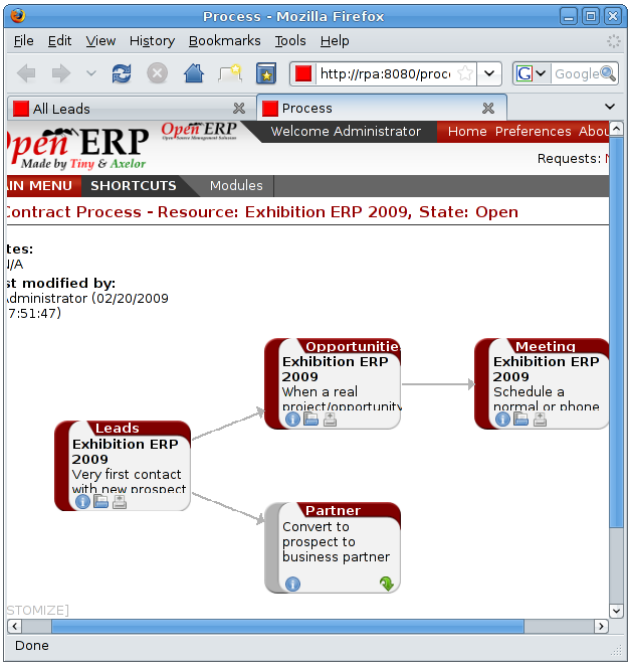


Figure 8.10: *Process of converting a prospect into a customer or opportunity*

8.2 Leads

A lead represents a potential customer or a possible future business or sales opportunity. They aren't usually qualified yet and they aren't yet assigned to an individual person for following up. When a lead needs to be followed up, it's converted to a partner and/or a sales opportunity.

For example, the following events could result in the creation of one or several leads:

- A business card from a prospective customer met briefly at an exhibition: you must contact him again to qualify the lead and to know if there is any possibility of a key sales opportunity,
- A database of potential customers in a given sector and region. The potential customers must be contacted again individually or using a mass mailing to determine which contacts need to be followed up,
- A contact that you've been given by a friend. You must then qualify it before starting to assign a salesperson to the contact,
- A form completed on your website directly integrated into Open ERP. Before converting the form into a sale proposition or opportunity, you should read and handle the person's request.

> **Note:** *Separation of sales services*
> *In companies of a certain type, you often distinguish between the sales department and the presales department. The role of the presales department is to acquire and qualify new leads, and the role of the sales department is to crystallize the sales opportunities or work with existing customers.*

System users in the pre-sales department will usually work on leads. Once these leads are converted into customers or sales opportunities the sales department pays individual attention to each opportunity.

8.2.1 Entering prospects into the system

New prospects are usually entered as a lead in the system. This means that you don't create a partner form or sales opportunity until you have qualified whether the lead is interesting or not. If the new contact is indeed interesting you then enter the data on into a partner form and, eventually, a sales opportunity.

To enter a lead manually use the menu *CRM & SRM → Sales → Leads → New Lead*. A form opens to let you enter data about this new contact.

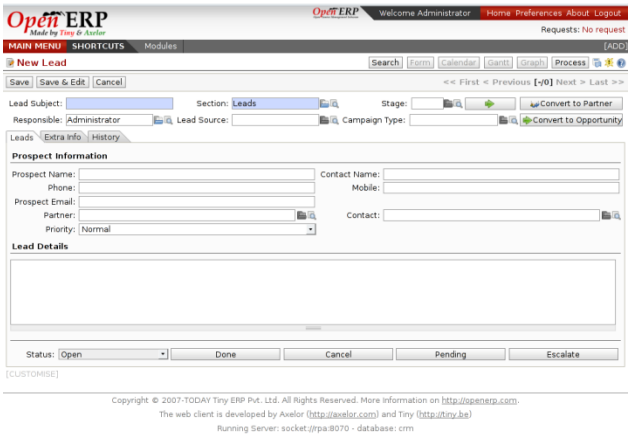


Figure 8.11: *Creating a new lead*

Leads have a status that depends on the qualification work that's been carried out:

- `Draft` : the lead data has been entered, any work has not yet been done and a salesperson has not yet been assigned to the request,
- `Open` : the lead is being handled,
- `Closed` : the lead has been converted into a partner and/or a sales opportunity,
- `Waiting` : the lead is waiting for a response from the customer,
- `Cancelled` : the lead has been cancelled because the salesperson has decided that it's not worth following up.

When a new lead has been created it's automatically put into the open state.

You can also import a huge list of leads. That's useful if you've bought a database of potential prospects and you want to load them all into the system to handle them all at the same time.

To do that you should start with a list of leads in CSV format. If your prospects are provided in another format it's easy to convert them to the CSV format using Microsoft Excel or OpenOffice Calc. Open the leads list using the menu *CRM & SRM → Sales -> Leads -> My Leads*. At the bottom of the list click on the **Import** link. Open ERP opens a form for importing the data.

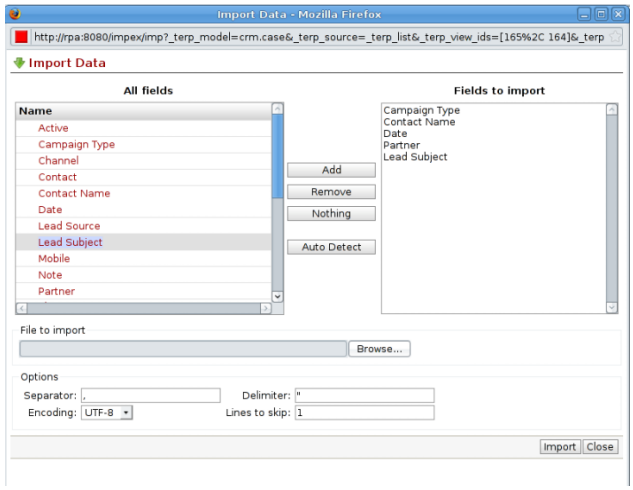


Figure 8.12: *Importing leads into the system*

You then define which columns are present in your CSV file in the correct order. Then select your file and click on **Import**. Check in the chapter about system administration, *Configuration & Administration*, for more information on import and export.

Tip: *Various Imports*
Importing and Exporting data in Open ERP is a generic function available to all resources. So you can import and export such lists as partners, sales opportunities, accounting entries, products and pricelists.

There are other methods of importing leads automatically or semi-automatically:

- Using the Outlook or Thunderbird plugin to insert new leads directly from an email client after a salesperson sees promising emails,
- Using the email gateway for each incoming email from a certain address (such as info@mycompany.com) creating a lead automatically from the contents of the email,
- Using Open ERP's XML-RPC web-services to connect to a form on your website.

These different methods are described in the next CRM chapter, *Customer Relationship Management*.

8.2.2 Organizing leads

To help the users organize and handle leads efficiently, Open ERP provides several menus in the CRM system that can be used depending on the needs of each:

- *Leads → New Lead* opens an entry form directly onto a new lead. This menu can usefully be put into your shortcuts,
- *Leads → My Leads* gives a list of all the leads (both open and not) which you're linked to,
- *Leads → My Leads → My Current Leads* gives a list of all your leads that you still need to handle (your open, draft and waiting leads),
- *Leads → My Leads → My Current Leads → My Pending Leads* gives a list of all your leads that that are still waiting for a customer response. This enables you to check periodically on your work to do,
- *Leads → All Leads* is a list of all the leads assigned to different salespeople. This menu as those beneath it are used by managers to check on each person's work.

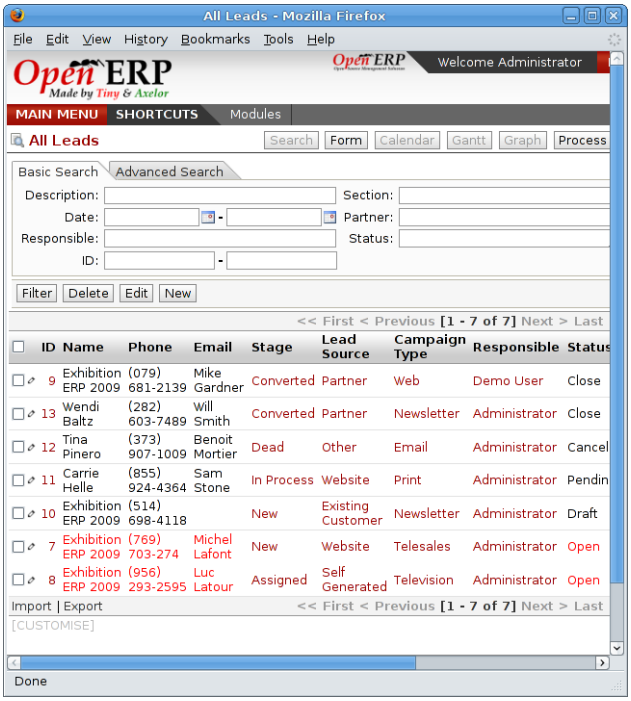


Figure 8.13: *List of leads to be handled*

Leads are prioritized. Salespeople should ideally start at the top of the list. They then open a form to describe the lead. At this stage they contact the suspected customer by email or phone and enter the result of the contact on the lead form.

They can then change the status of the lead to a state that depends on the response from the suspect:

- `Cancelled` : not to be followed as a lead,
- `Waiting` : waiting for a response from the suspect.

8.2.3 Converting leads into customers or opportunities

If a lead is interesting you convert it into a partner in the system. To do that, push the button **Convert to Partner**. Open ERP opens a partner form with the information from the lead entered into it. At this stage you can add more information such as the exact partner address and the contact details.

The created partner is automatically attached to the lead, which enables you to keep complete traceability from the lead. To do that look at the second tab in the lead **History**.

If the salesperson thinks that there is a real opportunity with the lead, following the contact, he can convert it into a sales opportunity using the button **Convert to Opportunity**. Open ERP then opens a window asking the title of the opportunity, the estimated revenue and the percentage success of converting to a sale.

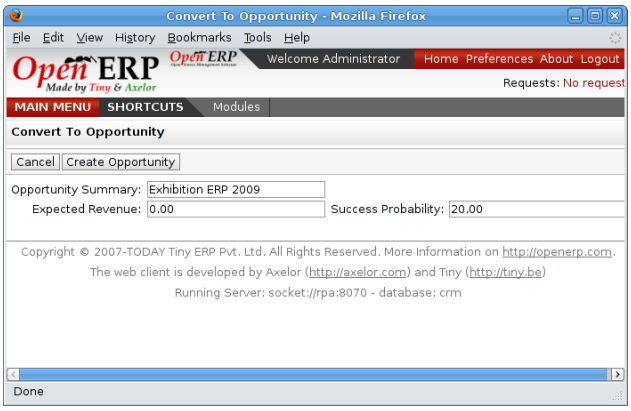


Figure 8.14: *Converting a lead into a sales opportunity*

Some companies have more advanced processes for the qualification of a lead. They pass through several steps, such as first call, renewing contact, waiting for a verbal agreement. You can then use the field **Step** that is found up to the right of the lead definition. To move it automatically through the next step, you can use the button that looks like a right arrow.

8.3 Sales Opportunities

While a lead represents the first contact with a prospect yet to be qualified, a sales opportunity represents a potential contract. Each opportunity must be followed up by a salesperson spending time to make a quotation or the cancellation of the opportunity.

Leads are generally handled en masse, with the automation of certain responses or emails. Opportunities, in contrast, are usually tracked one by one by the salespeople because that involves a process of negotiation.

8.3.1 Ensuring that you track opportunities

Just like leads, Open ERP provides several menus to handle sales opportunities efficiently. All the menus for opportunities are under the menu *CRM & SRM → Sales → Opportunities*.

To quickly create a new opportunity, use the menu *CRM & SRM → Sales → Opportunities → New Opportunity*. You usually use this menu in the case where the opportunity is direct and doesn't come first from a lead. It can also be useful to create a shortcut to this menu so that you can quickly open a new opportunity form when you need to – after a phone call, or an email, that needs followup.

The salesperson uses the menu *CRM & SRM → Sales → Opportunities → My Opportunities → My Open Opportunities* to track their opportunities. After various customer contacts, the salesperson can enter the information

into the form to describe the activity. The history tab provides a history of all the information about the activity throughout its life. The activities are automatically reported on the partner form of the associated customer. To see this, open the events tab when you open the partner form.

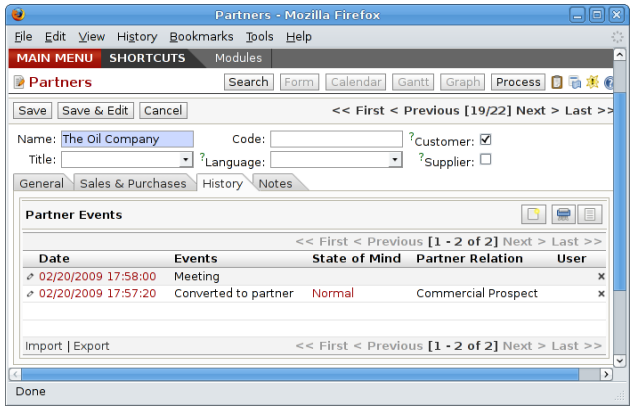


Figure 8.15: *History of events in a partner form*

When the leads have been converted into opportunities, the opportunities can be assigned to any salesperson. Then you designate an opportunity manager in the company who is responsible for assigning the new opportunities to different salespeople to suit their speciality, location or availability.

The manager can use the menu *Opportunity → All Opportunities → Unassigned Opportunities* to do this. This gives you a list of all opportunities that haven't yet been assigned to a salesperson. The manager can the enter the salesperson responsible for the opportunity into the field **Responsible**.

8.3.2 The company calendar

There are several methods for entering a new meeting with a partner. The first method is to enter the meeting directly in the company calendar. To do that, use the menu *CRM & SRM → Calendar → All Meetings*.

You can use the monthly, weekly or daily views to plan a meeting. To move between one mode and another use the buttons above and to the right of the calendar.

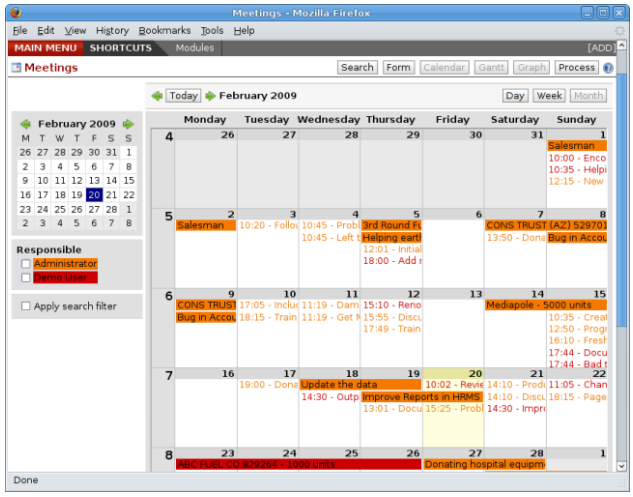


Figure 8.16: *Meetings calendar in monthly view*

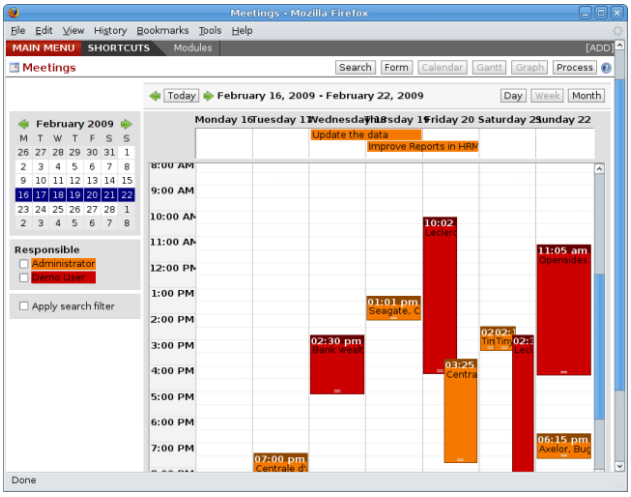


Figure 8.17: *Meetings calendar in weekly view*

In the calendar you distinguish between multi-day events and events that last only for a few hours. Multi-day events have a colored background whereas single events have a colored font. Each event has a color that represents the user that created the meeting. You can filter the different users by selecting them from the list at the left of the screen.

To enter a new meeting into the system you can click the day and the hour for a new meeting. In the weekly and daily views you can also press the mouse left button on the calendar and slide the mouse along to create an event of several hours. Open ERP then opens an entry screen for a new meeting.

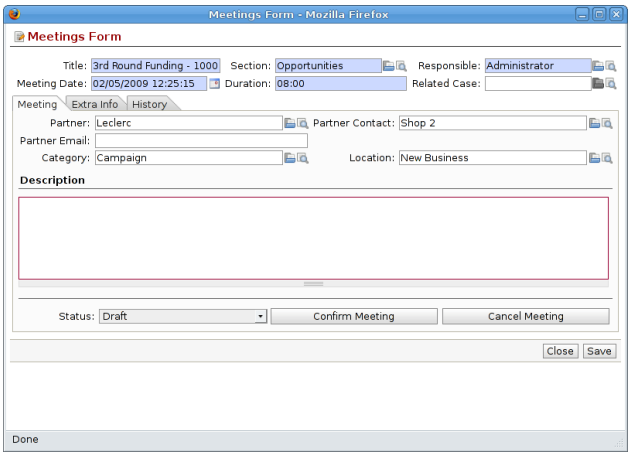


Figure 8.18: *Entering a new meeting*

Tip: *Consolidated Calendar*
The advantage of integrated management is that the enterprise calendar will group several system events. Then in the Open ERP calendar you'll automatically find both these meetings and such information as business opportunities, technical interventions, and requests for staff meetings.

8.3.3 Tracking phone calls

Open ERP has functions to manage a telephone call centre. If, hen you installed the CRM module, you selected the option for calls you'll be able to manage incoming and outgoing calls.

Call management can be used for two particular needs:

- Entering customer calls so that you keep a record of the communication attached to a partner or a sales opportunity,
- Managing a call centre with operators who handle lists of calls to carry out one after another.

To enter details of a phone call, use one of the two following menus:

- *CRM & SRM → Sales → Phone Calls → Inbound*,
- *CRM & SRM → Sales → Phone Calls → Outbound*.

The phone call will then be visible on the partner form to give you complete visibility of the events about that customer or supplier.

8.3.4 Managing a Call Center

You can manually encode calls that happen or you can pass them into Open ERP. But for mass campaigns, you can import a list of phone calls to make. To do this, click on the import link at the bottom of the list of phone calls. On the GTK client use the toolbar button *Form → Import* at the top.

Phone calls that have occurred in the open state. The different operators can be assigned calls and handle them one by one using the menu *CRM & SRM → Phone Calls → Outbound → New Outgoing Call*.

The operator can open the calls one by one. For each call, after having contacted the customer, the operator can click on one of the following buttons:

- **Cancel**: you cancel the call. For example you could cancel the call if you've tried to call them more than three times.
- **Held**: you've spoken to the customer by phone. In this case the operator can change the case section and send it to sales opportunities, for example. You could alternatively leave it in this state if you don't need to carry out any more actions with this customer.
- **Not Held**: the customer hasn't been called, you'll try to call him again later.

8.3.5 Advanced Customer Relations

Open ERP also supplies several tools to improve and automate relationships with partners. They won't be described extensively here, just introduced briefly.

The supplier/customer portal gives you the ability to provide your suppliers and customers with constrained access to Open ERP. They will then be able to view or enter sets of information directly online to Open ERP. For example they could enter their orders, reprint their invoices, or work on communal projects. To activate the portal you should install the modules that start with the string `portal_...`.

The email gateway lets you interface the CRM with incoming and outgoing emails. The scripts used for the email gateway are available in the `crm` module in the `scripts` subdirectory.

Outlook and Thunderbird plugins let you synchronize your contacts between your email client and your ERP. They both enable you to create sales opportunities based on exchanges you have with the customer.

The rules for automating actions enable you to send emails automatically based on the event, such as assigning opportunities to the most appropriate person. To access the CRM rules, use the menu *CRM & SRM → Configuration → Cases → Rules*. The segmentation tools let you create partner groups and act on each segment differently. For example you could create pricelists for each of the segments, or start phone marketing campaigns by segment. To enable the management of segmentation you should install the module `crm_profiling`. The `base_report_designer` module enables you to create letter templates in OpenOffice and automate letters for different prospects. Open ERP also has plugins for MS Word to simplify the creation of mass mailing.

CHAPTER

NINE

CUSTOMER RELATIONSHIP MANAGEMENT

It's often said that the customer is king. You would treat all your customers as royalty, at the center of your attention if you had a way of keeping your eyes on them at all times. Open ERP's CRM module is designed to make this aim a reality, helping employees of the business understand their customers' needs better, and automating their communication efforts.

Tip: *CRM & SRM*
CRM is the abbreviation for Customer Relationship Management, and SRM is Supplier Relationship Management.

If you want to focus on your customers, you need tools to make that focus easy. Tools that will capture all the knowledge you have available, tools that will help you analyze what you know, and tools that will make it easy to use all of that knowledge and analysis.

A crucial advantage that Open ERP gives you over the more specialist CRM applications is that Open ERP knows more about your customers and your ability to supply them because it's handling all of your accounting, sales, purchases, manufacturing and fulfilment as well as linking to all of your internal staff. Open ERP's `crm` module uses that information and offers several significant features that enable you and your staff to monitor and control your supplier and customer relationships effectively, such as delegating issues to the most appropriate people, keeping a history of communications and events, qualifying prospects and detecting problems.

It also uses several statistical tools that can analyze relationships quantitatively – your customer service performance and the quality of your suppliers, for example. Using performance analysis, you can easily put a policy of real continuous improvement in place by developing an automatic rules-based system in Open ERP.

To minimize re-typing work, Open ERP provides an email gateway that links your emails to the databases. This is a significant feature – many of your staff will then use Open ERP automatically through email without ever logging into it themselves and having to learn a new system.

Finally, at the end of this chapter you'll see an efficient method of qualifying prospects or customers that enables you to offer a service tailored to the potential value of different prospects.

For this chapter you should start with a fresh database that includes demo data, using the **CRM profile** and no particular chart of accounts configured.

9.1 Partners

In Open ERP, a partner represents all the entities that you can do business with. Some possible different types of partners are:

- suppliers,

- manufacturers,
- customers,
- clients,
- employees,
- prospects.

The concept of a partner here is much more flexible than in many other management applications because a partner can correspond to one type or a combination of several of these types. This avoids double data-entry and provides greater flexibility in the features available.

So a partner can be both your supplier and your customer at the same time. This feature is particularly important when you have subsidiaries or franchises since transactions between the parent and its subsidiaries in these cases will generally be two-way.

To get a list of partners using demonstration data, use the menu *Partners → Partners*.

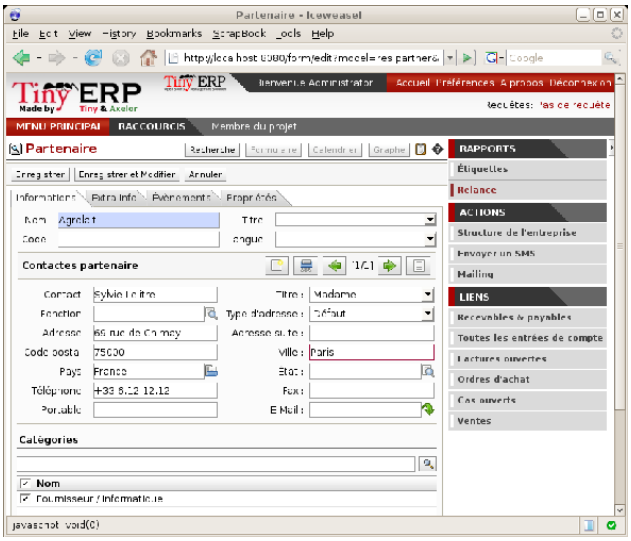


Figure 9.1: *A partner form*

To the right of the partner form you'll find all of the actions, reports and shortcuts available to the selected partner. This enables you to quickly send an SMS message, for example, or review a partner's order history, or print a reminder letter.

Tip: *Send an SMS message*
To send an SMS message from standard Open ERP you'll have to place an order with the bulk SMS gateway operator Clickatell™http://clickatell.com.
You'll then receive an API number, a login and a password which you can use in Open ERP to send SMS messages to your partners.
Or you can just develop a new module based on the inbuilt SMS functions, targeted at any of the other SMS service suppliers, and use that instead.

To send an SMS message to a partner or a selection of several partners, first select the partners then click the **Send SMS** Action icon.

To create a company in Open ERP (that is – a new partner) you should at a minimum enter the company's **Name** in the partner form.

9.1.1 Contacts

You can have several contacts for one partner. Contacts represent company employees that you're in contact with, along with their address details. For each address you can indicate their type (`Default` , `Invoice` , `Delivery` , `Contact` or `Other`). Based on this, Open ERP can supply an address that matches the contact's function when generating documents at various stages through an Order process.

Contacts can be entered into the first (**General**) tab of the **Partners** form, or you can get direct access to the list of addresses through the *Partners → Partner Contacts* menu.

You can search for a subset of Partners and Contacts using their company **Name** or **Contact name** or part of the address, or any of the other search fields in either the **Basic Search** or the **Advanced Search** tab.

Note: *Independent partners or physical people*
If you want to represent a physical person rather than a company, in Open ERP, that person's name can be typed directly into the ***Name*** *field on the Partner form. In this case don't put in any Contact Name.*

9.1.2 Partner Categories

Open ERP uses hierarchical categories to organize all of its partners. To reach the list of available partner categories, use the menu *Partners → Partners by Category*.

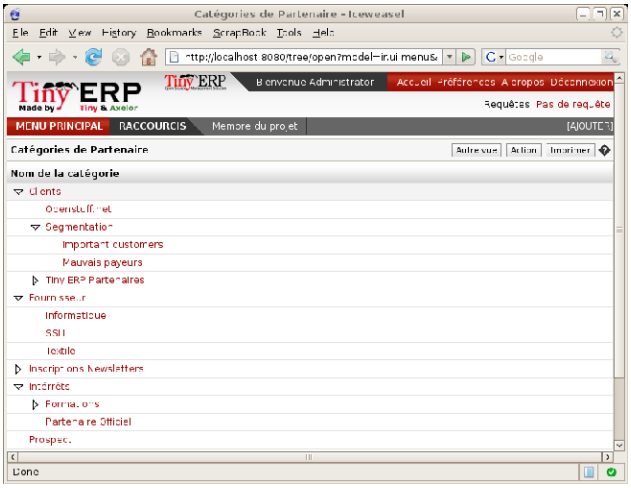


Figure 9.2: *Example Partner Category structure*

Double-click one of the categories in the partner category structure to get a list of the partners in that category. If you click on a category that has sub-categories you'll get a list of all of the partners in the main category and in all of its subcategories.

Because categories are structured in a hierarchical manner, you can apply an action at any level of the structure: a marketing promotion activity, for example, can be applied either to all customers, or selectively only to customers in one category and its subcategories.

The tree structure is also very useful when you're running the various statistical reports. You can structure reports at any level of the hierarchy using this partner segmentation.

In the following sections you'll see how to assign partners to categories manually (perhaps for a newsletter subscription or as a hot prospect), or automatically using segmentation rules.

Use the menu *Partners → Configuration → Categories → Edit Categories* to define a new category.

To try Open ERP's partner capabilities described here for yourself, log into your database as `admin/XXXXX` then

click *Partners → Configuration → Categories → Edit Categories* and create a new category of `Small Suppliers` whose parent is `Suppliers` . Then create a new **Partner** whose **Name** is `Susan Trent ``\ and category is \ ``Small Suppliers.`

Click *Partners → Partners by Category* and then click *Suppliers → Small Suppliers* to find just `Susan Trent` . Do this again but now click the **Suppliers** category in **Partners by Category** and you'll find that both `Plumbing Component Suppliers`and `Susan Trent` are in the higher-level category: `Susan Trent` is there because she's in a child category.

Add new contact `Graham Strong` to `Plumbing Component Suppliers` . Graham's **Address Type** is `Invoice` . Click *Partners → Partner Contacts* and see that both Susan and Graham appear on that list.

9.2 Case management

The following sections describe the steps you might use to implement an effective customer relationship management policy. The policy is implemented by basing new types of case on the built- in Open ERP case handling system.

Note: *Case*
Case is a generic term that refers to a discussion with a partner about a specific subject. This subject could be in any category – the monitoring of responses to a job advert, perhaps, or a purchase or sales order, or an after-sales quality problem.
A case is used for following the history of the messages on a topic and for automating some operations in response to certain conditions. Interfaces are available for OpenOffice.org and for email such as Microsoft Outlook Express and Microsoft Outlook, so that you can make productive use of the case system from your existing tools.
Case statistics generated by the system can be used by your managers to improve their handling of supplier and customer interactions.

9.2.1 CRM configuration

Case management is a generic system that can be configured to your more precise needs. You'll develop three case types here, to see how to build the following systems:

1. A system to manage business opportunities.
2. A system for managing support contracts on two levels.
3. A system for managing supplier quality.

Sections

To handle each of these case types in a different way, you must create different sections in Open ERP using the menu *CRM & SRM → Configuration → Case → Sections* . Do this as user `admin` in your database to try it for yourself.

You'll define the following four sections:

- Sales
- Support Level 2
  - Support Level 1
- Quality.

Put the name in the field **Case Section**. You construct a tree structure for sections is constructed using the **Parent Section** field in the Section form. So here you'd say that `Support Level 2` is the parent of `Support Level 1` . Open ERP doesn't restrict the order you use to define these two – you can save the parent while defining the child (try it by starting with `Support Level 1`).

A manager can then be assigned to each section (from the list of Open ERP system users), and an email address can optionally be added. Cases in this section are then automatically connected to this email address – case messages are emailed out automatically from this address and emails to this address are automatically logged in this section of the CRM system. This functionality is based on the email gateway referred to in detail further on in this chapter.

Click the menu *CRM & SRM → Cases → Cases by Section* to get the sections in a hierarchical list, then click a section name to list the cases that have been assigned to that section.

Note: *Cases by Section – with data*
Click the menu CRM & SRM → Cases → Cases by Section *to get the sections in a hierarchical list, then click a section name, such as* ***Helpdesk*** *or* ***Support****, to list the cases that have been assigned to that section.*

Categories

Once you've defined the different sections you can create Categories, which are used to differentiate the cases in a section. You create categories using the menu *CRM & SRM → Configuration → Cases → Categories* . Create the following in your database:

Table 9.1: Categories assigned to the different sections

Category	Section
Installation Requests	Sales
Potential Distributor	Sales
Interest in Training	Sales
Fault Fix	Support Level 1
Functional Problem	Support Level 1
Corrective Actions	Quality
Preventative Actions	Quality

Menu

Once the sections and the categories are defined you can generate some menus to make it easier to use these cases. Select the menu *CRM & SRM → Configuration → Create Menus* for a New Section'.

The procedure is to create the name of the new menu in **Menu base name**, select the name of a suitable **Parent menu** for the menu and the **Case Section** name, then click **Create menu Entries**. Following this procedure, create the following menus:

Table 9.2: Example of creating menus that make it easier to use cases

Menu base name	Case Section	Parent menu
Business Opportunities	Sales	Sales Management
Support L1	Support Level 1	CRM & SRM
Support L2	Support Level 2	CRM & SRM
Quality Problems	Quality	Purchase Management

Each time you run this utility (that is, for each line in the table above), Open ERP generates a menu structure like *Business Opportunities menu automatically generated*.

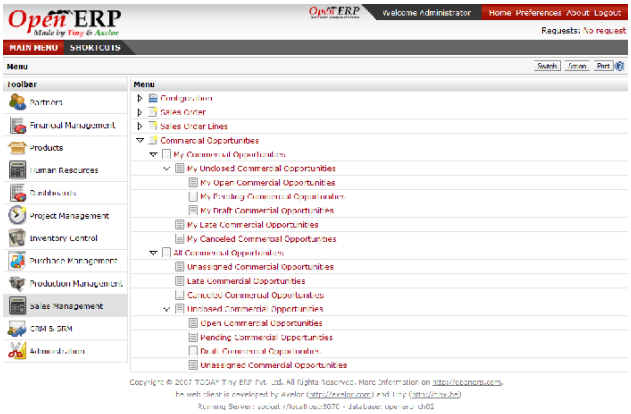


Figure 9.3: *Business Opportunities menu automatically generated*

Note: *Case sections*
Open ERP enables you to select the view mode you want when the menu is opened to display the cases for each section such as Sales, Helpdesk, and Support Request.
Your selection of view determines the type of form that opens when showing a case in each section. So the form following a support request case could differ from the form for a business opportunity.
If you're working in a different language from the default, you can define the labels in that language after you've created the new menus.

Note: *Personalizing menus*
You can rename menus if you don't like the way they've been generated by the system. To do this, select the menu line by single-clicking on the line (but not on the menu text itself) and then clicking the ***Switch*** *icon.*
You'll see a form view of the menu definition. If it's in edit mode you can change its name and position in the hierarchy, and you can select a different icon for it. You can also choose a different action for when the menu is clicked. If you've saved or cancelled the menu form so that it's not in edit mode you can duplicate it or delete it completely. Duplicating it can sometimes be helpful, placing a copy somewhere else in the menu hierarchy and perhaps making it accessible to different groups of users.

9.2.2 Using cases

Although you've created special menu trees for each of the types of case you defined, you can continue using the generic case system reached through *CRM & SRM → Cases*. The new case types are just versions of the generic case.

Tip: *Transferability of cases*
It's quite useful to base the whole management of customer relationships on a generic system, as Open ERP does. Since each section is just a specialization of the generic system you can transfer requests from one section to another, and this means that you don't lose cases in the system as you delegate work to other staff in your company.
For example you can imagine a support request becoming a business opportunity. Or an after-sales service request becoming a supplier quality issue where a fault is found in a purchased product.
You can also track items across the whole company.

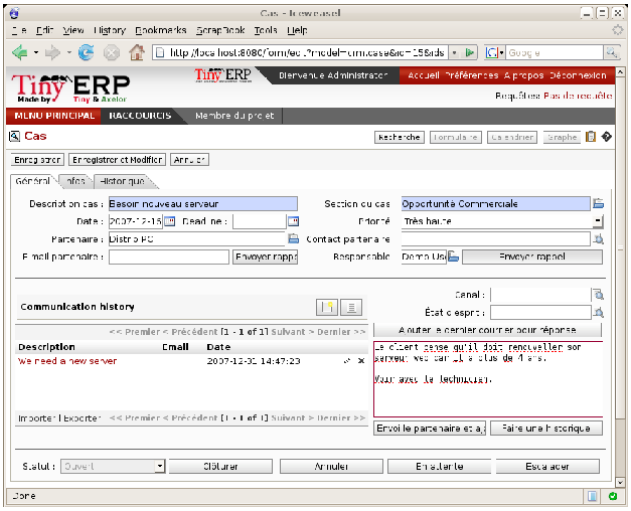


Figure 9.4: *An entry following a business opportunity*

To enter a new business opportunity, you can use the menu that you've just created: *Sales Management → Business Opportunities*. Or you could have used the generic menus *CRM & SRM → Cases → Cases by section*, or *CRM & SRM → Cases → All cases*.

Create a case from *Sales Management → Business Opportunities* by entering information about the request, namely:

- a **Description** of the case,
- its **Section** will already be completed with `Sales` ,
- a **Priority**,
- the **Partner**,
- the **Partner Contact** (which will be completed automatically when the Partner is filled in but can be overwritten),
- the **Partner Email** address (which will be completed from the Partner Contact's email address but can be overwritten),
- the person in your own company who will be the **User Responsible** for the case.

Tip: *The email gateway*
You'll see later in this chapter that cases can be generated automatically from emails. If the email gateway is configured properly you'll no longer have to enter cases manually through the menu system – they'll just be created from incoming emails.

A case starts in the `Draft` state once it's been created. You can then open it to indicate that you're working on it by clicking the **Open** button.

To enter text about the request or about actions taken to satisfy it, type an entry in free text. To save the history of your comments, click **Historize**. If you click **Send Partner and Historize** the partner will also receive a copy of your comment as you save it.

While the case is open you can click **Close** if it's been completed or **Cancel** if it's to go no further. If you want the case to wait for a response from a partner click **Pending**.

Add some text for this example case in the database, then close it.

If you've organized the sections in a hierarchical structure you can click on **Escalate**. The case then escalates into the parent section. You can't do that with the Business Opportunity that you just defined, which is single-level but you

could with a Support L1 case. For example if a developer on level 1 can't handle a customer problem then she can escalate the request to level 2 where it can be handled by a more experienced user.

Tip: *Assigning a case*
Two approaches are available to you for assigning a case to a suitable manager. Any case can be assigned by the user who creates the original case, or this field can be left blank. If it's blank you'd review the resulting list of unassigned cases and pick one up and assign it to yourself.
You can also imagine a mixed method: all cases arrive unassigned and a user is responsible for the division of work to the relevant section.

You can look up the history of comments and actions on the request at any time by looking at the case **History**, which is in its own tab.

Users can create their own shortcuts from menus such as *My Support Requests* and *My Business Opportunities* to quickly list cases that they're personally responsible for.

9.2.3 Generating calendars

The Open ERP web client can display any type of resource in the form of a timetable. You can generate calendar views for each of your cases as you create menus for those cases.

So if you want to implement a shared calendar for your calendar in Open ERP all you need to do is:

1. Create a section `Meeting Calendar`
2. Create menus for this section while specifying that you want a calendar view from *CRM & SRM → Configuration → Create Menus for a New Section*.

You'll get menus enabling you to manage calendars for each employee, and you'll also get a shared calendar for the company. This calendar view is totally dynamic. You can move an event or change its duration just using your mouse.

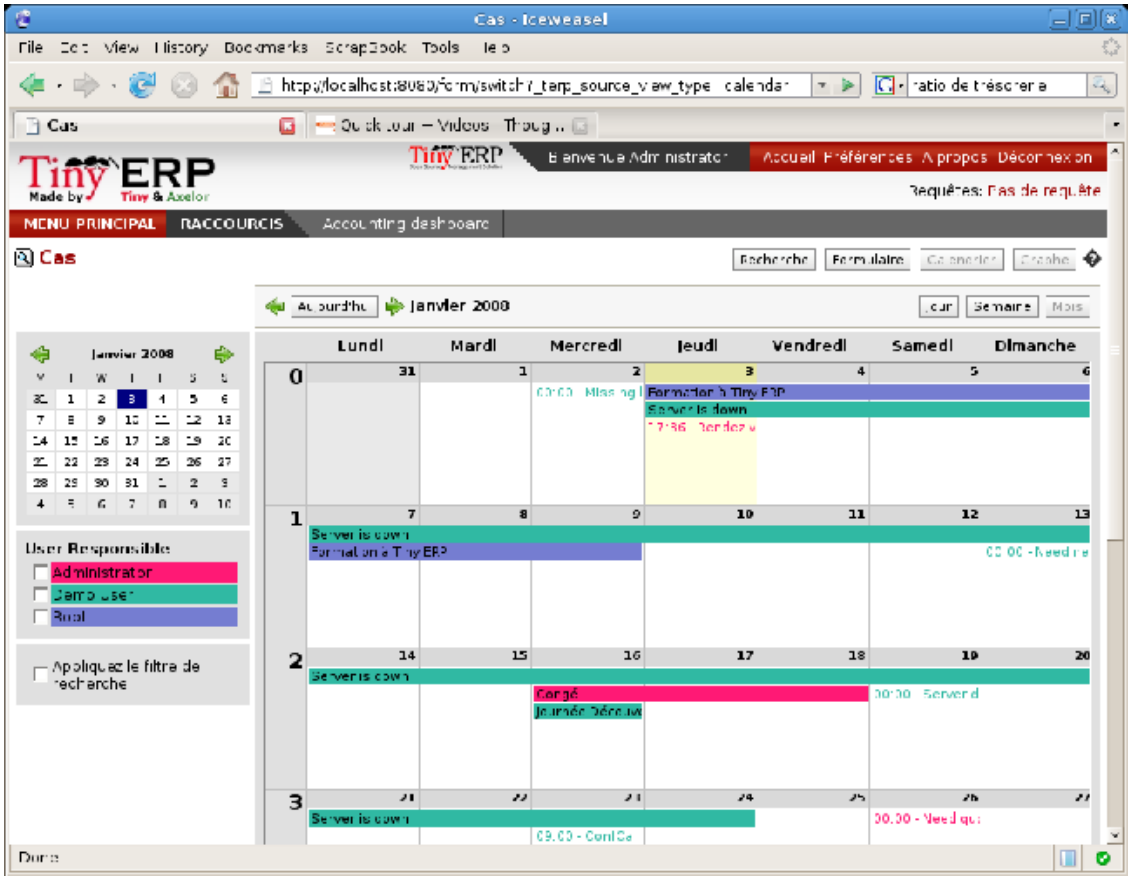


Figure 9.5: *Monthly view of the meeting calendar for cases*

You can change the view and return to the list view, forms or graphs by using the buttons at the top right. Open ERP's usual search tools and filters enable you to filter the events displayed in the calendar or, for example, to display the calendar for only some employees at a time.

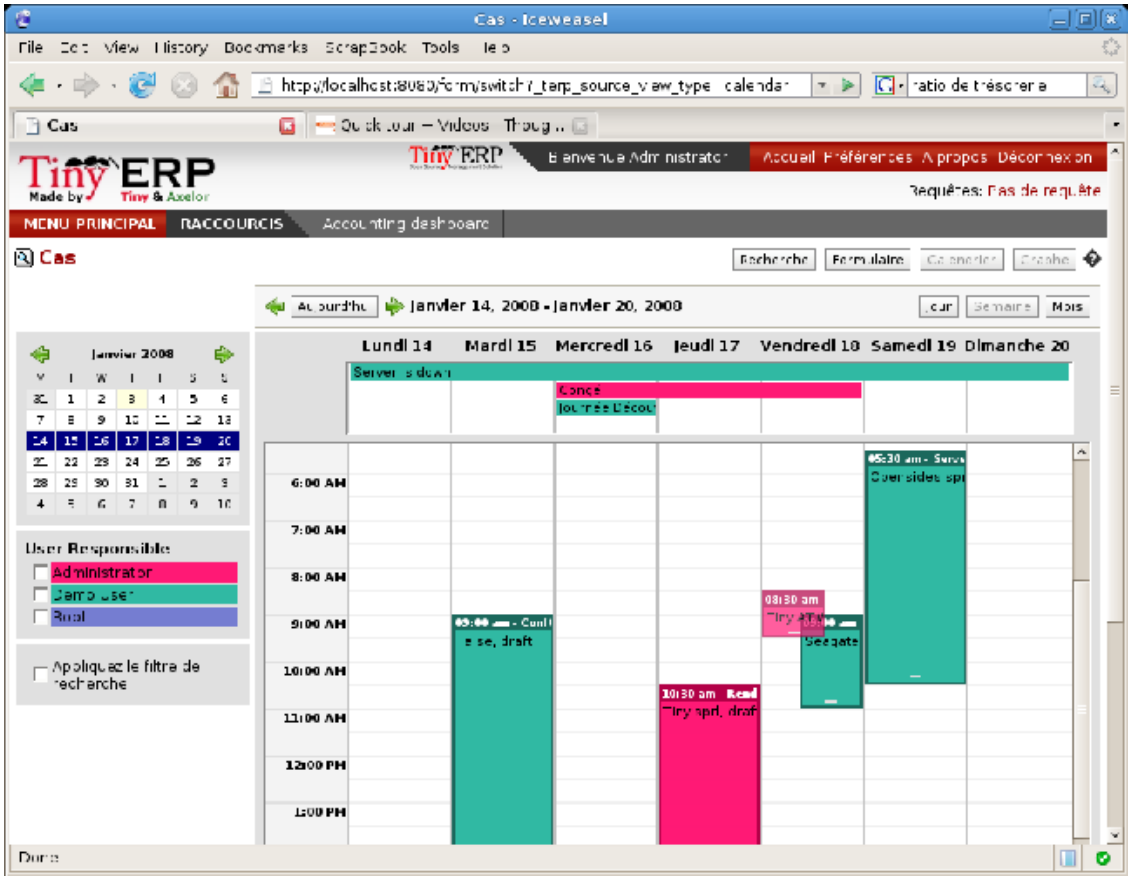


Figure 9.6: *Weekly view of the meeting calendar for cases*

Note: *The generic calendar*
Unlike traditional CRM software, Open ERP's calendar view is not limited to displaying appointments. It's available for any type of resource.
So in addition to the cases handled here, you could obtain calendars of tasks, deliveries, manufacturing orders, sales or personal leave.
This view is very useful for planning or to get a global overview of a list of dated elements.

9.2.4 Analyzing performance

Since all of your customer communications are integrated into the Open ERP system, you can analyses the performance of your teams in many ways. Open ERP has a module that helps handle this – `report_crm`. It's not part of the core Open ERP so you must first download it to your desktop from Open ERP's modules repository, then into your server using *Administration* → *Modules Management* → *Import module*. Then install it into the database.

Once you've installed it you can use menu *CRM & SRM* → *Reporting* to create different reports.

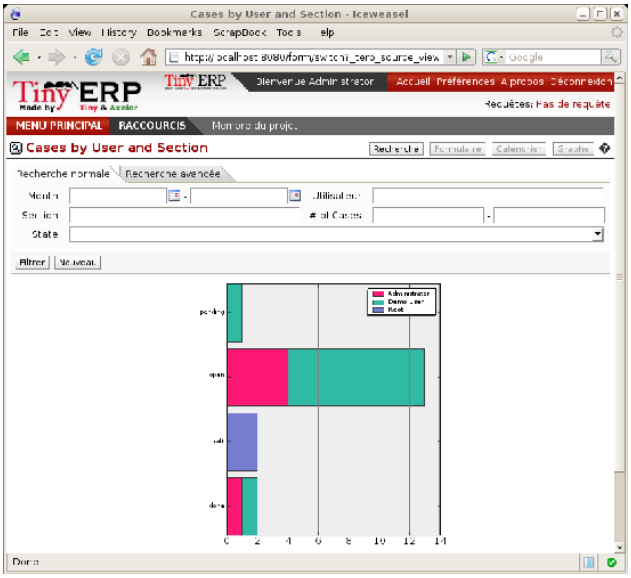


Figure 9.7: *Analyzing the performance of your support team*

If you want to analyze the performance of your service and support group, for example, use the graph from *CRM & SRM → Reporting → All Months → Cases by User and Section*. Click the menu to obtain a list view, then click the **Graph** button to the top right of the list. The system shows you statistics per user and it's possible to filter on each section and use other criteria for searching. For example, you can type in a date range, click **Filter**, and see the graph change to reflect the new data.

By default, the system provides a list containing the following information for each month, user and section, and an indication of the state of each set of information:

- **number of cases**,
- **average delay for closing** the request,
- **estimated revenue** for a business opportunity,
- **estimated cost**,
- estimate of revenue multiplied by the probability of success, to give you an **estimated weighted revenue** figure.

Tip: *Navigating through the statistics*
You can obtain more information about a user or a case section from these reports, drilling down into the data displayed.
*In the web client you click the appropriate text string on one of the lines (such as **Demo User** or **Helpdesk and Support**) to open a form for it, and then click one of the buttons in the **Action** toolbar to the right of the User or Section form that is displayed.*
In the GTK client you'd right-click over the text instead – this brings up a context menu with the same options as the web client would give you.

You can specify that the graph view, say, appears by default so that you can consistently present the information more visually.

9.2.5 Automating actions using rules

Analyzing figures gives you a better basis for managing all of your services and customer and supplier relationships. But you can do more than just display the figures graphically from time to time.

If the performance of a section, a user or a category of a case is beginning to cause concern then you can use Open ERP's rules system to monitor the situation more closely. Rules enable you to automatically trigger actions depending on criteria you define for each case. They provide a good way of implementing a proper continuous improvement policy for your customer relations and quality of service.

Using these rules you could:

- automatically send emails to the client during different phases of a support request, to keep the client up to date with progress,
- assign the case to another person if the the case manager is on holiday,
- send a reminder to the supplier if their response is delayed too long,
- always mark a case as urgent if it's from a major client,
- transfer the case to technical services if the request is about a technical fault.

To define new rules use the menu *CRM & SRM → Configuration → Cases → Rules*.

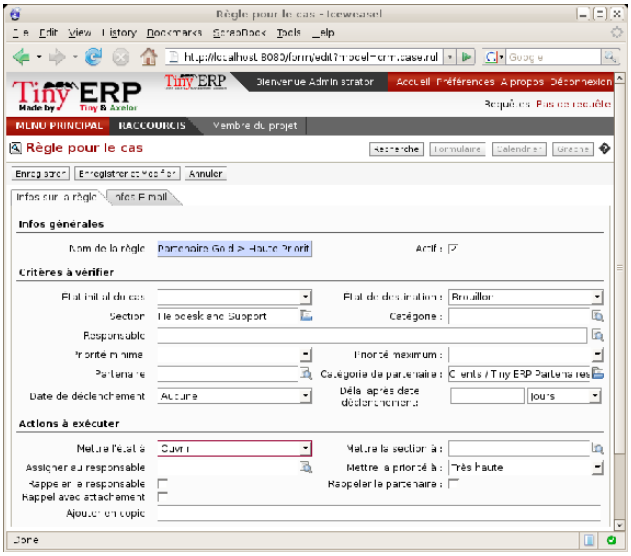


Figure 9.8: *Screenshot of a rule*

The criteria for activating this rule are defined on the main part of the screen. These criteria are:

- a condition about the initial state (for example during the creation of a case – initial state: `None` , eventual state: `Draft`),
- a condition about the destination state (for example at the closure of a case to send a confirmation or thank you email),
- the case section to which the rule applies,
- the category for the case,
- a condition about the manager of the case (for example to send copies of case progress to a manager if the client request is handled by a trainee),
- a condition about the priority level (for example to provide different types of reaction depending on the urgency of the request),
- a partner or a category to be applied to the rule,

- a date for the trigger
  - reporting by the date of creation
  - reporting by date of the last action
  - reporting by the length of time that it's been active.

If you have defined several criteria Open ERP will apply the rule only if all of the criteria are valid.

You define the action that will be taken if the rule is met in the second tab of the lower part of the setup window. The following actions are included:

- change the state of the case,
- move the case to a new section,
- assign the case to a system manager,
- change the priority of a case,
- send a reminder to the case manager or a partner,
- attach information (or not) to a reminder,
- send copies of the case discussion to specified email addresses,
- send a predefined email.

Note: Example 1 Improvement in the quality of support

For example, on the graph that analyses the performance of team support in Figure 4-6 you can see that the Demo User takes an average time of 3 days and 4 hours to close a customer support request. This is too long. After analyzing the data in depth, you can see that most cases were closed in less than two days, but some may take more than ten days.

If you think that the quality of service should be improved you can automate certain actions. You could send copies of the discussion to a technical expert if the case remains open for longer than two days, defined by the following rule:

- ***Rule Name** : Copy to an expert after 2 days,*
- ***Case state from** : Open,*
- ***Case state to** : Open,*
- ***Responsible** : Demo User,*
- ***Trigger Date** : Creation date,*
- ***Delay after trigger date** : 2 days,*
- ***Add watchers (cc)** : expert@mycompany.com ,*
- ***Remind responsible** : Yes.*

After the rule has been defined, the expert will receive a copy of the whole discussion between the Demo User and the customer for every case that remains unclosed after two days. He'll be able to interact with the discussion to avoid lengthy delays on complex problems.

Some companies use several support levels. The first level is handled by the least qualified support people and the higher levels by users who have the advantage of more experience. A user on level 1 can escalate the case to a higher level when necessary.

To systematically train employees at level 1 you can create the following rule: when the case has been escalated they will continue to be copied on the progress of the case. If a user at support level 1 can't handle a request he can escalate it to level 2. Then when an expert at level 2 answers the customer's request, the level 1 support person also receives the answer to the problem that he couldn't originally handle. So your team can be educated automatically from listening in to the passage of live support calls.

Suppose that you supply two types of support contract to your customers: Gold and Normal. You can then create a rule which raises the priority of a case automatically if the partner is in the Gold Support Contract category.

Define the case this way:

- ***Rule Name** : Priority to Gold Partners,*
- ***Case state from** : /,*
- ***Case state to** : Open,*
- ***Partner Category** : Support Contract / Gold,*
- ***Set priority to** : High.*

Improved client relations can flow from using such rules intelligently. With the statistical control system you can manage certain SLAs (Service Level Agreements) with your customers without a great deal of effort on your part. So you can be selective in replying to those of your partners based on the specific quality of service that you are contracted to supply.

Note: Example 2 Tracking supplier quality
Remember that an Open ERP partner can be a supplier as much as a customer. You can use the same mechanism for the management of supplier quality as you do for customer support.
If any of your staff detect a quality problem with a product from a supplier they should create a new case in the Quality section. If the email gateway is installed all you need to do is copy an email to a specified address (for example complaints@mycompany.com) while sending your email of complaint to the supplier. The case is automatically created in Open ERP and the supplier's email response will close the case and be placed automatically in the case history.
In this case the user can add corrective or preventative actions to conform to ISO 9001, without having to enter every action into Open ERP – most of the information comes just from the emails.
The system's statistics provide analyses about the number and the cost of quality problems from different suppliers.
If certain suppliers don't offer the service quality that you expect you can automatically create rules that:

- *send a reminder to the supplier after a few days if the case still remains open*
- *remind the production manager to call the supplier and resolve the situation if the case hasn't been closed within a week*
- *select and qualify your suppliers on the basis of their quality of service*

Tip: *The CRM portal*
Open ERP's `portal_service` module enables you to open parts of your CRM functionality to suppliers and customers. They can then connect to your system using their own login and follow their orders or requests online. For example the customer could make a support request directly in your system, perhaps avoiding a lengthy process of data entry.

9.2.6 Using the email gateway

To automate the creation of current cases you can install the email gateway.

The email gateway enables you to use Open ERP's CRM without necessarily using the Open ERP interface. Users can create up-to-date cases just by sending and receiving emails. This system works with the major current email clients such as Microsoft Outlook and Outlook Express, Thunderbird and Evolution.

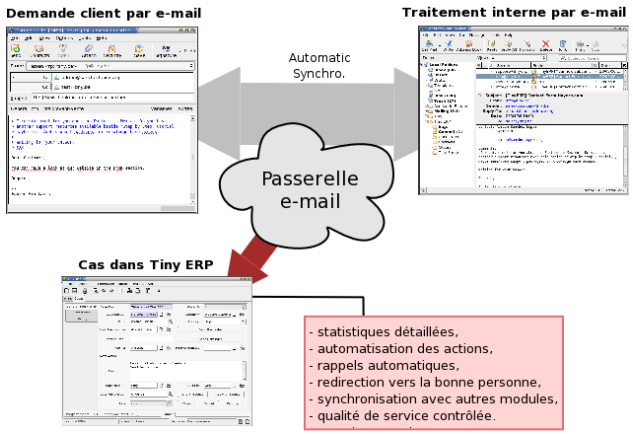


Figure 9.9: *Schematic showing the use of the email gateway*

Installation and Configuration

To use the email gateway you must install it on your server. You can use a variety of methods to configure it. Described here is a simple and generic approach using the Fetchmail program under Linux. You'll need a system administrator

to carry out this work.

To start with you have to create an email account (POP3 or IMAP) for each Section that you'll want to connect an email to. If you have the support email address `support@pop.mycompany.com`you'd use the following entries:

- **POP server** : `pop.mycompany.com` ,
- **User** : `support` ,
- **Password** : `<mypass>` .

You'll also need to choose an Open ERP user that the gateway will use to access your database, such as:

- **User Id** : `3` ,
- **Password** : `support` .

Tip: *Identifying a resource*
Each resource on the Open ERP system has a unique identifier number. This corresponds to an identifier in the underlying PostgreSQL database table, in the ID column for that resource.
*With the web client you can usually find this number by going to the form view of a resource and clicking the **View Log** button to the top right of the form. The ID is shown at the top of the **Information** dialog box. (This didn't work in some of the earlier versions prior to 4.2.3.3.)*
You can also use the GTK client for this. Viewing any resource, such as a User, you can directly see its ID at the bottom left of the form.

Then specify the case section in Open ERP that you'll use when this user is connected by email, for example, the **Helpdesk and Support** section.

Install Fetchmail on your Open ERP server. You can download it from the address http://fetchmail.berlios.de/.

Note: *Fetchmail*
Fetchmail is a Free / Open Source software utility used on Unix-like operating systems to retrieve e-mails with the remote protocols POP, IMAP, ETRN and ODMR on the local system. It's downloadable from this address: http://fetchmail.berlios.de/.

Create a fetchmailrc file that contains the following rules:

```
# fetchmailrc

poll pop.mycompany.com proto pop3:

username support password mypass mda "/path/to/terpmg/openerp-mailgate.py -u3 -padmin
-ssupport -esupport@mycompany.com"
```

Then start the fetchmail program, giving it a link to the configuration file that you just created:

```
fetchmail -f fetchmailrc
```

Tip: *Error detection*
If you're executing fetchmail for the first time you should use the -v argument. This makes its output verbose so you can easily see what's happening as the program executes.

Creating and maintaining cases

Each time you start fetchmail it downloads all the emails and creates or updates the cases in CRM. You can turn fetchmail into a daemon to check all new emails every five minutes by using the command:

fetchmail -d 300

If you want to receive customer requests by email you must first create a rule that automatically assigns new cases to a specified user. You must then verify that this user possesses a suitable email address in the **Address** field within Open ERP.

To find out if the new email should create a new case or update an existing case, Open ERP analyzes the subject line of the email. Existing cases are identified by the case number in the subject line, for example

Re: [101] Problem with ...

When a customer sends a new request by email the case is automatically created and the email is transferred by the gateway to the user responsible for new cases, changing the subject line to add the case identifier. The user can then respond by emailing or by using the Open ERP interface to the case. If the user responds by email the case can be automatically closed in Open ERP, keeping the responses in the history list. If the partner responds again, the case is reopened.

9.3 Profiling

9.3.1 Establishing the profiles of prospects

During presales activities it's useful to qualify your prospects quickly. You can pose a series of questions to find out what product to offer to the customer, or how quickly you should handle the request.

Tip: *Profiling*
This method of rapidly qualifying prospects is often used by companies who carry out presales by phone. A prospect list is imported into the Open ERP system as a set of partners and the operators then pose a series of questions to each prospect by phone.
Responses to these questions enable each prospect to be qualified automatically which leads to a specific service being offered based on their responses.

As an illustration, take the case of the Tiny company which offers a service based on the Open ERP software. The company goes to several exhibitions and encounters dozens of prospects over a few days. It's important to handle each request quickly and efficiently.

The products offered by Tiny at these exhibitions are:

- training on Open ERP – for independent people or small companies,
- partner contract – for IT companies that intend to offer an Open ERP service,
- Open ERP as SaaS – for small companies,
- a meeting in conjunction with a partner to provide a demonstration aimed at providing a software integration – for companies that are slightly larger.

The Tiny company has therefore put a decision tree in place based on the answers to several questions posed to prospects. These are given in the following figure *Example of profiling customer prospects by the Tiny company*:

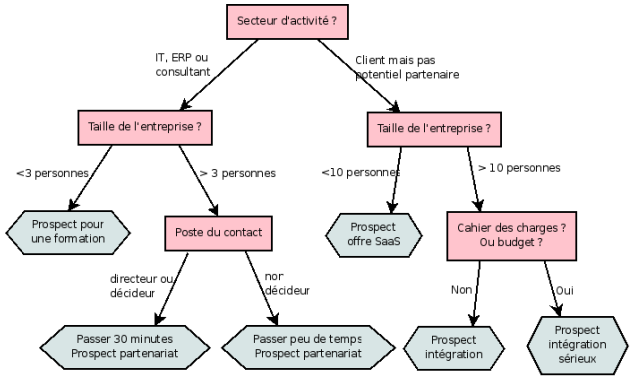


Figure 9.10: *Example of profiling customer prospects by the Tiny company*

The sales person starts by asking the questions mentioned above and then with a couple of minutes of work can decide what to propose to the prospective customer.

At the end of the exhibition prospects' details and their responses to the questionnaire are entered into Open ERP. The profiling system automatically classifies the prospects into appropriate partner categories.

This enables your sales people to follow prospects up efficiently and adapt their approach based on each prospect's profile. For example, they can send a letter based on a template developed for a specific partner category. They'd use Open ERP's report editor and generator for their sales proposition, such as an invitation to a training session a week after the show.

9.3.2 Using profiles effectively

To use the profiling system you'll need to install Open ERP's `crm_profiling` module. It's part of the core Open ERP system in version 5.0.0 so you don't have to download it separately from `addons-extra`.

Once the module is installed you can create a list of questions and the possible responses through the menu *CRM & SRM → Configuration → Segmentation → Questions*.

To obtain the scheme presented earlier you can create the following questions and responses:

Table 9.3: Questionnaire for defining profiles

Questions	Possible Responses
Journalist ?	Yes / No
Industry Sector ?	IT / ERP Consultant / Services / Industry / Others
Number of Staff ?	1 / 2-20 / 21-50 / 51-100 / 101-500 / 500+
Contact's job function ?	Decision-maker / Not decision-maker
Already created a specification for the work ?	Yes / Soon / No
Implementation budget ?	Unknown / <100k / 101-300k / >300k

For instance, a sales person specializing in large accounts for the service sector could have a profile defined like this:

- Budget for integration: `Unknown` , `100k-300k` or `>300k` ,
- Already created a specification for the work? `Yes` ,
- Industry Sector? `Services` .

When entering the details of a specific prospect, the prospect's answers to various questions can be entered in the new fifth tab of the partner form. Open ERP will automatically assign prospects to the appropriate partner category based on these answers.

Tip: *Sales targets*
The module `report_invoice_salesman` *enables you to set up regular business targets. These can be based on sales turnover or sales margins.*
With this module you can compare the performance of each sales person with their targets for the period. Sales people can view their own performance against target in real time through a dashboard.
This module is totally integrated with the rest of accounting so there's no need to extract any data from another system to get the sales figures against objectives by sales person or sector – it's just available all the time in real time.

Customers corresponding to a specific search profile can be treated as a priority. The sales person can access the profile of the large active accounts from the menu *Partners → Partners by category*.

CHAPTER

TEN

COMMUNICATIONS TOOLS

Open ERP provides all the information you need to pursue your company's business opportunities effectively. But to stay productive with all the information you have to handle it's essential that you can keep using your normal communications tools by interfacing them with Open ERP, and not be limited just to Open ERP's interface.

Open ERP can do most things you need to pursue your business opportunities. But there can be quite a quite a bit to learn, which reduces your efficiency while you're learning. And if that's true for a heavy user of the system, it's doubly true for an occasional user or someone who already makes heavy use of standard Office applications and can't easily change.

So for those who need to continue using their traditional Office applications to maintain their efficiency, Open ERP can be fitted out with interface adapters to some of the most common. Your users can participate in many Open ERP-maintained processes without ever leaving their familiar Office-based environment, and can avoid double data-entry yet link into Open ERP's database automatically.

The three following modules are described:

- Mozilla Thunderbird interface,
- Microsoft Outlook interface,
- Microsoft Word interface.

These three modules were developed by the Axelor company (http://axelor.com/ , located in Paris) and are available through the official Open ERP site in the modules section.

The chapter is a mix of installation and configuration instructions, and basic interaction exercises.

For this chapter you should start with a fresh database that includes demo data, with `sale` and its dependencies installed and no particular chart of accounts configured.

You will also need to have administrator access to your Windows PC to install the Outlook and Word interface adapters described in the chapter.

10.1 Microsoft Outlook interface

The Microsoft Outlook plugin enables you to carry out a series of Open ERP operations directly from the Outlook email client:

- create a contact or partner from an email,
- archive an email and its attachments in Open ERP,

- send any file attached to an Open ERP document (such as proposals, projects, and tasks).

Tip: *Outlook versions*
The Microsoft Outlook plugin works with Microsoft Outlook 2003 and 2007 but not with Outlook Express

10.1.1 Installing the Outlook plugin

To start, you must install the `email_interface` module in Open ERP. It's the same module as used by the Thunderbird extension. Don't install it again if it's already there (which it might be because you can use both Outlook and Thunderbird simultaneously to get the same Open ERP functionality – so some of your staff may use one and other may use the other).

Once you've installed the module all you need is to run the Windows auto-installer `tiny_outlook_plugin-X.exe` where X corresponds to the version number downloaded. This file can be found in the list of modules on the official Open ERP site.

Installation is then automatic.

10.1.2 Using the Outlook plugin

Using the Microsoft Outlook plugin is quite similar to using the Thunderbird extension. In Outlook find the menu *Tools → Open ERP Options*.

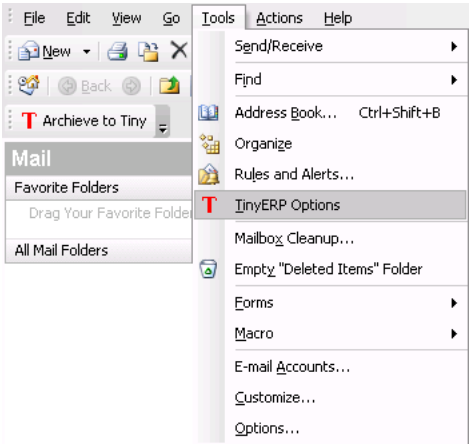


Figure 10.1: *Configuration menu for the interface between Outlook and Open ERP*

In the window that you use for configuring the Outlook plugin you can enter parameters for accessing the Open ERP server, with various options for:

- how to handle attachments,
- which color to give emails transferred to Open ERP.

Once the server data entry is completed, click **Test the Connection** to check that your parameters make it function correctly.

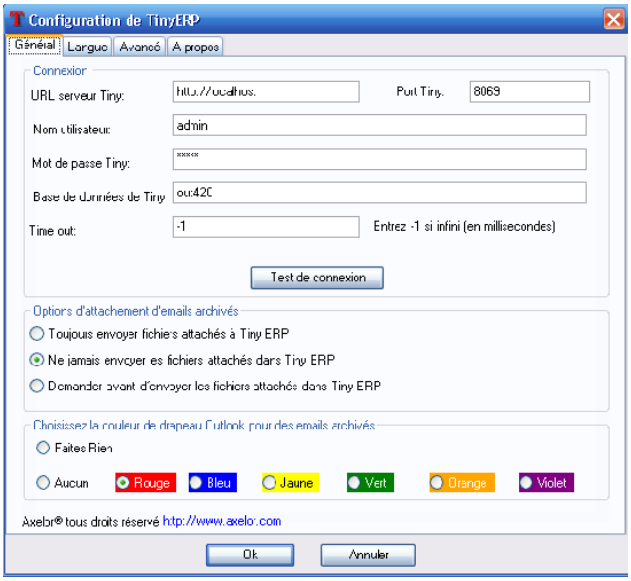


Figure 10.2: *Configuring access to Open ERP from Word*

When Outlook is configured, archiving an email and its attached files in Open ERP can be done in several ways:

- directly from the toolbar,
- from the context menu by right-clicking on an email,
- from the page while looking at the email.

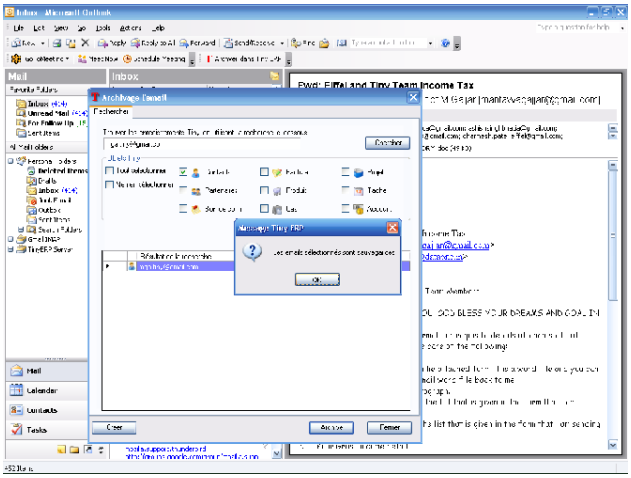


Figure 10.3: *Saving an Outlook email in Open ERP*

You can select an existing contact or create a new contact on the fly in the Open ERP database. Then you can send the email and its attachments and also save it in Open ERP.

It's possible to send attachments to all types of Open ERP objects. For example this might be useful for:

- sending documents about a customer project into the corresponding project in Open ERP,
- attaching the documents about an order (such as proof of payment and order receipts),
- attaching documents to an employee file (such as their CV or annual appraisal).

Once the email is sent into Open ERP it's marked with another color in Outlook to help remind you not to archive it again.

Note: *Testing the Outlook adapter*
If you install the Outlook adapter as described, explore its functionality with the database as described in this section.

10.2 Mozilla Thunderbird interface

Everything that you can do with the Outlook plugin you can also do with the Mozilla Thunderbird plugin – enabling you to carry out a series of Open ERP operations directly from Thunderbird, such as:

- create a contact or partner from an email,
- save an email and its attachments in Open ERP,
- send any file attached to an Open ERP document (such as proposals, projects, and tasks).

10.2.1 Installing the Thunderbird extension

To be able to use the Thunderbird plugin you first have to install the Open ERP module `email_interface` . It may not be loaded in the core of the Open ERP Server so you might have to load it using one of the methods described at the end of *Installation and Initial Setup*. Once you've got it into your server's filesystem it's installed the same way as all of the other modules you've handled so far.

You'll then have to install the Thunderbird extension. To do that, use the file `tiny_plugin_2.0.xpi` which is found in the plugins directory of the `email_interface` module. Don't install it again if it's already there (which it might be because you can use both Outlook and Thunderbird simultaneously to get the same Open ERP functionality – so some of your staff may use one and other may use the other).

Then take the following steps:

1. From Thunderbird, open the menu *Tools → Complementary Modules*.
2. Click the **Install** button.
3. Select the file `tiny_plugin-2.0.xpi`.
4. Click **Install Now** then restart Thunderbird.

Once the extension has been installed, you have only to create a shortcut in your Thunderbird toolbar for the function **Archive to Open ERP**. Do it like this:

1. Click the right mouse button on the toolbar and select **Personalize**,
2. Place the icon **Archive to Open ERP** in your toolbar in the place of your choice.

Tip: *Thunderbird version*
The Open ERP plugin for Thunderbird only works with Thunderbird version 2.0 and above.
So check your Thunderbird version before installing, and download the latest version that you need from the following address: http://www.mozilla.org/products/thunderbird/

10.2.2 Thunderbird user interface

When you've installed the module the first thing to do is connect it to Open ERP from Thunderbird. To do this use the menu *Tools → Open ERP Plugin*.

A configuration window appears enabling you to enter configuration data about your Open ERP server.

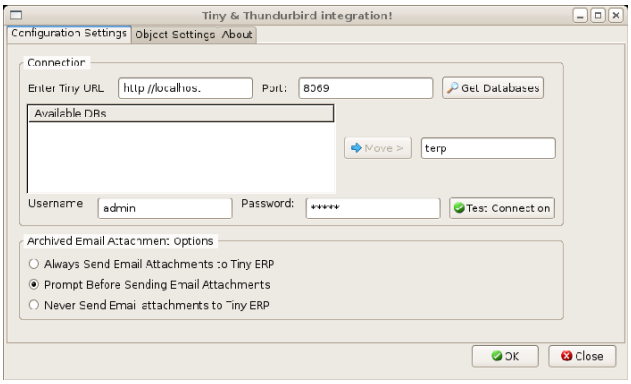


Figure 10.4: *Configuration for accessing Open ERP from Thunderbird*

To archive an email in Open ERP from Thunderbird select the email and click on the icon **Archive in Open ERP**. Alternatively you could right-click the mouse: either opens a search dialog box.

This allows you to select an object that you'd like to add to your email and its attachments. You can select a partner, a task, a project, an analytical account, or any other object.

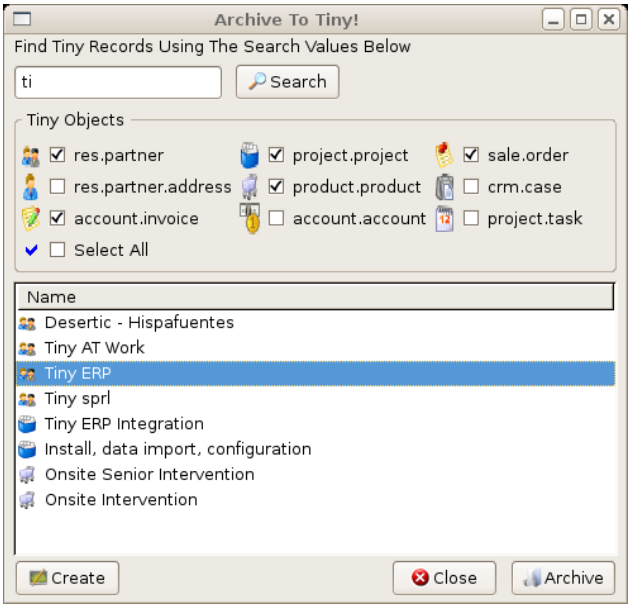


Figure 10.5: *Selecting Open ERP objects from Thunderbird*

Tip: *Document Management*
The Thunderbird plugin is compatible with Open ERP's document management. So if you install the module document you could:

- *search through the content of your company's documents (those that have the type .doc, .pdf, .sxw and .odt) and also in archived emails,*
- *have a shared filesystem that's connected to various Open ERP documents to share information and access it with your favorite browser,*
- *organize and structure your documents (such as projects, partners and users) in Open ERP's system.*

If you can't find a partner or contact to correspond with your email in Open ERP it's possible to create one on the fly simply by using the information contained in the email and clicking the **Create** button.

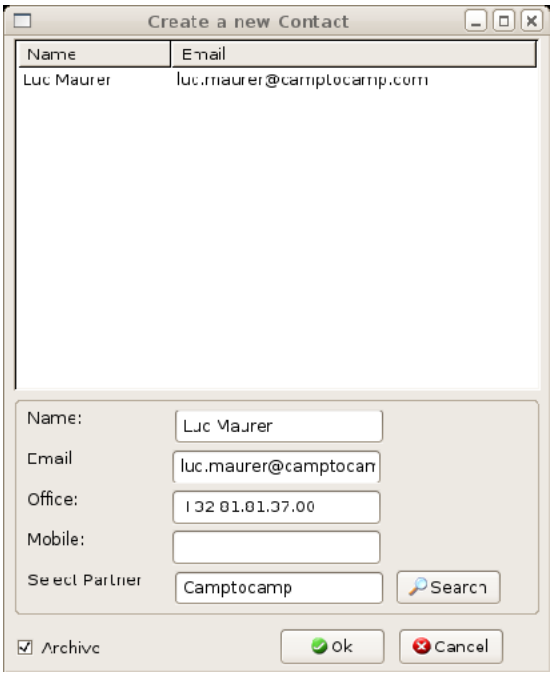


Figure 10.6: *Creating a contact on the fly from Thunderbird*

To access archived data from different documents in Open ERP you can use the **Email Thunderbird** interface that appears over Open ERP documents.

Note: *Testing the Thunderbird adapter*
If you install the Thunderbird adapter as described, explore its functionality as described in this section using the database you installed.

10.3 Microsoft Word interface

Open ERP supplies a Microsoft Word plugin that enables you to create your own document templates. What's more you can use the merge tool *Tools → Merge documents* to insert data from Open ERP while you generate different business documents.

So you can create templates for a number of needs, such as proposals, business letters of agreement, or price requests. Each user can create his or her own document and use the plugin to obtain data from Open ERP. The plugin is very helpful for easily automating business actions.

10.3.1 Installing the Word plugin

The module for connecting Microsoft Word is also found in the list of Open ERP modules at http://openerp.com. Once it's been downloaded install the file `tiny_word_plugin-X.exe` .

When the program is installed, you must run Microsoft Word and configure the parameters that enable you to access the Open ERP server from Word. Click the menu *Tools → Open ERP options*.

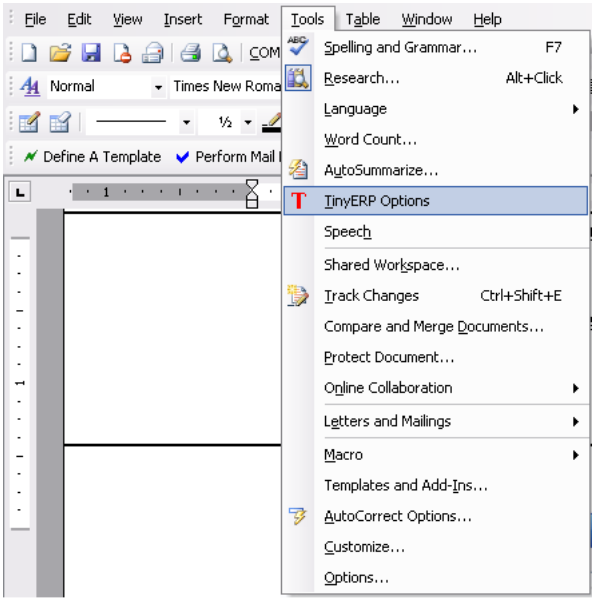


Figure 10.7: *Menu for accessing the configuration of the plugin*

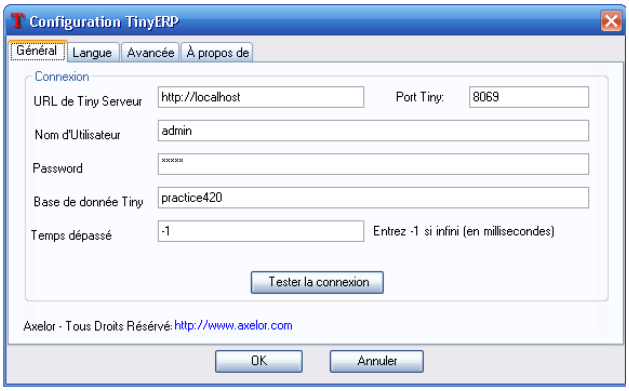


Figure 10.8: *Configuration of the Word plugin for accessing Open ERP*

10.3.2 Using the Word interface

Start by selecting the module from which you want to make a report, for example a Sales Order. From Word you can access all the fields in an Open ERP Order, and all of the fields linked to that order such as from Order Lines, and from Products in those Order Lines.

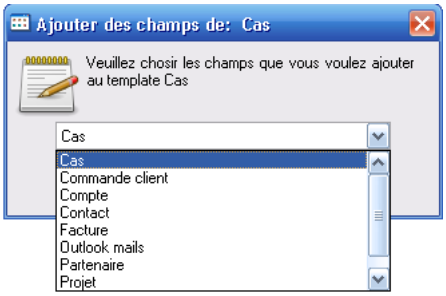


Figure 10.9: *Select the module that will generate the report*

Complete your document and insert Open ERP fields into the appropriate places.

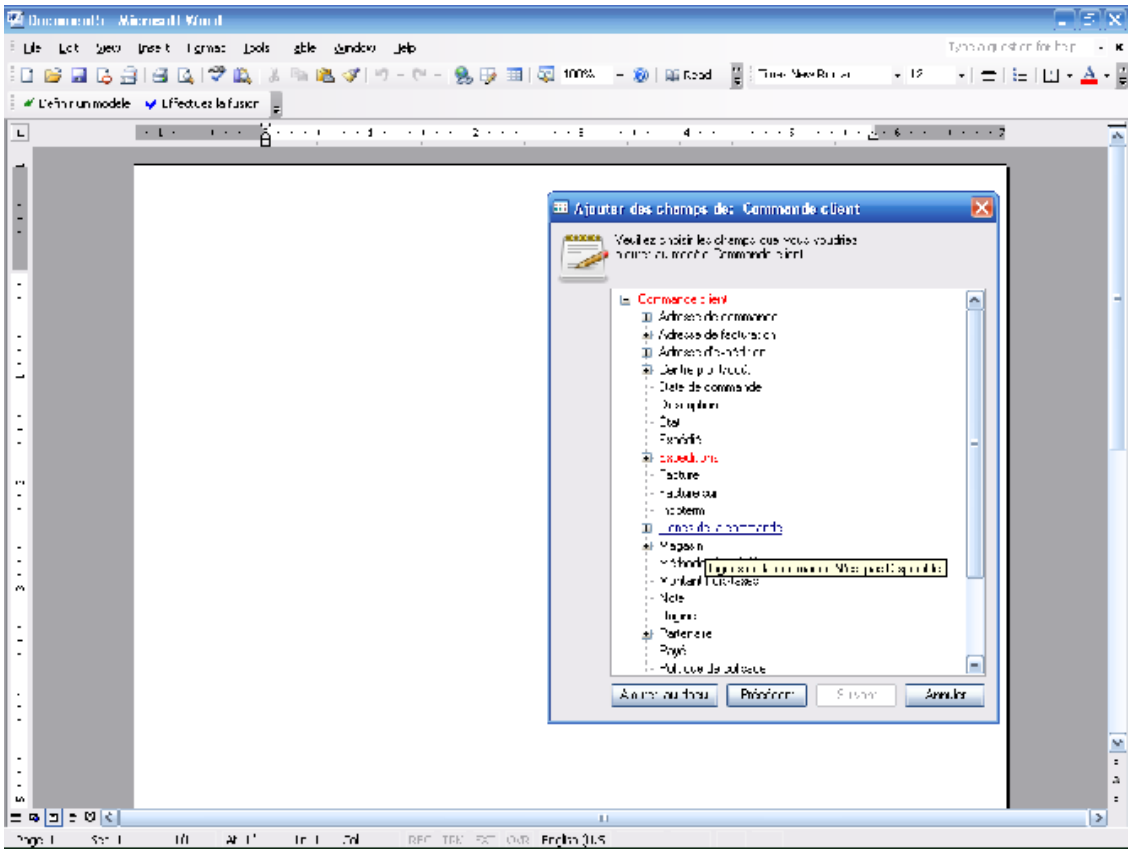


Figure 10.10: *Add Open ERP fields into a Word document*

Note: *Fields in red*
When you've selected some fields and added them into your Word document, some of them appear in red. This color indicates that you can't use that particular field because it has a complex data relationships that can only be discovered when you start to use the field.

Select the merge tool from by clicking **Perform Mail Merge** from the toolbar. This connects Microsoft Word to Open ERP, at which point it searches for data to insert into the document. This tool enables you to select which documents must be included in the report. Make your selection and click **Start Merge** to run the tool that produces your different documents.

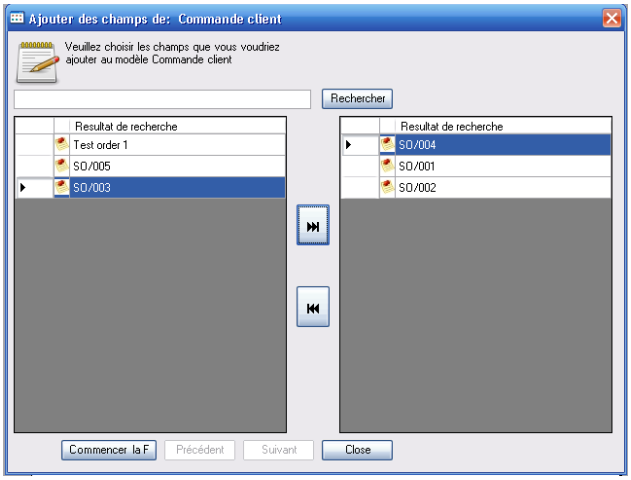


Figure 10.11: *Selecting the Open ERP documents to use in the merge*

Word then generates the documents by inserting the Open ERP data. You get one page for each selected document.

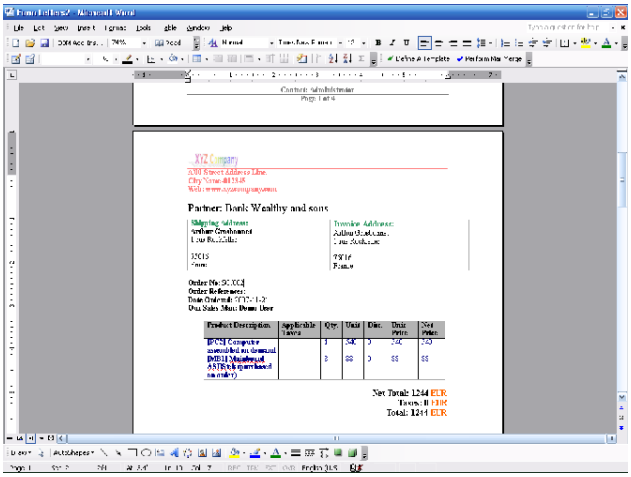


Figure 10.12: *Result of merging a Word document with data from Open ERP*

Note: *Testing the Word adapter*
If you install the Word adapter as described, explore its functionality using the database as described in this section.

In *Configuration & Administration* you'll see another, more powerful, module that enables you to create complete reports in OpenOffice.org through an interface added directly in Open ERP. So you can create your own templates, such as fax and invoice templates.

These reports can then be exported in PDF by leaving Open ERP, or can be edited before sending to a customer. So you can also personalize the details of your faxes and invoices as needed, even though they are based on your templates.

Part IV

General Accounting

When it's well integrated with the management system, an accounting system offers a company special benefits in addition to the obvious abilities it should have to report on the financial position. This part deals with the practical aspects of accounting, and accounting's role throughout the whole company.

Open ERP's accounting modules enable you not only to manage your operations clearly, following the workflow through from invoicing to payment, but also to use various tools for financial analysis based on both real-time data and recent history depending on the analysis.

Your accounting structure can be completely configured from A to Z to match the needs of your company very closely.

CHAPTER

ELEVEN

FROM INVOICE TO PAYMENT

11.1 Accounting workflow and the automatic generation of invoices

The chart *Accounting workflow for invoicing and payment* shows the financial workflow followed by each invoice.

Figure 11.1: *Accounting workflow for invoicing and payment*

In general, when you use all of Open ERP's functionality, invoices don't need to be entered manually. Draft invoices are generated automatically from other documents such as Purchase Orders.

11.1.1 Draft Invoices

The system generates invoice proposals which are initially set to the `Draft` state. While these invoices remain unconfirmed they have no accounting impact within the system. There's nothing to stop users creating their own draft invoices if they want to.

The information that's needed for invoicing is automatically taken from the Partner form (such as payment conditions and the invoice address) or from the Product (such as the account to be used) or from a combination of the two (such as applicable Taxes and the Price of the product).

Tip: *Draft invoices*
There are several advantages in working with Draft invoices:

- *You've got an intermediate validation state before the invoice is approved. This is useful when your accountants aren't the people creating the initial invoice, but are still required to approve it before the invoice is entered into the accounts.*
- *It enables you to create invoices in advance, without approving them at the same time. You're also able to list all of the invoices awaiting approval.*

11.1.2 Open or Pro-Forma Invoices

you can approve (or validate) an invoice in the `Open` or `Pro Forma` state. A Pro Forma invoice doesn't yet have an invoice number, but the accounting entries on the invoice that's created correspond to the amounts that Open ERP will

record as the customer's payables.

Tip: *Pro Forma invoices*
In some countries, you're not allowed to generate accounting entries from pro forma invoices. You create instead a report from the purchase order, which prints a pro forma invoice that has no accounting consequences within the system.
You can use the module described in Configuration & Administration *to create this report.*

An open invoice has a unique invoice number. The invoice is sent to the customer and is marked on the system as awaiting payment.

11.1.3 Reconciling invoice entries and payments

In Open ERP an invoice is considered to be paid when its accounting entries have been reconciled with the payment entries. If there hasn't been a reconciliation an invoice can remain in the open state until you have entered the payment.

Tip: *Payment and reconciliation*
To avoid surprises, it's important to understand the idea of reconciliation and its link with invoice payment.
You'll find both a ***Reconciled*** *field and the* ***Paid*** *checkbox on an invoice. They differ from each other only if an invoice has been paid (using reconciliation of records) but has subsequently been marked as unreconciled.*

Note: *Reconciliation*
Reconciliation links entries in an account that cancel each other out – they're reconciled to each other (sum of credits = sum of debits).
This is generally applied to payments against corresponding invoices.

Without the reconciliation process, Open ERP would be incapable of marking invoices that have been paid. Suppose that you've got the following situation for the Smith and Offspring customer:

- Invoice 145: 50,
- Invoice 167: 120,
- Invoice 184: 70.

If you receive a payment of 120, Open ERP will delay reconciliation because there's a choice of invoices to pay. It could either reconcile the payment against invoices 145 and 184 or against invoice 167.

You can cancel an invoice if the **Allow Cancelling Entries** function has been activated in the journal and the entries haven't yet been reconciled. You could then move it from `Canceled` , through the `Draft` state to modify it and regenerate it.

Tip: *Treatment in Lots*
Usually, different transactions are grouped together and handled at the same time rather than invoice by invoice. This is called batch work or lot handling.
You can select several documents in the list of invoices: check the checkboxes of the interesting lines using the web client and click the appropriate shortcut button at the right; or shift-click the lines using the mouse in the GTK client and use the action or print button at the top – these give you the option of a number of possible actions on the selected objects.

At regular intervals, and independently of the invoices, an automatic import procedure or a manual accounts procedure can be used to bring in bank statements. These comprise all of the payments of suppliers and customers and general transactions, such as between accounts.

When an account is validated, the corresponding accounting entries are automatically generated by Open ERP.

Invoices are marked as paid when accounting entries on the invoice have been reconciled with accounting entries about their payment.

This reconciliation transaction can be carried out at various places in the process, depending on your preference:

- at data entry for the accounting statement,
- manually from the account records,
- automatically using Open ERP's intelligent reconciliation.

You can create the accounting records directly, without using the invoice and account statements. To do this, use the rapid data entry form in a journal. Some accountants prefer this approach because they're used to thinking in terms of accounting records rather than in terms of invoices and payments.

You should really use the forms designed for invoices and bank statements rather than manual data entry records, however. These are simpler and are managed within an error-controlling system.

11.1.4 A records-based system

All the accounting transactions in Open ERP are based on records, whether they're created by an invoice or created directly.

So partner reminders are generated quickly from the list of unreconciled entries in the trade receivables account for that partner. In a single reminder you'll find the whole set of unpaid invoices as well as unreconciled payments, such as advance payments.

Similarly, financial statements such as the general ledger, account balance, aged balance (or chronological balance) and the various journals, are all based on accounting entries. It doesn't matter if you generated the entry from an invoice form or directly in the invoice journal. It's the same for the tax declaration and other statutory financial statements.

When using integrated accounting, you should still go through the standard billing process because some modules are directly dependent on invoice documents. For example, a customer sale order can be configured to wait for payment of the invoice before triggering a delivery. In such a case, Open ERP automatically generates a draft invoice to send to the client.

11.2 Invoicing

In Open ERP, the concept of "invoice" includes the following documents:

- the customer invoice,
- the supplier invoice,
- a customer credit note,
- a supplier credit note.

Only the invoice type and the representation mode differ for each of the four documents. But they're all stored in the same object type in the system.

You get the correct form for each of the four types of invoice from the menu you use to open it. The name of the tab enables you to tell the invoice types apart when you're working on them.

Note: *Types of invoice*
There are many advantages in deriving the different types of invoice from the same object. Two of the most important are:

- *In a multi-company environment with inter-company invoicing, a customer invoice in one company becomes a supplier invoice for the other,*
- *This enables you to work and search for all invoices from the same menu. If you're looking for an invoicing history, Open ERP provides both supplier and customer invoices in the same list, as well as credit notes.*

Note: *Credit Note*
A credit note is a document that enables you to cancel an invoice or part of an invoice.

To access invoices in Open ERP, use the submenus of *Financial Management → Invoices*.

Most of the time, invoices are generated automatically by Open ERP as they are generated from other processes in the system. So it's not usually necessary to create them manually, but simply approve or validate them. Open ERP uses the following different ways of generating invoices:

- from Supplier or Customer Orders,
- from receipt or despatch of goods,
- from work carried out (timesheets, see *Organization of Human Resources*),
- from closed tasks (see *Internal Organization and Project Management*),
- from fee charges or other rechargeable expenses (see *Services Management*).

The different processes generate `Draft` invoices. These must then be approved by a suitable system user and sent to the customer. The different invoicing methods are detailed in the following sections and chapters.

To get the list of draft invoices generated by Open ERP, you can use the menu *Financial Management → Invoices → Customer Invoices → Draft Customer Invoices*. You'll find a similar menu for Purchase Invoices that haven't yet been received or approved *Financial Management → Invoices → Supplier Invoices → Draft Supplier Invoices*.

It's also possible to enter invoices manually. This is usually done for invoices that aren't associated with an Order (usually purchase orders) or Credit Notes. Also if the system hasn't been configured correctly you might need to edit the invoice before sending it to the customer.

For example, if you haven't realized that the customer is tax-exempt, the invoice you generate from an Order will contain tax at the normal rates. It's then possible to edit this out of the invoice before validating it.

11.2.1 Entering a customer invoice

The principle of entering data for invoices in Open ERP is very simple, as it enables non- accountant users to create their own invoices. This means that your accounting information can be kept up to date all the time as orders are placed and received, and their taxes are calculated.

At the same time it allows people who have more accounting knowledge to keep full control over the accounting entries that are being generated. Each value proposed by Open ERP can be modified later if needed.

Start by manually entering a customer invoice. Use *Financial Management → Invoices → Customer Invoices* for this.

A new invoice form opens for entering information.

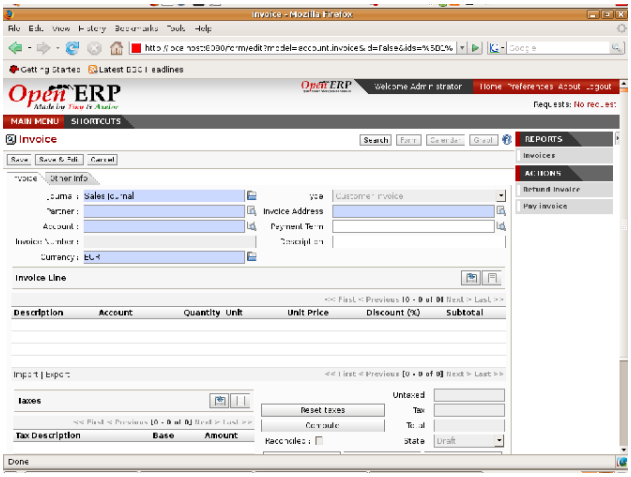


Figure 11.2: *Entering a new invoice*

The document is composed of three parts:

- the top of the invoice, with customer information,
- the main body of the invoice, with detailed invoice lines,
- the bottom of the page, with detail about the taxes, and the totals.

To enter a document in Open ERP you should always fill in fields in the order that they appear on screen. Doing it this way means that some of the later fields are filled in automatically from the selections made in earlier fields. So select the **Partner**, and the following fields are completed automatically:

- the invoice address corresponds to the partner contact that was given the address type of **Invoice** in the partner form (or otherwise the address type of **Default**),
- the partner account corresponds to the account given in the **Accounting** which is found in the last tab of the partner form. By default the software is configured with **Account Receivable** as `Main Receivable` ,
- a specific or a default payment condition can be defined for this partner in the **Sales & Purchases** area of the partner form. Payment conditions are generated by rules for the payment of the invoice. For example: 50% in 21 days and 50% in 60 days from the end of the month.

Note: *Properties fields*
The Properties fields on the Partner form or the Product form are multi-company fields. The value that the user sees in these fields depends on the company that the user works for.
If you work in a multi-company environment that's using one database, you have several charts of accounts. Asset and liability accounts for a partner depend on the company that the user works for.

Tip: *Seeing partner relationships*
You can reach more information from certain relation fields in Open ERP.

- *In the web client in read-only mode a relation is commonly a hyperlink - it takes you to the main form for that entity, with all of the actions and links.*
- *In the web client in edit mode you can press the keyboard* `Ctrl` *button at the same time as right-clicking in the field to get a context menu with links and other options.*
- *And in the GTK clientyou can right-click the field to get that same context menu.*

So one way or another you can rapidly reach the partner's:

- *current sales and purchases,*
- *CRM requests,*
- *open invoices,*
- *accounts records,*
- *payable and receivable accounts.*

You can add more detailed additional information to the invoice and select the currency that you want to invoice in.

Once the invoice heading is saved you must enter the different invoice lines. You could use either of two techniques:

- enter the whole field manually,
- use a product to complete the different fields automatically.

Tip: *Invoice Line Description*
The invoice line description is more of a title than a comment. If you want to add more detailed comments you can use the field in the second tab ***Notes****.*

So select the product `Titanium Alloy Radiator`in the product field in an invoice line. The following fields are then completed automatically:

- **Description** : this comes from the product, in the language of the partner,
- **Account** : determined by the purchase or sales account defined in the product properties. If no account is specified in the product form, Open ERP uses the properties of the category that the product is associated with.
- **Unit of Measure** : this is defined by default in the product form,
- **Unit Price** : this is given by the list price in the product form and is expressed without taxes,
- **Taxes** : provided by the product form and the partner form.

Tip: *Managing the price with tax included*
By default, Open ERP invoices and processes the price without taxes – they're managed as a separate amount. If you want to have invoices provided with tax included you can install the module `account_tax_include`*.*
The module adds a field on each invoice that enables you to set the invoice to be tax exclusive or tax inclusive.

Note: *Information about the product*
When you're entering invoice data it can sometimes be useful to get hold of more information about the product you're invoicing. Since you're already in edit mode, you'd press the ***Ctrl*** *key and use a right mouse-click on the* ***Product*** *field (in both the web and the GTK clients). Then select the available reports. Open ERP provides three standard reports about the product:*

- *forecasts of future stock,*
- *product cost structure,*
- *location of the product in your warehouses.*

(At the time of writing this function worked on pop-up windows of the GTK client but not the web client.)

You can enter several invoice lines and modify the values that are automatically completed by Open ERP.

Once the invoice lines have been entered, you can click **Calculate** on the invoice to get the following information:

- details of tax calculated,
- tax rate,
- total taxes,
- total price.

In the **Taxes** area at the bottom left of the invoice you'll find the details of the totals calculated for different tax rates used in the invoice.

Tip: *Tax Calculations*
You can double-click on one of the lines in the tax summary areas in the invoice.
Open ERP then shows you the detail of the tax charges which will form your tax declaration at the end of the period. It shows you the total that will be computed in the different parts of the legal declaration. This enables you to manage the declaration in Open ERP automatically.

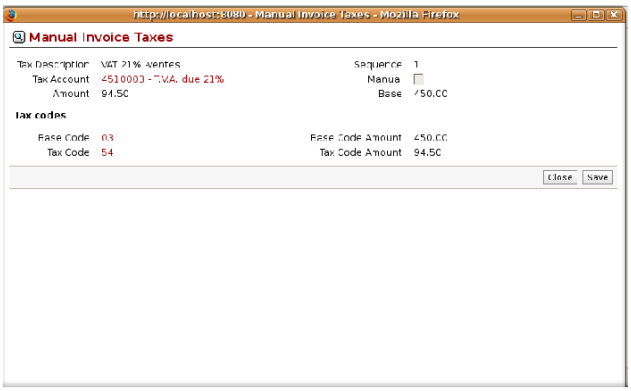


Figure 11.3: *Detail of tax charges on an invoice*

Before approving the invoice you can modify the date and the accounting period, which are entered by default as today's date. These fields are found on the second tab **Other Information**.

Note: *Invoice layout*
If you want to make your invoice layout more elaborate you can install the module `account_invoice_layout`*. This enables you to add various elements between the lines such as subtotals, sections, separators and notes.*

Click **Validate** when you want to approve the invoice. It moves from the `Draft` state to the `Open` state.

When you've validated an invoice, Open ERP gives it a unique number from a defined sequence. By default it takes the form `Year / Sequence Number` for example `2008/00101` . If you want to modify the sequence numbers use the menu *Administration → Configuration → Sequences → Sequences*.

Accounting entries corresponding to this invoice are automatically generated when you approve the invoice. You see the detail of this by clicking the entry in the **Journal** and searching there for the account moves generated by that invoice number.

..index:: single: taxes; DEEE

11.2.2 Managing taxes

Details on the product form and the partner form determine the selection of applicable taxes for an invoice line. By default Open ERP takes account of all the taxes defined in the product form. If a tax is defined in the Properties tab of the Partner form then Open ERP will base its tax calculation on the Partner taxes instead, so a Partner that is defined as tax-exempt, for example, will take precedence over taxes defined in the Product.

Take the case of the following product

- Applicable taxes:
  - TVA: 19.6% type TVA
  - DEEE: 5.5, type DEEE

Note: *DEEE tax*
The DEEE tax (disposal of electronic and electrical equipment) is an ecological tax that was imposed in France from 2007. It's applied to batteries to finance their recycling and is a fixed sum that's applied to the before-tax amount on the invoice

If you trade with a company in your own country, and your country has a DEEE-type tax, the applicable taxes for this invoice could be:

- DEEE: 5.5,
- TVA: 19.6%.

If you sell to a customer in another company in the community (intracommunity), instead, then tax is not charged. Your foreign partners would then be zero-rated by selecting a 0% tax in the last tab, **Accounting**. When you create an invoice for this customer, Open ERP will calculate the following taxes on the product:

- DEEE: 5.5,
- TVA intracommunity: 0%.

If you haven't entered the parameters in the customer form correctly, Open ERP will suggest incorrect taxes in the invoice. That's not an insuperable problem because you can always modify the information directly in the invoice before approving it.

Tip: *Occasional invoices*
When you create an invoice for a product that will only be bought or sold once you don't have to encode a new product. But you'll have to provide quite a bit of information manually on the invoice line:

- *sale price,*
- *applicable taxes,*
- *account,*
- *product description.*

11.2.3 Cancelling an invoice

By default Open ERP won't allow you to cancel an invoice once it has been approved. Since accounting entries have been created you theoretically can't go back and delete them. However in many cases it's more convenient to cancel an invoice when there's an error than to produce a credit note and reconcile the two entries. Your attitude to this will be influenced by current legislation in your accounting jurisdiction and your adherence to accounting purity.

Open ERP accommodates either approach. Cancelling an invoice can be permitted by checking the box **Allow Cancelling Entries** in the Journal corresponding to this invoice. You'll then be allowed to cancel the invoice if the following two conditions are met:

1. The accounting entries haven't been reconciled or paid: if they have then you'll have to cancel the reconciliation.
2. The accounting period or the fiscal year hasn't already been closed: if it has then no modification is possible.

Cancelling an invoice has the effect of automatically modifying the corresponding accounting entries.

When the invoice has been cancelled you could then put it back into the `Draft`state. So you could modify it and approve it again later.

Tip: *Numbering invoices*
Some countries require you to have contiguously numbered invoices (that is, with no break in the sequence). If, after cancelling an invoice that you're not regenerating, you find yourself with a break in the numbering you'd have to go and modify the sequence, redo the invoice and replace the sequence number with its original value.
You can control the sequences using the menu Administration → Configuration → Sequences → Sequences.

Cancelling an invoice will cause a break in the number sequence of your invoices. You're strongly advised to recreate this invoice and re-approve it to fill the hole in the numbering if you can.

Tip: *Duplicating a document*
The duplication function can be applied to all the system documents: you can duplicate anything – a product, an order, or a delivery.

Note: *Some points*

1. *Duplicating invoices*

   Instead of entering a new invoice each time, you can base an invoice on a similar preceding one and duplicate it. To do this, first search for a suitable existing one. In the web client, show the invoice in read-only (non-editable) form view, then click ***Duplicate****. In the GTK client, select* Form → Duplicate *from the top menu.*

   The duplication creates a new invoice in the `Draft` *state. That enables you to modify it before approving it. Duplicating documents in Open ERP is an intelligent function, which enables the duplicated invoice to be given its own sequence number, today's date, and the draft state, even if the preceding invoice has been paid.*

2. *Saving partner preferences*

   Open ERP has many functions to help you enter data quickly. If you invoice the same products frequently for the same partner you can save the last invoice preferences using conditional default values.

   To test this functionality, create an invoice for a partner and add some lines (from the GTK client). Then hold `Ctrl` *and click with the right mouse button on the contents of the* ***Invoices*** *field and select* ***Set as default****. Check the box that indicates this default should apply only to you.*

   Then the next time you create an invoice these invoice lines will be automatically created and you'll only have to modify the quantities before confirming the invoice.

   For taxes you could put the default amount in the invoice lines (in France it would be 19.6%, in Belgium 21%, in the UK 17.5% or 15%). Doing this you won't forget to add tax when you're manually entering invoices.

   (The capabilities of the GTK client are more extensive than those of the web client. You can set defaults for multiple lines in the GTK client but only a single line in the web client, so you need to be quite sure what is possible before you use this functionality routinely.)

3. *Getting information by navigating to it*

   As you're creating an invoice you'll often find you need extra information about the partner to help you complete the invoice. As described earlier, you can navigate to other information linked to this partner, such as:

   - *tasks completed,*
   - *benefit details,*
   - *most recent invoices,*
   - *latest orders.*

   Do the same to get information about the products you're invoicing,. For example: is there enough stock? When will you be getting more stocks in? What are the costs and normal list prices for this product?

   By making this information easily accessible while you're invoicing, Open ERP greatly simplifies your work in creating the invoice.

11.2.4 Creating a supplier invoice

The form that manages supplier invoices is very similar to the one for customer invoices. However, it's been adapted to simplify rapid data entry and monitoring of the amounts recorded.

Tip: *Entering data*
Many companies don't enter data on supplier invoices but simply enter accounting data corresponding to the purchase journal.
This particularly applies to users that have focused on the accounting system rather than all the capabilities provided by an ERP system. The two approaches reach the same accounting result: some prefer one and others prefer the other depending on their skills.
However, when you use the Purchase Management functions in Open ERP you should work directly on invoices because they provide Purchase Orders or Goods Receipt documents.

To enter a new supplier invoice, use the menu *Financial Management → Invoices → Supplier Invoices → New Supplier Invoice*.

Everything is similar to the customer invoice, starting with the **Journal** unless the default is acceptable, and then the **Partner**, which will automatically complete the following fields

- **Invoice address**,
- partner **Account**.

Unlike the customer invoice you don't have to enter payment conditions – simply a **Due Date** if you want one. If you don't give a due date, Open ERP assumes that this invoice will be paid in cash. If you want to code in more complete payment conditions than just due date you can use the **Payment Term** field which you can find on the second tab **Other Info**.

You must also enter the invoice **Total** with taxes included. Open ERP uses this amount to check whether all invoice lines have been entered correctly before it will let you validate the invoice.

Indicate the **Currency** if the invoice isn't going to use the default currency, then you can enter the **Invoice lines**.

Just like the customer invoice you have the choice of entering all the information manually or using a product to complete many of the fields automatically. Entering a product, all of the following values are completed automatically:

- the product **Account** is completed from the properties of the product form or the **Category** of the product if nothing is defined on the product itself,
- the **Taxes** come from the product form and/or the partner form, based on the same principles as the customer invoice,
- the **Quantity** is set at 1 by default but can be changed manually,
- set the **Unit Price** from the total price you're quoted after deducting all the different applicable taxes,

Click **Compute Taxes** to ensure that the totals correspond to those indicated on the paper invoice from the supplier. When you approve the invoice, Open ERP verifies that the total amount indicated in the header correspond to the sum of the amounts without tax on the invoice lines and the different applicable taxes.

Tip: *The Calculate button*
*Even though you should calculate the invoice before approving it you don't have to push the **Compute Taxes** button. If you approve the invoice directly the software calculates the different taxes itself and verifies the total.*
This button is only used for making a pre-check of the amount displayed before you confirm it finally.

Open ERP automatically completes the **Date Invoiced** and the accounting period, but you can still change these values manually in the second tab on the invoice before saving it.

Note: *Dates and Accounting Periods*
Accounting periods are treated as legal period declarations. For example a tax declaration for an invoice depends on the accounting period and not on the date of invoicing.
Depending on whether your declarations are made monthly or quarterly, the fiscal year contains either twelve or four accounting periods.
The dates are shown in the document you created in the accounting system. They're used for calculating due dates.

The two pieces of information don't have to have the same date. If, for example, you receive an invoice dated 5th January which relates to goods or services supplied before 31st December, the invoice may be coded into the December accounting period and thus be recognized in that period for the tax declaration, while the invoice can remain 5th January which remains the basis of the due date for payment.

You can find that the amounts don't correspond with what your supplier has given you on paper for reasons that can include:

- the supplier made a calculation error,
- the amounts have been rounded differently.

Tip: *Rounding Tax*
It often happens that a supplier adds 1 to the total because the tax calculation has been rounded upwards. Some tax amounts aren't valid because of this rounding.
For example it's impossible to arrive at the amount of 145.50 if you're working to a precision of 2 decimal places and a rate of 19.6%:

- *121.65 x 1.196 = 145.49*
- *121.66 x 1.196 = 145.51*

In this case you can modify a value in the lines that the total's based on, or the total amount of taxes at the bottom left of the form: both are editable so that you can modify them to adjust the total.

When the totals tally you can validate the invoice. Open ERP then generates the corresponding accounting entries. You can manage those entries using the **Account** fields on the invoice and on each of the invoice lines.

11.2.5 Credit Notes

Entering a customer credit note is almost identical to entering a customer invoice. You just start from the menu *Financial Accounting → Invoices → Customer Refunds*.

Similarly, entering a supplier credit note is the same as that of the supplier invoice and so you use the menu *Financial Accounting → Invoices → Supplier Refunds*.

It's easy to generate a credit note quickly from an existing invoice. To do this, select a customer or supplier invoice and click **Refund invoice** on the toolbar to the right. Open ERP opens a new credit note form for you in the `Draft` state so that you can modify it before approval.

Tip: *Crediting several invoices*
*You can refund several invoices in one operation. From the web client you'd display a list of invoices and then click the checkboxes alongside the ones you want to refund. Then click the **Refund invoice** action from the right toolbar.*
*In the GTK client you'd make a multiple selection of invoices by clicking whichever lines you want to select while holding the keyboard `Ctrl` button down. Then you'd execute the action by clicking the **Action** (gears) icon on the icon toolbar and selecting **Refund invoice**.*

11.2.6 Invoice payment

The invoice is automatically marked as paid by Open ERP once invoice entries have been reconciled with payment entries. You yourself don't have to mark the invoices as paid: Open ERP manages that when you reconcile your payments.

Tip: *Reconciling a credit note*
Generally you reconcile the invoice's accounting entries with their payment(s). But you can also reconcile an invoice with the entries from the corresponding credit note instead, to mutually cancel them.

You've probably seen the **Pay Invoice** action button in the toolbar to the right of the invoice form. This lets you enter payments and get entries reconciled very quickly. This functionality is usually employed by companies that use Open ERP as a simple billing system and not for complete accounting. They enter their payments manually on different invoices.

You probably shouldn't use this functionality if you have all of your accounting in Open ERP. It's much more convenient to manage the payment of invoices when you're entering bank statements and cash transactions. These allow better control of financial transactions and permit greater flexibility in areas such as:

- advance and partial payments of invoices,
- payment of several invoices by several payments,
- fine-grained management of different due dates on the same invoices,
- management of adjustments if there are different amounts to those on the invoice.

11.3 Accounting entries

Various methods of creating accounting entries can be used. You've already seen how an invoice creates its own entries, for example.

This section deals, in order, with

- managing bank statements,
- managing cash,
- manual journal entries,

You'll see how to proceed with entering financial transactions here. In Open ERP you use the same form for handling bank statements and for managing cash. The two types of transaction differ only in the journal that's used.

11.3.1 Managing bank statements

Open ERP provides a visual tool for managing bank statements that simplifies data entry into accounts. As soon as a statement entry is validated the corresponding accounting entries are automatically generated by Open ERP. This lets non-accounting people to enter financial transactions without fussing about such things as credit, debit and counterparts

Start by entering a statement line. To do that use the menu *Financial Management → Entries Encoding → Entries by Statement → New Statement*. A data entry form for statements then opens as shown in figure *Data entry form for a bank statement*.

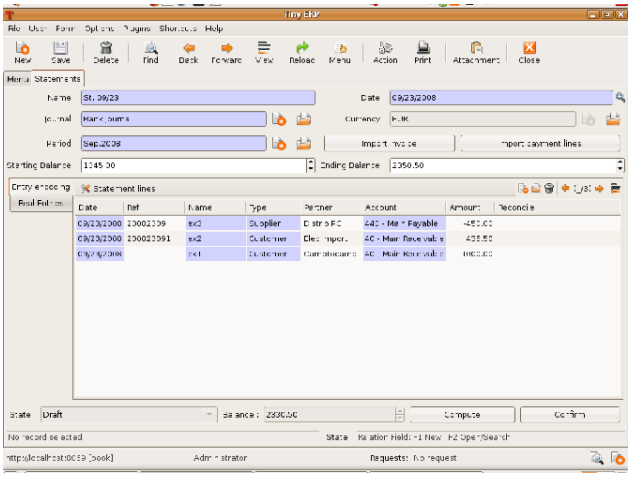


Figure 11.4: *Data entry form for a bank statement*

The statement reference (**Name**) and the **Date** are automatically suggested by Open ERP from the preceding statement line. You can configure your own reference by managing sequences in the *Administration* menu.

You must then select the :guilable‘Journal‘. Ideally, when you’re configuring your company you’d create at least one journal for each bank account and one journal for petty cash in your company. So select the journal corresponding to the bank account whose statement you’re handling.

The currency that you’re using for the statement line is that of the selected journal. If you’re entering statement lines for an account in American dollars (USD) the amounts must be entered in `USD`. The currency is automatically converted to the company’s main currency when you confirm the entry, using the rates in effect at the date of entry (which means that you’d need valid currency conversion rates to be created first).

The initial balance is completed automatically by Open ERP based on the final balance of the preceding statement. You can modify this value and force another value. This lets you enter statements in the order of your choice. Also if you’ve lost a page of your statement you can enter the following ones immediately and you’re not forced to wait for a duplicate from the bank.

So, complete the final balance, which corresponds to the last value on the account after all of the statement entries. This amount will be the control for operations before approving the statement.

Then you must enter all the lines on the statement. Each line corresponds to a banking transaction.

Enter the transaction line. When you type the Partner name, Open ERP automatically proposes the corresponding account. The total amount due for the customer or supplier is pre-completed by Open ERP (**Amount**). This gives you a simple indication of the effective payment. You must the enter the amount that appears on your statement line: a negative sign for a withdrawal and a positive sign for a cash payment or deposit. When the payment entry has been made you can reconcile this directly with the accounting entry for the invoices. Press the `Ctrl` key on the keyboard (necessary for the web client, though not the GTK client) and then press the `<F1>` key while your cursor is in the **Reconcile** field on the payment line.

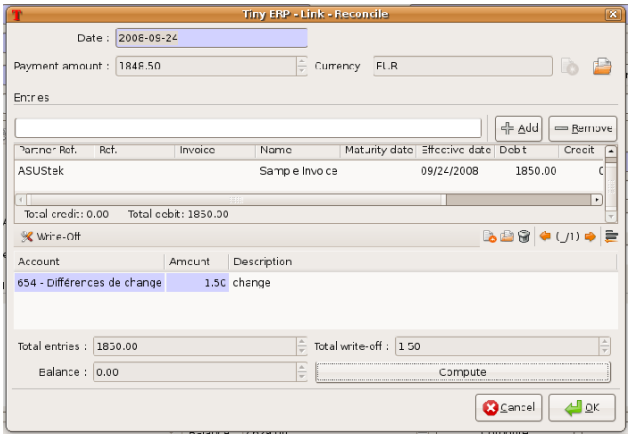


Figure 11.5: *Reconciliation from data entry of the bank statement*

The reconciliation form then appears. To the right you'll find the amount for payment. You must then select the invoices paid by this transaction (Entries). To enable you to reconcile this the amount of payment must correspond exactly with one or several due dates of invoice.

Note: *Reconciliation*
Other methods of reconciliation are possible: from accounting entries, when saving the payment directly on an invoice, or using the automatic reconciliation tool. But if you can, you should do a reconciliation when you're encoding the payment because that's the time when you have all of the information you need to hand for reconciling the payment with the corresponding invoice.
You can carry out either a full or a partial reconciliation.

If you see a difference between the payment and the invoices to reconcile, you can enter the difference in the second part of the form **Write-off**. You have to set an account for the adjustment. The main reasons explaining the difference are usually:

- losses or profits,
- exchange differences,
- discounts given for rapid payment.

When the reconciliation is complete - that is the payment is equal to the sum of the due payments and the adjustments - then you can close the reconciliation form.

The reconciliation operation is optional – you could very well do it later or not do it at all. It's got two significant effects, however:

- marking that the invoices have been paid,
- preventing the payment and invoice amounts from appearing on customer reminder letters. Unless you've reconciled them a customer will see the invoice and payment amounts on her reminder letter (which won't alter the balance due since they'll just cancel each other out).

Finally, once you have entered the various lines of your bank statement you can validate it. Open ERP then automatically generates the corresponding accounting entries if the balance calculated equals the final balance indicated in the header. The reconciled invoices are marked as paid at that point.

A user with advanced accounting skills can enter accounting entries directly into the bank journal. The resulting account is the same but the operation is more complex because you must know the accounts to use and must have mastered the ideas of credit and debit.

11.3.2 Cash Management

To manage cash, you use the same form as before. At the start of the day you set the opening amount of cash in the entry (**Starting Balance**). Instead of confirming the entry immediately you should leave it in the `Draft` state.

All the transactions throughout the day are then entered in this statement. When you close the cash till, generally at the end of the day, you enter the amount found in the cash till in the field **Ending Balance**. Then confirm the statement to close the day's cash statement and automatically generate the corresponding accounting entries.

Tip: *Confirming the statement*
Accounting entries are only generated when the statement is confirmed. So if the total statement hasn't been approved (that's to say during the day, in the case of petty cash) you shouldn't be surprised if partner payments haven't been deducted from their corresponding account.

11.3.3 Manual entry in a journal

Invoices and statements produce accounting entries in different journals. But you could equally create entries directly in a journal without using the forms to help you. This functionality is often used for various entry transactions.

To do this, use the following menu *Financial Management → Entries Encoding → Entries Encoding by Line*.

Select the journal and the accounting period. A window opens, enabling you to enter the accounting data in an editable list. You can then enter data from a supplier invoice.

As you'll recall, these entries are usually generated automatically by Open ERP. If you haven't created an invoice you'll have to enter values manually.

Fill these fields manually in this order:

- **Effective Date** : invoice date,
- **Move** : leave this empty so that Open ERP can fill it in automatically from the next number in sequence for line validations,
- **Ref.** : reference from the supplier invoice,
- **Partner Ref.** : partner concerned,
- **Account** : account for the purchase line (`Products Purchase`),
- **Name** : description of the invoice line (`PC2`),
- **Credit** : `1196` .

Press the **Enter** key on your keyboard to validate this first line. The next sequence number is assigned to your accounting entry. Your line is then colored red and takes the `Draft` state. When a line is in the draft state then it's not yet reflected in the accounts. Open ERP won't validate that line until the balancing entry is made (so the credit amounts must balance the debit amounts for that set of entries).

Open ERP now proposes the balancing accounting line to be filled in. If the account used (in this case account `600`) includes taxes by default in its definition Open ERP automatically proposes taxes associated with the amount entered. At this stage you can modify and validate this second line of the account, or replace it with other information such as a second purchase line.

When you've entered all of the data from your lines, Open ERP automatically proposes counterpart entries to you, based on the credit entries. If you validate it, the accounting entries are all matched together and the lines move from the `Draft` state (red) to the `Open` state (black).

Tip: *Completing a balancing entry*
When an accounting entry is matched, Open ERP moves it to the open state automatically and prepares to enter the next data.
If you want to add some other balancing lines you can enter the number of the entry on the new line that you're entering. In such a case the whole line stays at Draft until the whole set balances to zero.

11.3.4 Process of reconciliation

The reconciliation operation consists of matching entries in different accounts to indicate that they are related. Generally reconciliation is used for:

- matching invoice entries to payments so that invoices are marked as paid and customers don't get payment reminder letters (reconciliation in a customer account),
- matching deposits and cheque withdrawals with their respective payments,
- matching invoices and credit notes to cancel them out.

A reconciliation must be carried out on a list of accounting entries by an accountant, so that the sum of credits equals the sum of the debits for the matched entries.

Reconciliation in Open ERP can only be carried out in accounts that have been configured as reconcilable (the **Reconcile** field).

Tip: *Don't confuse:* ***account*** *reconciliation and* ***bank statement*** *reconciliation*
It's important not to confuse the reconciliation of accounting entries with bank statement reconciliation. The first consists of linking account entries with each other, while the second consists of verifying that your bank statement corresponds with the entries of that account in your accounting system.

There are different methods of reconciling entries. You've already seen the reconciliation of entries while doing data entry in an account. Automatic and manual reconciliations are described here.

Automatic reconciliation

For automatic reconciliation, you'll be asking Open ERP to make its own search for entries to reconcile in a series of accounts. It tries to find entries for each partner where the amounts correspond.

Depending on the level of complexity that you choose when you start running the tool, the software could reconcile from two to nine entries at the same time. For example, if you select level 5, Open ERP will reconcile three invoices and two payments if the total amounts correspond.

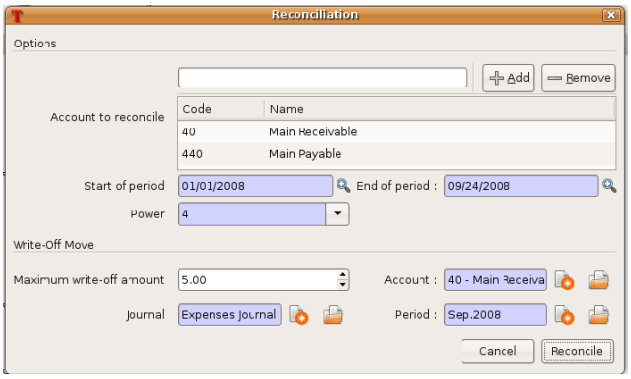


Figure 11.6: *Form for automatic reconciliation*

To start the reconciliation tool, click *Financial management → Periodical Processing → Reconciliation → Automatic Reconciliation*.

A form opens, asking you for the following information:

- **Account to reconcile** : you can select one, several, or all reconcilable accounts,
- the period to take into consideration (**Start of Period / End of Period**),
- the Reconciliation **Power** (from `2` to `9`),
- information needed for the adjustment (details for the **Write-Off Move**).

Note: *Reconciling*
You can reconcile:

- *all the Accounts Receivable – your customer accounts of type Debtor,*
- *all the Accounts Payable – your supplier accounts of type Creditor.*

The adjustment option enables you to reconcile entries even if their amounts aren't exactly equivalent. For example, Open ERP permits foreign customers whose accounts are in different currencies to have a difference of up to, say, 0.50 units of currency and put the difference in a write- off account.

Tip: *Limit write-off adjustments*
You shouldn't make the adjustment limits too large. Companies that introduced substantial automatic write-off adjustments have found that all employee expense reimbursements below the limit were written off automatically!

Note: *Default values*
If you run the automatic reconciliation tool regularly you should set default values for each field by pressing the `Ctrl` *key and using the right-click mouse button (when the form is in edit mode using the web client), or just right-click using the GTK client. The resulting context menu enables you to set default values. This means that you won't have to re-type all the fields each time.*

Manual reconciliation

For manual reconciliation, open the entries for reconciling an account through the menu *Financial Management → Periodical Processing → Reconciliation → Reconcile Entries*. You can also call up manual reconciliation from any screen that shows accounting entries. Select entries that you want to reconcile. From the selection, Open ERP indicates the sum of debits and credits for the selected entries. When these are equal you can click the **Reconcile Entries** button to reconcile the entries.

Note: Example Real case of using reconciliation

Suppose that you're entering customer order details. You ask "what's outstanding on the customer account ?" (that is the list of unpaid invoices and unreconciled payments). To review it from the order form, navigate to the ***Partner*** *record and select the view* ***Receivables and Payables****. Open ERP opens a history of unreconciled accounting entries on screen.*

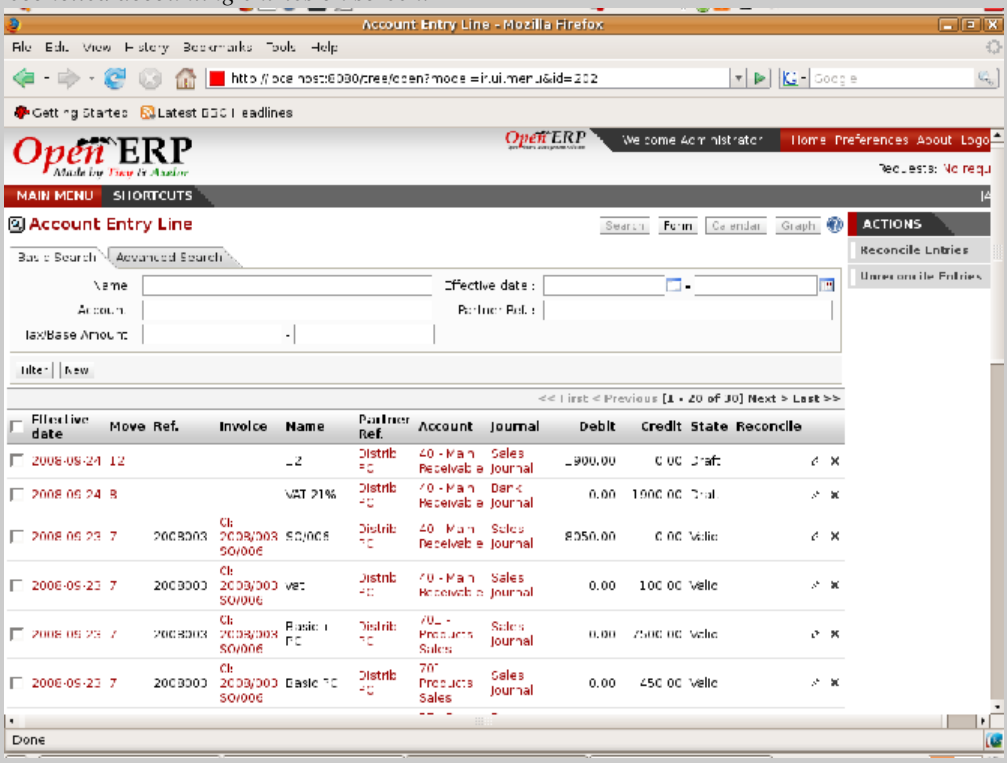


Figure 11.7: Unreconciled accounting entries

You see an invoice for 1900 and a payment two weeks later of 1900 with the same reference. You can select the two lines in that view. The total at the bottom of the page shows you that the credit amount equals the debit amount for the selected line. Click ***Reconcile Entries*** *to reconcile the two lines.*

After this these lines can't be selected and won't appear when the entries are listed again. If there's a difference between the two entries, Open ERP suggests that you make an adjustment. This adjustment is a compensating entry that enables a complete reconciliation. You must therefore specify the journal and the account to be used for the adjustment.

For example, if you want to reconcile the following entries:

Table 11.1: Entries for reconciliation

Date	Ref.	Description	Account	Debit	Credit
12 May 08	FAC23	Car hire	4010	544.50	
25 May 08	FAC44	Car insurance	4010	100.00	
31 May 08	PAY01	Invoices n° 23, 44	4010		644.00

On reconciliation, Open ERP shows a difference of 0.50. At this stage you have two possibilities:

- don't reconcile, and the customer receives a request for 0.50,
- reconcile and accept an adjustment of 0.50 that you will take from the P&L account.

Open ERP generates the following account automatically:

Table 11.2: Write-off account

Date	Ref.	Description	Account	Debit	Credit
Date	Ref.	Description	Account	Debit	Credit
03 Jun 08	AJ001	Adjustment: profits and losses	4010		0.50
03 Jun 08	AJ001	Adjustment: profits and losses	XXX	0.50	

The two invoices and the payment will be reconciled in the first adjustment line. The two invoices will then be automatically marked as paid.

11.4 Management of payments

Open ERP gives you forms for preparing, validating and executing payment orders. This enables you to manage issues such as:

1. Payment provided on several due dates.
2. Automatic payment dates.
3. Separating payment preparation and payment approval in your company.
4. Preparing an order during the week containing several payments, then creating a payment file at the end of the week.
5. Creating a file for electronic payment which can be sent to a bank for execution.
6. Splitting payments dependent on the balances available in your various bank accounts.

11.4.1 Process for managing payment orders

To use the tool for managing payments you must first install the module `account_payment`. It's part of the core Open ERP system.

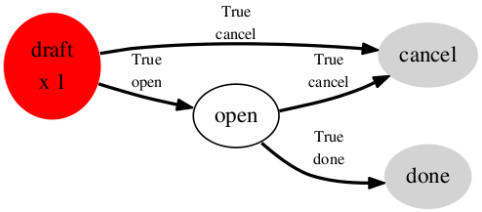
The system lets you enter a series of payments to be carried out from your various bank accounts. Once the different payments have been registered you can validate the payment orders. During validation you can modify and approve the the payment orders, sending the order to the bank for electronic funds transfer or just printing cheques as you wish.

For example if you have to pay a supplier's invoice for a large amount you can split the payments amongst several bank accounts according to their available balance. To do this you can prepare several Draft orders and validate them once you're satisfied that the split is correct.

This process can also be regularly scheduled. In some companies, a payment order is kept in Draft state and payments are added to the draft list each day. At the end of the week it's an accountant's job to work on all of the waiting payment orders.

Once the payment order is confirmed there's still a validation step for an accountant to carry out. You could imagine that these orders would be prepared by an accounts clerk, and then approved by a manager to go ahead with payment.

Tip: *Payment Workflow*
An Open ERP workflow is associated with each payment order. Select a payment order and if you're in the GTK client click Plugins → Print workflow *from the top menu.*
You can integrate more complex workflow rules to manage payment orders by adapting the workflow. For example, in some companies payments must be approved by a manager under certain cash flow or value limit conditions.



Workflow: Payment Order Workflow

Figure 11.8: *Payments workflow*

When the accounting manager validates the document, Open ERP generates a banking file with all the payment orders. You can then just send the file over your electronic connection with your bank to execute all your payments.

In small businesses it's usually the same person who enters the payment orders and who validates them. In this case you should just click the two buttons, one after the other, to confirm the payment.

11.4.2 Preparation and execution of orders

To enter a payment order, use the menu *Financial Management → Payment → Payment Orders → New Payment Order*.

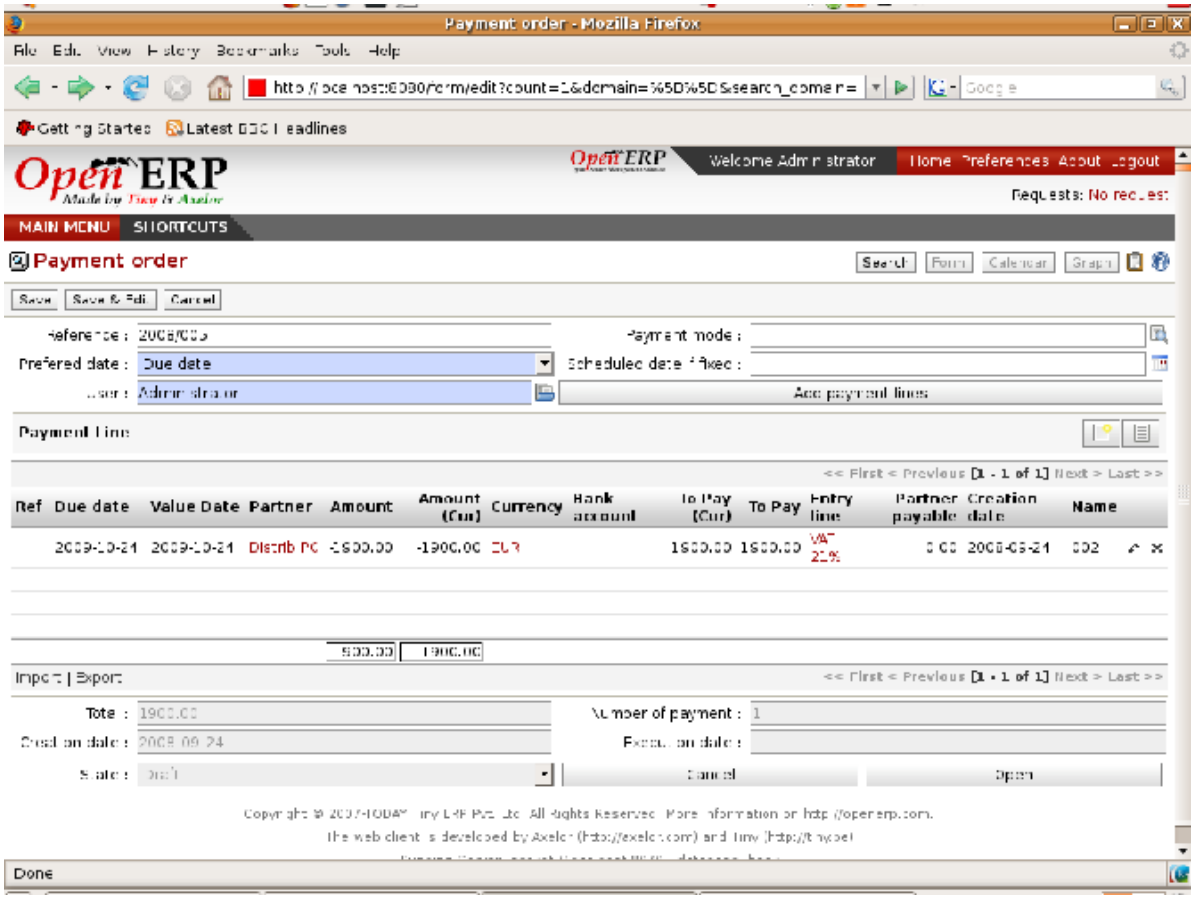


Figure 11.9: *Entering a payment order*

Open ERP then proposes a reference number for your payment order.

You then have to choose a payment mode from the various methods available to your company. These have to be configured when you set the accounting system up using menus *Financial Management → Configuration → Payment Type* and *Financial Management → Configuration → Payment Mode*. Some examples are:

- Cheques
- Bank transfer,
- Visa card on a FORTIS account,
- Petty cash.

Then you set the **Preferred date** for payment:

- **Due date** : each operation will be effected at the invoice deadline date,
- **Directly** : the operations will be effected when the orders are validated,
- **Fixed date** : you must specify an effective payment date in the **Scheduled date if fixed** field that follows.

The date is particularly important for the preparation of electronic transfers because banking interfaces enable you to select a future execution date for each operation. So to configure your Open ERP most simply you can choose to pay all invoices automatically by their deadline.

You must then select the invoices to pay. They can be manually entered in the field **Payment Line** but it's easier to add them automatically. For that, click **Add payment lines** and Open ERP will then propose lines with payment deadlines. For each deadline you can see:

- the invoice **Effective date**,
- the reference **Ref.** and description of the invoice, **Name**,
- the deadline for the invoice,
- the amount to be paid in the company's default currency,
- the amount to be paid in the currency of the invoice.

You can then accept the payment proposed by Open ERP or select the entries that you'll pay or not pay on that order. Open ERP gives you all the necessary information to make a payment decision for each line item:

- account,
- supplier's bank account,
- amount that will be paid,
- amount to pay,
- the supplier,
- total amount owed to the supplier,
- due date,
- date of creation.

You can modify the first three fields on each line: the account, the supplier's bank account and the amount that will be paid. This arrangement is very practical because it gives you complete visibility of all the company's trade payables. You can pay only a part of an invoice, for example, and in preparing your next payment order Open ERP automatically suggests payment of the remainder owed.

When the payment has been prepared correctly, click **Confirm**. The payment then changes to the `Open` state and a new button appears that can be used to start the payment process. Depending on the chosen payment method, Open ERP provides a file containing all of the payment orders. You can send this to the bank to make the payment transfers.

In future versions of Open ERP it's expected that the system will be able to prepare and print cheques.

As usual, you can change the start point for the payment workflow from the *Administration* → *Customization* → *Workflow* menus.

Accounting is at the heart of managing a company: all the company's operations have an impact here. It has an informational role (how much cash is there? what debts need to be repaid? what's the stock valuation?) and, because of the information it provides, a reliable and detailed accounting system can and should have a major decision-making role.

In most real companies, accounting is limited to producing statutory reports and satisfying the directors' curiosity about certain strategic decisions, and to printing the balance sheet and the income statement several times a year. Even then there's often several weeks of delay between reality and the report.

Note: *Valuing your accounting function*
In many small companies, the accounting function is poorly treated.
Not only do you see the data for documents being entered into the system twice, but also the results are often just used to produce legal documentation and regular printouts of the balance sheet and income statements some weeks after the closing dates.
By contrast, integrating your accounts with your management system means that you can:

- *reduce data entry effort – you only need do it once,*
- *run your processes with the benefit of financial vision: for example in managing projects, negotiating contracts, and forecasting cash flow,*
- *easily get hold of useful information when you need it, such as a customer's credit position.*

So accounting is too often underused. The information it brings makes it a very effective tool for running the company if it's integrated into the management system. Accounting information really is necessary in all of your company's processes for you to be effective, for example:

- for preparing quotations it's important to know the precise financial position of the client, and to see a history of any delays in payment,
- if a given customer has exceeded their credit limit, accounting can automatically stop further deliveries to the customer,
- if a project budget is 80% consumed but the project is only 20% complete you could renegotiate with the client, or review and rein in the objectives of the project,
- if you need to improve your company's cash flow then you could plan your services projects on the basis of billing rates and payment terms of the various projects, and not just delivery dates – you could work on short-term client projects in preference to R&D projects, for example.

Open ERP's general accounting and analytic accounting handle these needs well because of the close integration between all of the application modules. Furthermore, the transactions, the actions and the financial analyses happen in real time, so that you can not only monitor the situation but also manage it effectively. The `account` module in Open ERP covers general accounting, analytic accounting, and auxiliary and budgetary accounting. It's double-entry, multi-currency and multi-company.

Note: *Accounting*

- *General accounting (or financial accounting) is for identifying the assets and liabilities of the business. It's managed using double-entry accounting which ensures that each transaction is credited to one account and debited from another.*
- *Analytical accounting (or management accounting, or cost accounting) is an independent accounting system which reflects the general accounts but is structured along axes that represent the company's management needs.*
- *Auxiliary accounting reflects the accounts of customers and/or suppliers.*
- *Budgetary accounts predefine the expected allocation of resources, usually at the start of a financial year.*

Tip: *Multi-company*
There is a choice of methods for integrating Open ERP in a multi-company environment:

- *if the companies hold few documents in common (such as products, or partners - any Open ERP resource), you should install separate databases,*
- *if the companies share many documents, you can register them in the same database and install Open ERP's multi-company documents to finely manage access rights,*
- *you can synchronize specified document types in several databases using the* `base_synchro` *module, which is a shared-funding module rather than in the standard open repositories.*

One of the great advantages of integrating accounts with all of the other modules is in avoiding the double entry of data into accounting documents. So in Open ERP an Order automatically generates an Invoice, and the Invoice automatically generates the accounting entries. These in turn generate tax submissions, customer reminders, and so on. Such strong integration enables you to:

- reduce data entry work,
- greatly reduce the number of data entry errors,
- get information in real time and enable very fast reaction times (for bill reminders, for example),
- exert timely control over all areas of company management.

Tip: *For accountants*
When you create a database you can elect to install only the accounting modules by choosing the ***Accounting only profile*** `profile_accounting`*.*
You should then install the web portal `portal_account`*. With appropriate rights management, this allows trustees to provide customers with real-time access to their data. It also gives them the opportunity to work on certain documents that have no direct accounting impact, such as budgets.*
This can provide an added-value service that greatly improves the interaction between trustees and their clients.

All the accounts are held in the default currency (which is specified in the company definition), but each account and/or transaction can also have a secondary currency (which is defined in the account). The value of multi-currency transactions is then tracked in both currencies.

For this chapter you should start with a fresh database that includes demo data, with `sale` and its dependencies installed and no particular chart of accounts configured.

CHAPTER

TWELVE

FINANCIAL ANALYSIS

This chapter is devoted to statutory taxation and financial reporting from Open ERP. Whether you need reports about customers and suppliers, or statements for various statutory purposes, Open ERP enables you to carry out a whole range of parametric analyses of the financial health of your company.

Whether you want to analyze the general health of your company or review the status of an Account Receivable in detail, your company's accounts are the place to define your various business indicators.

To bring you the most accurate picture of your business, Open ERP's different accounting reports are flexible, and the results are calculated in real time. This enables you to automate recurring actions and to change your operations quickly when a company-wide problem (such cash reserves dropping too low, or receivables climbing too high) or a local problem (a client that hasn't paid, or a project budget overspend) occurs.

So this chapter describes the various reports and financial statements supplied by Open ERP's accounting modules. It also describes how Open ERP handles purchase and sales taxation, and the reporting of taxation.

For this chapter you should start with a fresh database that includes demo data, with `sale` and its dependencies installed and no particular chart of accounts configured.

12.1 Managing accounts payable / creditors and accounts receivable / debtors

Open ERP provides many tools for managing customer and supplier accounts. You'll see here:

- financial analysis of partners, to understand the reports that enable you to carry out an analysis of all of your partners,
- multi-level reminders, which is an automatic system for preparing reminder letters or emails when invoices remain unpaid,
- detailed analysis of individual partners.

12.1.1 Financial analysis of partners

When members of your accounts department sign on to the Open ERP system, they can immediately be presented with the **Accounting Dashboard**. By default it contains a useful graph for analyzing Receivables. To get access to it, install the module `board_account`. Then look at it using the menu *Dashboards → Accounting → Accounting Dashboard*.

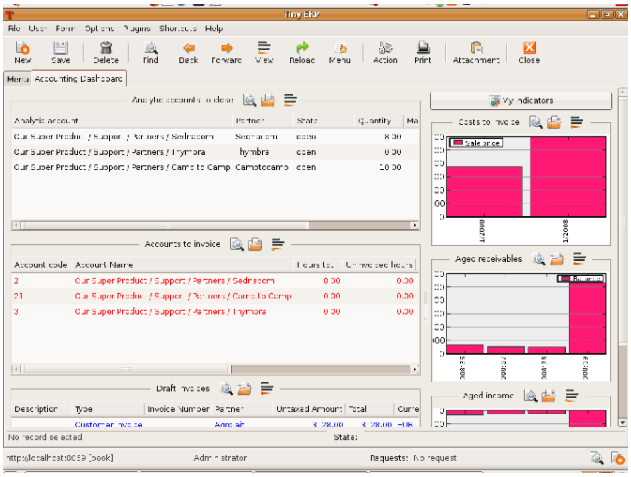


Figure 12.1: *Accounting Dashboard*

In the dashboard, the graph at the right entitled **Aged Receivables** represents your receivables week by week. That shows you at a glance the cumulative amount of your customer debtors by week.

All of Open ERP's graphs are dynamic. So you can, for example, filter the data by clicking **Zoom** and then **Filter** on the Search form. Or just click on **Zoom** to open in a larger window for a graph, then click **Search** to display this in a list view.

To obtain a more detailed report of the aged balance (or order by past date) use the menu *Finance → Accounting → Reporting → Partner Accounts → Aged Partner balance*.

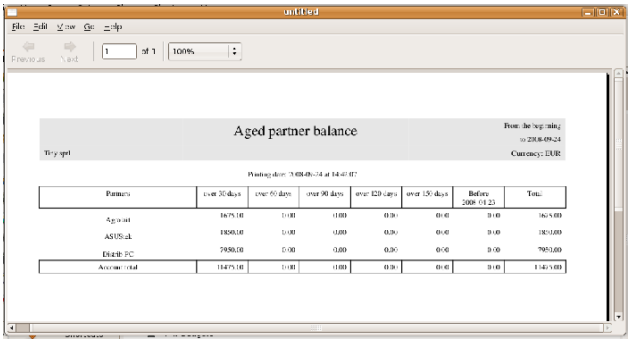


Figure 12.2: *Aged balance using a 30 day period*

When opening that report, Open ERP asks for the name of the company, the fiscal period and the size of the interval to be analyzed (in days). Open ERP then calculates a table of credit balance by period. So if you request an interval of 30 days Open ERP generates an analysis of creditors for the past month, past two months, and so on.

For an analysis by partner you can use the partner balance that you get through the menu *Financial Management → Reporting → Partner Accounts → Partner balance*. The system then supplies you with a PDF report containing one line per partner representing the cumulative credit balance.

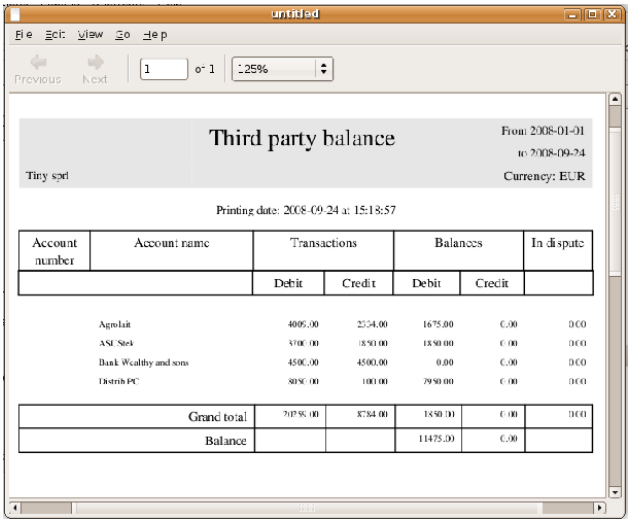


Figure 12.3: *Partner balances*

If you want detailed information about a partner you can use the partner ledgers that you reach through the menu *Financial Management → Reporting → Partner Accounts → Partner Ledger*.

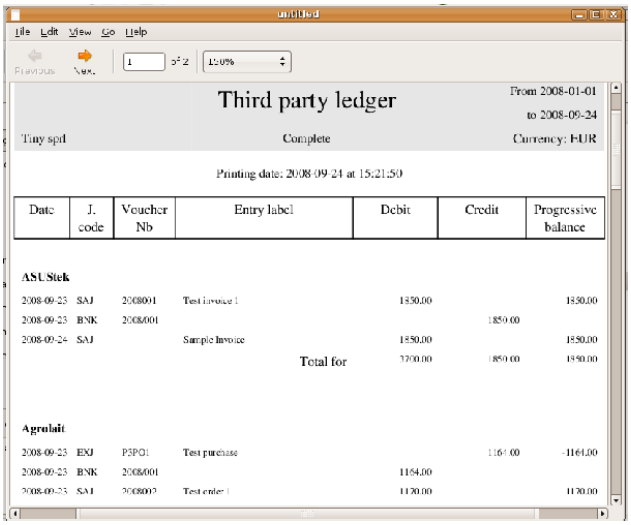


Figure 12.4: *Partner ledger*

Finally you can look up individual account entries by searching for useful information. To search for account entries:

- by journal, go through the menu *Financial Management → Entries Encoding → Entries Encoding by Line*,
- by account, go through the menu *Financial Management → Charts → Chart of Accounts* and double-click the appropriate account,
- by making a global search, go through the menu *Financial Management → Entries Encoding → Entries Encoding by Move* and searching,
- by partner, do it by navigating from a **Partner** field in any form that shows it to the partner then using the buttons to the right of the partner form.

Tip: *Exporting entries*
It's helpful to remember that you can export all types of resource in Open ERP. From the web client you need to navigate to a search list for the resource then click the ***Export*** *link at the bottom left of the list. From the GTK client you'd use the menu* Form → Export. *This enables you to easily make your own analysis in Microsoft Excel or OpenOffice.org Calc, by exporting accounting entries.*

12.1.2 Multi-step follow-ups

To automate the management of followups (reminders) you must install the module `account_followup`. This is installed automatically as part of the accounting profile, but is not part of the other profiles. Or you can install it alone.

Once the module is installed configure your levels of followup using the menu *Financial Management → Configuration → Follow-Ups*.

The levels of follow-up are relative to the date of creation of an invoice and not the due date. This enables you to put payment conditions such as 'payable in 21 days' and send a reminder in 30 days, or the converse.

For each level you should define the number of days and create a note which will automatically be added into the reminder letter. The sequence determines the order of the level in ascending order.

Table 12.1: Example of configuring followup levels

Sequence	Level	Days	Description
1	Level 1	30 days net	First payment reminder
2	Level 2	45 days net	Second reminder
3	Level 3	60 days from end of month	Put on notice

You can send your reminders by mail and/or email with the menu *Financial Management → Periodical Processing → Send followups*.

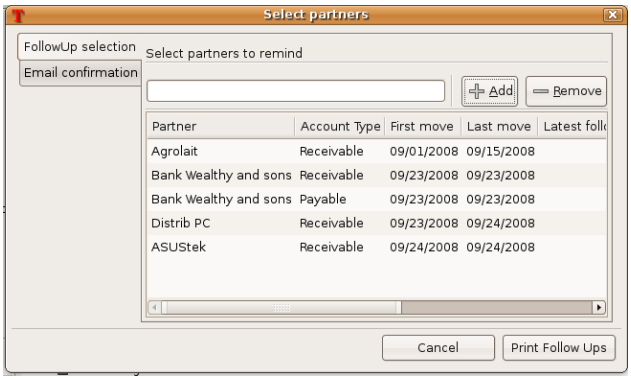


Figure 12.5: *Form for preparing follow-up letters*

Open ERP presents you with a list of partners who are due reminders, which you can modify before starting the procedure. On the second tab of the form you can supply the information you'll send in the email reminder.

The system then gives you a PDF report with all of the reminder letters for each partner. Each letter is produced in the language of the partner (if that's available) and you can therefore get letters in several languages in the same PDF on several pages.

To check the due date of customers and/or suppliers before starting the reminder procedure, use the menu *Financial Management → Periodical Processing → Send followups*. You get a list of unreconciled entries accounts. You can then modify the date and the last follow-up and the level of reminder for each entry.

To obtain a detailed report per partner use the menus in *Financial Management → Reporting → Follow-Ups*.

The different reports are standard Open ERP screens, so you can filter them and explore the elements in detail.

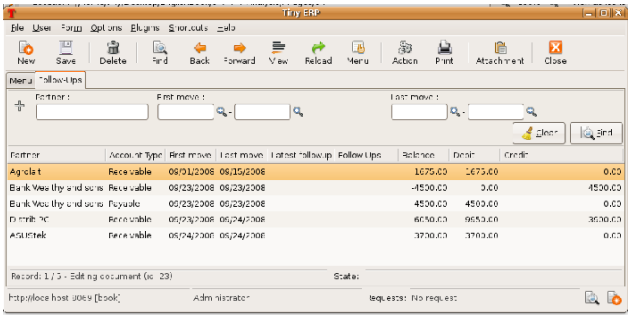


Figure 12.6: *Summary screen for follow-ups*

12.1.3 Partner situation

In daily use of Open ERP a manager will often need to search quickly for financial information amongst partner data. For this she can use the buttons to the right of form when she opens a partner form, to go directly to:

- a follow-up letter from the **Overdue payments** Report button,
- the list of open **Invoices**,
- a shortcut to **All account entries**,
- the unclosed CRM requests from **Open cases**,
- a shortcut to the unreconciled **Receivables and Payables**.

The exact links depend on the modules that are installed in Open ERP.

These links are also available to her using the navigation features such as right-clicking partner fields in the GTK client.

The **Overdue payments** report produces a PDF document which is used for follow-up but it doesn't modify any of the partner's accounting entries. Its use doesn't increase the follow-up level so you can run this report repeatedly without any problem.

In Open ERP you can search for a partner on the basis of the value of its trade receivables. So search for partners with a credit amount between 1 and 99999999 and you'll get a list of partners that owe you payment. You can then select the whole list and print follow-up letters for them all.

To the right of the partner form there's a shortcut to **Invoices**. This link includes all of the invoices defined in the systems, namely:

- customer invoices,
- supplier invoices,
- credit notes,
- supplier credit notes.

Tip: *Reminders from accounting entries*
Companies that do not have computerized records tend to keep track of payments from invoices and paperwork and not from a formal partner account.
It's better to create reminder letters from a partner's account receivable than from unpaid bills, however. By using the Open ERP system you can easily take account of all advances, unreconciled payments, credit notes and credit payments.
So it's better to send a letter based on the accounting entries of invoices and unreconciled payments than just on a list of unpaid invoices.

In the links appearing on the partner form, two buttons enable the opening of partner accounting entries:

- **All account entries**,
- **Receivables & Payables**.

The first button is useful for obtaining a historical analysis of the customer or supplier. You can get information about such significant items as sales volume and payment delays. The second button is a filter which shows only the open trade credits and debits for the partner.

12.2 Statutory taxes and accounts

This section deals with statutory taxes and accounts which are legally required from the company:

- the taxation structure provided by Open ERP,
- the accounts ledgers,
- account balance (used to produce the income statement and balance sheet),
- the different journals (general, centralized and detailed),
- the tax declaration.

Tip: *Other declarations*
In addition to the legal declarations available in the accounts modules, Open ERP supplies declarations based on the functionality in other modules. You can, for example, install the `report_intrastat` *module for intra-stat declarations about sending goods to and receiving goods from other countries.*

12.2.1 Taxation

You can attach taxes to financial transactions so that you can

- add taxes to the amount that you pay or get paid,
- report on the taxes in various categories that you should pay the tax authorities,
- track taxes in your general accounts,
- manage the payment and refund of taxes using the same mechanisms that Open ERP uses for other monetary transactions.

Since the detailed tax structure is a mechanism for carrying out governments' policies, and the collecting of taxes so critical to their authorities, tax requirements and reporting can be complex. Open ERP has a flexible mechanism for handling taxation that can be configured through its GUI or through data import mechanisms to meet the requirements of many various tax jurisdictions.

The taxation mechanism can also be used to handle other tax-like financial transactions, such as royalties to authors based on the value of transactions through an account.

Setting up a tax structure

Three main objects are involved in the tax system in Open ERP:

- a **Tax Case** (or **Tax Code**), used for tax reporting, that can be set up in a hierarchical structure so that multiple codes can be formed into trees in the same way as a Chart of Accounts.
- a **Tax**, the basic tax object that contains the rules for calculating tax on the financial transaction it's attached to, and is linked to the General Accounts and to the Tax Cases. A tax can contain multiple child taxes and base its calculation on those taxes rather than the base transaction, providing considerable flexibility. Each tax belongs to a **Tax Group** (currently just `VAT` or `Other`).
- the **General Accounts**, that record the taxes owing and paid. Since the general accounts are discussed elsewhere in this part of the book and are not tax-specific, they won't be detailed in this section.

You can attach zero or more **Supplier Tax** and **Customer Tax** items to products, so that you can account separately for purchase and sales taxes (or Input and Output VAT – where VAT is Value Added Tax). Because you can attach more than one tax, you can handle a VAT or Sales Tax separately from an Eco Tax on the same product.

You can also attach a **Default Tax** to a Partner, which replaces any taxes belonging to the same Tax Group that may have been defined in a Product.

So you can define a `Tax Exempt` tax in the `VAT` group and assign it to partners who declare themselves to be charities. All product sales to a charity would then be VAT free even if the products themselves carry various tax rates, but non-VAT taxes such as Eco-taxes can still be applied.

Tax Cases

Tax Cases are also known in Open ERP as Tax Codes. They're used for tax reporting, and can be set up in a hierarchical structure to form trees in the same way as a Chart of Accounts.

To create a new Tax Case, use the menu *Financial Management → Configuration → Taxes → Tax Codes*. You define the following fields:

- **Tax Case Name** : a unique name required to identify the Case,
- **Company** : a required link that attaches the Case to a specific company, such as the Main Company,
- **Case Code** : an optional short code for the case,
- **Parent Code** : a link to a parent Tax Case that forms the basis of the tree structure like a Chart of Accounts,
- **Sign for Parent** : choose 1.00 to add the total to the parent account or -1.00 to subtract it,
- **Description** : a free text field for documentation purposes.

You can also see two read-only fields:

- **Year Sum** : a single figure showing the total accumulated on this case for the financial year.

- **Period Sum** : a single figure showing the total accumulated on this case for the current financial period (perhaps 1 month or 3 months).

You will probably need to create two tax cases for each different tax rate that you have to define, one for the tax itself and one for the invoice amount that the tax is based on. And you'll create tax cases that you won't link to Tax objects (similar to General Account `View` types) just to organize the tree structure.

To view the structure that you've constructed you can use the menu *Financial Management → Reporting → Taxes Report → Chart of Taxes*. This tree view reflects the structure of the **Tax Cases** and shows the current tax situation.

Tax objects

Tax objects calculate tax on the financial transactions that they're attached to, and are linked to the General Accounts and to the Tax Cases.

To create a new Tax Case, use the menu *Financial Management → Configuration → Financial Accounting → Taxes → Taxes*. You define the following fields:

- **Tax Name** : a unique name required for this tax (such as `12% Sales VAT`),
- **Company** : a required link to a company associated with the tax, such as the Main Company,
- **Tax Group** : `VAT` or `Other` , used to determine which taxes on products can be substituted by taxes on partners,
- **Tax Type** : a required field directing how to calculate the tax: `Percent` , ''Fixed'' , `None` or `Python Code` , (the latter is found in the **Compute Code** field in the **Special Computation** tab),
- **Applicable Type** : a required field that indicates whether the base amount should be used unchanged (when the value is `True`) or whether it should be processed by Python Code in the **Applicable Code** field in the **Special Computation** tab when the value is `Code`),
- **Amount** : a required field whose meaning depends on the Tax Type, being a multiplier on the base amount when the **Tax Type** is `Percent` , and a fixed amount added to the base amount when the **Tax Type** is `Fixed` ,
- **Include in base amount** : when checked, the tax is added to the base amount and not shown separately,
- **Domain** : is only used in special developments, not in the core Open ERP system,
- **Invoice Tax Account** :a General Account used to record invoiced tax amounts, which may be the same for several taxes or split so that one tax is allocated to one account,
- **Refund Tax Account** : a General Account used to record invoiced tax refunds, which may be the same as the Invoice Tax Account or, in some tax jurisdictions, must be separated,
- **Tax on Children** : when checked, the tax calculation is applied to the output from other tax calculations specified in the **Childs Tax Account** field (so you can have taxes on taxes), otherwise the calculation is applied to the base amount on the transaction,
- **Tax included in Price** : when checked, the total value shown includes this tax,
- **Tax Application** : selects whether the tax is applicable to Sale, Purchase or All transactions,
- **Child Tax Accounts** : other tax accounts that can be used to supply the figure for taxation.

Tip: *Using Child Taxes*
You can use child taxes when you have a complex tax situation that you want to hide your end users from. For example, you might define a motor mileage expenses product with a composite tax made up of two child taxes – a non-reclaimable private element and a reclaimable business element (which is the case in some European countries). When your staff come to claim motor mileage, they do not need to know about this taxation, but the accounting impact of their claim will be automatically managed in Open ERP.

The fields above apply the taxes that you specify and record them in the general accounts but don't provide you with the documentation that your tax authorities might need. For this use the Tax Declaration tab to define which Tax Cases should be used for this tax:

- **Invoices/Base Code** : tax case to record the invoiced amount that the tax is based on,
- **Invoices/Tax Code** : tax case to record the invoiced tax amount
- **Credit Notes/Refund Base Code** : tax case to record the refund invoice amount that the tax is based on,
- **Credit Notes/Refund Tax Code** : tax case to record the refund invoice tax amount.

Use of Taxes on Products, Partners, Projects and Accounts

When you've created a tax structure consisting of Tax Cases and Tax objects, you can use the taxes in your various business objects so that financial transactions can be associated with taxes and tax-like charges.

Tip: *Retail Customers*
When you're retailing to end users rather than selling to a business, you may want to (or be required to) show tax-inclusive prices on your invoicing documents rather than a tax-exclusive price plus tax. To do this in Open ERP just install the `account_tax_include` *module. Each invoice is given a new* ***Price method*** *field, in which you choose* ***Tax included*** *or* ***Tax excluded****. Prices are then displayed appropriately.*

You can assign a tax to a Partner so that it overrides any tax defined in a Product. You'd do this, for example, if a partner was a charity and paid a lower or zero rate of VAT or Sales Tax on its purchases. Assuming that you have an appropriate Charities VAT or Sales Tax in the `VAT` **Tax Group**, use the menu *Partners → Partners* to open and edit a Partner form for the charity, then:

- select the **Properties** tab,
- set the **Default Tax** field to the `Charities VAT` tax.

You can assign multiple taxes to a Product. Assuming you have set up the appropriate taxes, you would use the menu *Products → Products* to open and edit a Product definition, then:

- select one or more **Customer Taxes** for any products that you might sell, which may include a `Sales Tax` or `Output VAT` , and a `Sales Eco Tax` ,
- select one or more **Supplier Taxes** for any products that you might purchase, which may include a `Purchase Tax` or `Input VAT` , and a `Purchase Eco Tax` .

Generally, when you make a purchase or sale, the taxes assigned to the product are used to calculate the taxes owing or owed. But when you make a transaction with a partner that has a **Default Tax** defined, for example a sale to a charity with `Charities ''\ \ ''Tax` , that tax will be used in place of other Product taxes in the same group – in this case replacing the standard `Sales Tax` or `Output VAT` .

You can also assign multiple taxes to a Project, so that invoices from the Project carry an appropriate rate of tax (project invoicing is dealt with in detail in *Internal Organization and Project Management*).

Note: *Tax regions*
The third-party module `import_export` *(currently in* `addons-extra` *can be used to extend Open ERP's tax system, so that you can assign taxes to different accounts depending on the location of the Partner. The* ***Partner*** *is given a new* ***Partner Location*** *field that can be set to Local, Europe or Outside, so that taxes and tax bases can be channelled to different accounts.*
This module could be the basis of more ambitious location-based tax accounting.

And you can assign multiple taxes to an account so that when you transfer money through the account you attract a tax amount. In such a case, this 'tax' may not be legally-required taxation but something tax-like, for example authors' royalties or sales commission.

12.2.2 The accounts ledgers and the balance sheet

To print the balance of accounts or the accounts ledgers you should turn to the Chart of Accounts. To do that go to the menu *Financial Management → Charts → Charts of Accounts*.

Select the accounting period and type of moves (all entries or just posted entries) you're interested in and click **Open Charts** to display the chart in a tree view, then select one or several accounts for analysis by clicking and highlighting the appropriate line(s). Click the **General Ledger**, the **Account balance**, or an **Analytic check** in the **Reports** toolbar at the right. If you select an account which has sub-accounts in the hierarchy you automatically analyze both that account and its child accounts.

Tip: *Simulated balance*
While you're printing account balances, if you have installed the `account_simulation` *module from addons-extra, Open ERP asks you which level of simulation to execute.*
Results will vary depending on the level selected. You could, for example, print the balance depending on various methods of amortization:

- *the normal IFRS method,*
- *the French method.*

More generally it enables you to make analyses using other simulation levels that you could expect.

The `account_reporting` module was developed to provide configurable reports for balance sheets or earnings statements in legally required formats.

12.2.3 The accounting journals

To obtain the different journals use the menu *Financial Management → Reporting → Journals*.

Note: *Journals*
Note there are different types of journal in Open ERP

- *accounting journals (detailed in this chapter),*
- *purchase journals (for distributing supplies provided on certain dates),*
- *sales journals (for example classifying sales by their type of trade),*
- *the invoice journals (to classify sales by mode of invoicing - daily / weekly / monthly - and automating the tasks.*

To get access to these different journals install the modules `sale_journal` *(found at the time of writing in* `addons`*, so available in a standard installation) and* `purchase_journal` *(found in* `addons-extra` *at the time of writing, so needing special installation).*

Then select one or several journals and click **Print**. Open ERP then proposes various reports:

- detailed accounting entries,
- general journal,
- journal grouped by account.

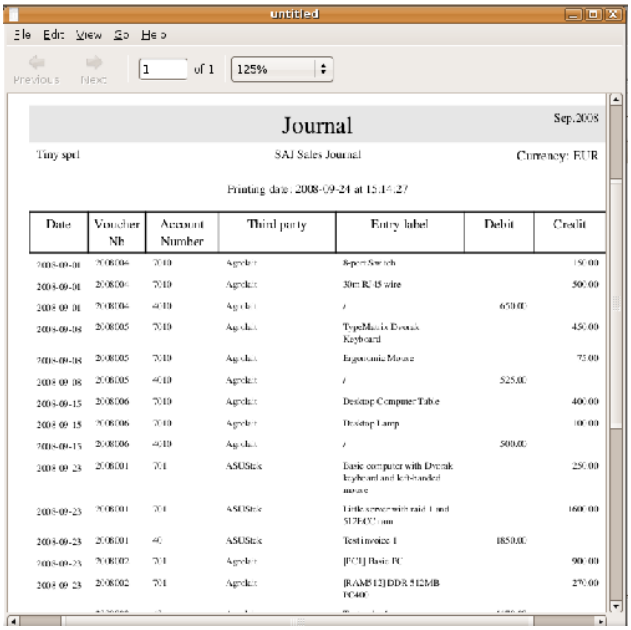


Figure 12.7: *Printing a journal*

12.2.4 Tax declaration

Information required for a tax declaration is automatically generated by Open ERP from invoices. In the section on invoicing you'll have seen that you can get details of tax information from the area at the bottom left of an invoice.

You can also get the information from the accounting entries in the columns to the right.

Open ERP keeps a tax chart that you can reach from the menu *Financial Management* → *Periodical Processing* → *Taxes*. The structure of the chart is for calculating the tax declaration but also all the other taxes can be calculated (such as the French DEEE).

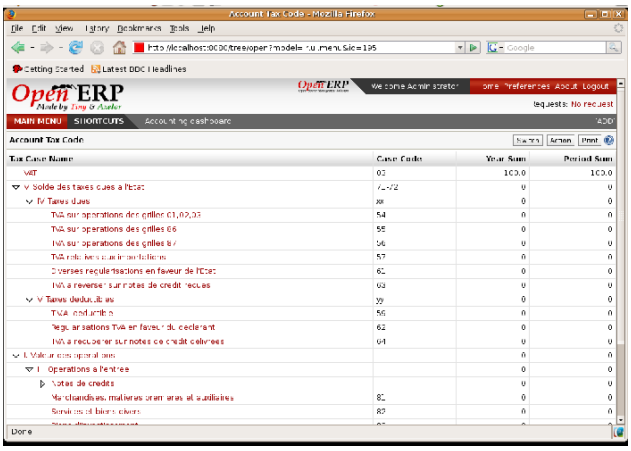


Figure 12.8: *Example of a Belgian TVA (VAT) declaration*

The tax chart represents the amount of each area of the tax declaration for your country. It's presented in a hierarchical structure which lets you see the detail only of what interests you and hides the less interesting subtotals. This structure can be altered as you wish to fit your needs.

You can create several tax charts if your company is subject to different types of tax or tax-like accounts, such as:

- authors' rights,
- ecotaxes such as the French DEEE for recycling electrical equipment.

Each accounting entry can then be linked to one of the tax accounts. This association is done automatically by the taxes which had previously been configured in the invoice lines.

Tip: *Tax declaration*
Some accounting software manages the tax declaration in a dedicated general account. The declaration is then limited to the balance in the specified period. In Open ERP you can create an independent chart of taxes, which has several advantages:

- *it's possible to allocate only a part of the tax transaction,*
- *it's not necessary to manage several different general accounts depending on the type of sale and type of tax,*
- *you can restructure your chart of taxes as you need.*

At any time you can check your chart of taxes for a given period using the report *Financial Management → Reporting → Taxes Reports → Print Taxes Report*.

This data is updated in real time. That's very useful because it enables you to preview at any time the tax that you owe at the start and end of the month or quarter.

Furthermore, for your tax declaration you can click on one of the tax accounts to investigate the detailed entries that make up the full amount. This helps you search for errors such as when you've entered an invoice at full tax rate when it should have been zero-rated for an inter-community trade or for a charity.

In some countries, tax can be calculated on the basis of payments received rather than invoices sent. In this instance choose **Base on** `Payments` instead of **Base on** `Invoices` in the **Select period** field. Even if you make your declaration on the basis of invoices sent and received it can be helpful to compare the two reports to see the amount of tax that you pay but haven't yet received from your customers.

12.3 Company Financial Analysis

You'll see here the analysis tools for your company's financial situation, in particular:

- management indicators,
- budgets,
- the accounting dashboard.

12.3.1 Management Indicators

Note: *Financial Indicators*
Indicators, sometimes called financial ratios, are tools for analyzing a company's finances. They enable you to compare two accounts or sets of accounts from the balance sheet or the profit and loss account, in the form of a ratio. They also let you measure the financial health of a company and make comparisons from one year to the next or against those of other companies.

To define financial indicators in Open ERP you should install the module `account_report`. When installing the module the usual financial indicators are registered in Open ERP.

You can consult your indicators, calculated in real time, from the menu *Financial Management → Reporting → Custom Reports*.

Indicators defined by default in Open ERP are the following:

- **Indicators of Working Capital** : determines if the company can pay its short term debts in normal conditions. It's calculated from `(Stocks + Cash + Current Assets) / Current Liabilities.`
- **Financial Ratios** : enables you to calculate the company's liquidity. It is defined as follows: `( Current Assets - Stocks) / Current Liabilities.`
- **Fixed Assets** : in a going concern, the value of fixed assets are covered in the first place by owners' capital and in the second place by all of the long term liabilities. Ideally this indicator will be greater than 1.

Tip: *Calculation of indicators*
Calculating indicators can take quite a while in Open ERP because you have to analyse the whole company's accounting entries.
So it's best not to calculate all of the indicators at once, but just a small selection to keep calculation time within limits.

Time analysis of indicators

You can analyze the financial indicators along two axes. You must have a figure calculated at a particular instant of time when you compare accounts, balances and the ratios between them. But you can also calculate a time series to follow the change of a given indicator throughout the life of the company. To do a temporal analysis of your indicators, you must install the module `account_report_history` from the set of modules in addons-extra.

Once this module is installed, you can click on a financial indicator to get a graph of its evolution in time.

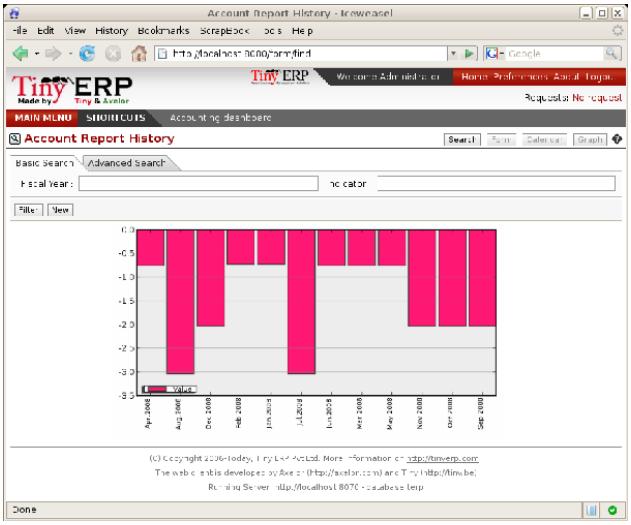


Figure 12.9: *History of an accounting indicator*

Defining your own indicators

You can define your own indicators in Open ERP using the menu *Financial Management → Configuration → Custom Reporting → New Reporting Item Formula*.

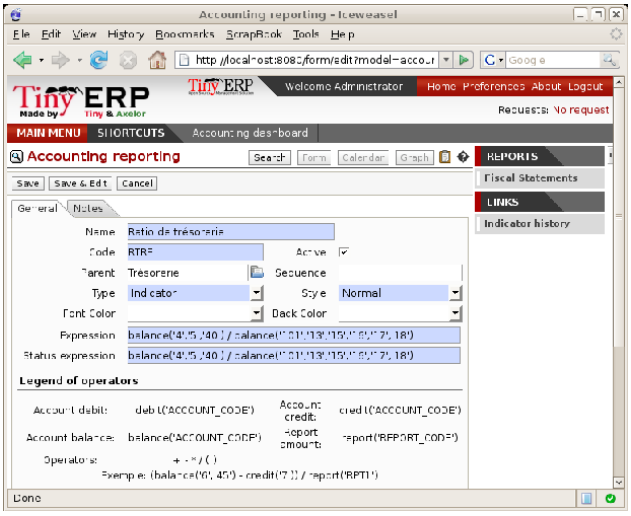


Figure 12.10: *Defining a new indicator*

You should make sure that the accounts that you base indicators on are given unique account codes, because codes are used in the creation of formulae. Create a formula using the syntax indicated in the instructions at the bottom of the form:

- Sum of debits in a general account: `debit('12345')`,
- Sum of credits in a general account: `credit('12345')`,
- Balance of a general account: `balance('12345')`,
- Value of another indicator: `report ('IND')`.

where:

- `12345` represents the code of a general account,
- `IND` represents the code of another indicator.

So, using this notation, the cash ratio is defined by `balance('4', '5') / balance('1')` – that's the balance in accounts 4 and 5 divided by the balance in account 1.

12.3.2 Good management budgeting

Open ERP manages its budgets using both General and Analytic Accounts. You'll see how to do this here for General Accounts and then in *Analytic Accounts* for Analytical Accounts. Install `account_budget` to be able to do this.

Use the menu *Financial Management* → *Configuration* → *Budgets* → *General Budgets* to define a new budget.

Tip: *Budget Revisions*
Even though you can *modify a budget at any time to make a revision of it, it's best if you don't do that. Rather than edit an existing budget document, make a new version so that you can keep your original estimates safe for comparison. This lets you analyze your changing perspectives of the company from revision to revision.*

Begin data entry by entering a **Name**, a **Code**, and a **Start Date** and an **End Date** in your new budget. Then you can define the budgeted amounts within that period, one by one. For each, you define:

- an **Analytic Account**

- a **Budgetary Position** : for example **Sales** or **Purchases**,
- a **Start Date** and **End Date** for the use of the budget,
- a **Planned Amount** in the default currency of the chart of accounts.

Once it's completed you can save your budget.

To print a budget and make calculations of expenditure to budget use the menu *Financial Management* → *Budgets* → *Budget* Open ERP then gives you a list of available budgets. Select one or more budgets and then click **Print Budgets** to create the report for each in a date range of your choosing. The figure *Printing a budget* gives an example of a budget produced by Open ERP.

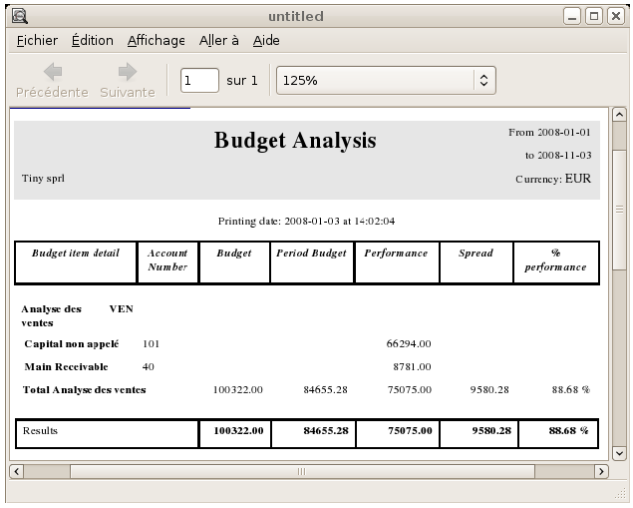


Figure 12.11: *Printing a budget*

You could also use the menu *Financial Management* → *Reporting* → *Budgets* which gives you a choice of one or more **Budgetary Position** entries before clicking **Budget** and choosing a date range. This gives a budgetary analysis report for each of the positions.

12.3.3 The Accounting Dashboard

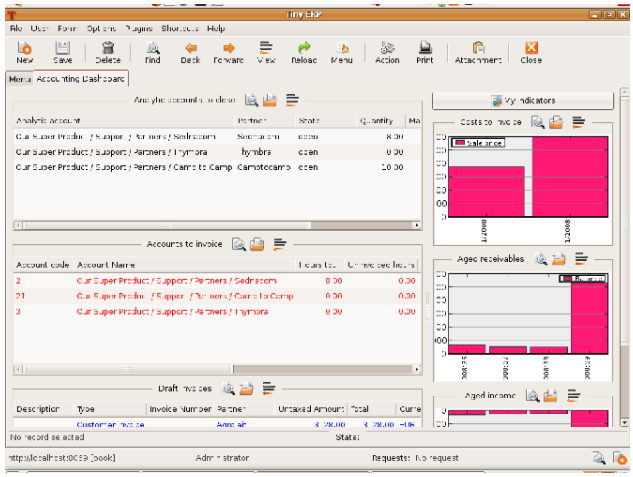


Figure 12.12: *Accounting Dashboard*

If you've installed the module `board_account`, Open ERP gives you an accounting dashboard that can be presented to your accounting staff as they sign into the system (if you have set it as their Home Page). This dashboard provides an analysis of the company's financial health at a glance.

This gives a description of the different parts of the dashboard, from top to bottom then from left to right:

- **Analytic accounts to close** : when you're managing cases each analytical account is a project or a contract. This area gives the accounts that must be closed (for example, contracts expired, support hours exceeded).
- **Accounts to invoice** : shows analytical accounts where there are charges to be invoiced.
- **Draft invoices** : gives the list of invoices waiting to be approved by an accountant.
- **Costs to invoice** : gives the weekly changes which can be, but haven't yet been, invoiced.
- **Aged receivables** : gives a weekly graph of the receivables that haven't yet been reconciled.
- **Aged income** : gives a weekly graph of the company's turnover.

In each panel of the accountants' dashboard you can click the **Zoom** button at the top right to investigate the detail of your financial indicators.

The Accounting dashboard is dynamically integrated, which means that you can navigate easily through the data if you want more detail about certain factors, and edit the entries if necessary.

CHAPTER

THIRTEEN

CONFIGURING ACCOUNTS FROM A TO Z

Accounts must be configured to meet your company's needs. This chapter explains how to modify your chart of accounts, journals, access rights, initial account balances, and default values for the initial configuration of your Open ERP accounts.

Assuming that it calculates sufficiently accurately, the best accounting software would be marked out by its usability and simplicity of data entry, and flexibility in configuring its different components. You'd be able to easily modify the accounting module to meet your own needs so that you could optimize it for the way you want to use it.

Open ERP lets you adapt and reconfigure many functions to ease the task of data entry:

- adding controls for data entry,
- customizing the screens,
- filling fields automatically during data entry with data that's already known to the system.

For this chapter you should start with a fresh database that includes demo data, with `sale` and its dependencies installed and no particular chart of accounts configured.

13.1 Chart of Accounts

On installation, the software is given a default chart of accounts that's the same regardless of your country. To install the chart of accounts and tax definitions for your own country install the module `l10n_XX` where XX represents your country code in two letters. For example to get the chart of accounts for France install the module `l10n_fr`.

Some of these pre-built modules are comprehensive and accurate, others have rather more tentative status and are simply indicators of the possibilities. You can modify these, or build your own accounts onto the default chart, or replace it entirely with a custom chart.

You view active charts of accounts using the menu *Financial Management → Charts → Charts of Accounts*, and **Open Charts** for the selected year and account moves.

Note: *Hierarchical charts*
Most accounting software packages represent their charts of accounts in the form of a list. You can do this in Open ERP as well if you want to, but its tree view offers several advantages:

- *it lets you show and calculate only the accounts that interest you,*
- *it enables you to get a global view of accounts (when you show only summary accounts),*
- *it simplifies searches semantically,*
- *it's more intuitive, because you can search for accounts on the basis of their classification,*
- *it's flexible because you can easily restructure them.*

The structure of the chart of accounts is hierarchical, with account subtotals called account views. You can develop a set of account views to contain only those elements that interest you.

To get the detail of the account entries that are important to you, all you need to do is click the account's **Code** (if you have no codes, you can select the line, then click **Switch** to get the acount definition, then click the **Entries** in the **LINKS** part of the toolbar).

Displaying the chart of accounts can take several seconds because Open ERP calculates the debits, credits and balance for each account in real time. If you just want to work with a chart of accounts that has structure but shows no totals, use the function *Financial Management → Charts → Charts of Accounts → Fast Charts of Accounts*.

13.1.1 Creating a chart of accounts

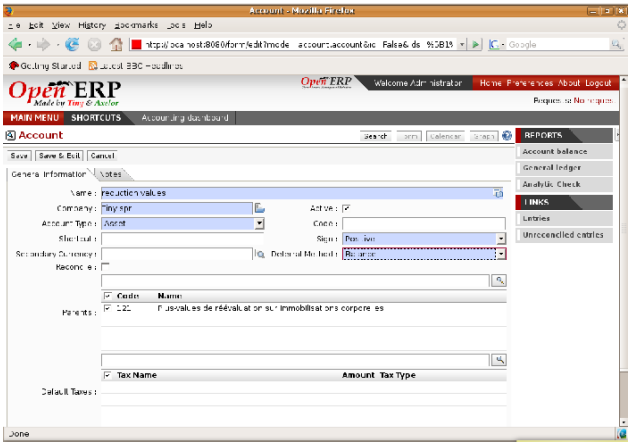


Figure 13.1: *Definition of an account*

To add, modify or delete existing accounts, use the menu *Financial Management → Configuration → Financial Accounting → Financial Accounts → List of Accounts*.

Tip: *Multi-lingual fields*
In Open ERP multi-lingual fields are marked by a small flag to their right. Click on the flag to get a translation of the value of the field in the different installed languages. You can also edit the translation.
This enables you to efficiently manage other languages as you need them. The field's value appears in the language of the logged-in user or, in the case of reports printed for a partner, that of the partner.

The main account fields are:

- **Name** : the name of the account is a multi-lingual field, which is why there's a little flag to the right. Give the field a name.

- **Active** : if you deactivate an account (by unchecking the box) it will no longer be visible in the chart of accounts but can be reactivated later. Only accounts which aren't needed for account entries can be deactivated.
- **Account Type** : account types determine an account's use in each journal. By default the following types are available: **View**,:guilabel:*Receivable*, **Payable**, **Income**, **Expense**, **Tax**, **Cash**, **Asset**, **Equity**. You can add new types through the menu *Financial Management → Configuration → Financial Accounting → Financial Accounts → Account Types*. Use the **View** type for accounts that make up the structure of the charts and have no account data inputs of their own.

Note: *Type of account*
*The account types are mainly used as an informative title. The only two types that have any particular effect are **Receivables** and **Payables**.*
These two types are used by reports on partner credits and debits. They're calculated from the list of unreconciled entries in the accounts of one of these two types.

- **Account Number** : the code length isn't limited to a specific number of digits. Use code 0 for all root accounts.
- **Currency** : the default currency for that account.
- **Deferral Method** : determines how to treat the account and its entries at the closing of the books at the end of the year. Four methods are available:
  - **Balance** : an entry is generated for the account balance and carried across to the new year (generally used for bank accounts),
  - **None** : no accounting entries are transferred across to the new financial year (generally for classes 6 and 7),
  - **Detail** : all entries are kept for the new fiscal year,
  - **Unreconciled** : only unreconciled entries are carried over to the new fiscal year (usually used for third-party accounts).
- **Reconcile** : determines if you can reconcile the entries in this account. Activate this field for partner accounts and for chequing (checking) accounts.
- **Parents** : determines which account is the parent of this one, to create the tree structure of the chart of accounts.
- **Default Taxes** : this is the default tax applied to purchases or sales using this account. It enables the system to generate tax entries automatically when entering data in a journal manually.

The tree structure of the accounts can be altered as often and as much as you wish without recalculating any of the individual entries. So you can easily restructure your account during the year to reflect the reality of the company better.

13.1.2 Using virtual charts of accounts

The structure of a chart of accounts is imposed by the legislation in effect in the country of concern. Unfortunately that structure doesn't always correspond to the view that a company's CEO needs.

In Open ERP you can use the concept of virtual charts of accounts to manage several different representations of the same accounts simultaneously. These representations can be shown in real time with no additional data entry.

So your general chart of accounts can be the one imposed by the statutes of your country, and your CEO can then have other virtual charts as necessary, based on the accounts in the general chart. For example the CEO can create a view per department, a cash-flow and liquidity view, or consolidated accounts for different companies.

The most interesting thing about virtual charts of accounts is that they can be used in the same way as the default chart of accounts for the whole organization. For example you can establish budgets from your consolidated accounts or from the accounts from one of your companies.

Tip: *Virtual accounts*
Virtual accounts enable you to provide different representations of one or several existing charts of accounts. Creating and restructuring virtual accounts has no impact on the accounting entries. You can then use the virtual charts with no risk of altering the general chart of accounts or future accounting entries.
Because they're used only to get different representation of the same entries they're very useful for:

- *consolidating several companies in real time,*
- *depreciation calculations,*
- *cash-flow views,*
- *getting more useful views than those imposed by statute,*
- *presenting summary charts to other users that are appropriate to their general system rights.*

So there are good reasons for viewing the execution of financial transactions through virtual charts, such as budgets and financial indicators based on special views of the company.

To create a new chart of accounts you should create a root account using the menu *Financial Management → Configuration → Financial Accounting → Financial Accounts → List of Accounts*. Your top level account should have **Code** `0` and **Type** `View` . Then you can choose your structure by creating other accounts of **Type** `View` as necessary. Check your virtual structure using the menu *Financial Management → Charts → Charts of Accounts*.

Finally, when you've got your structure, you must make the general accounts and virtual accounts match. For that search the general accounts and ensure that each non-`View` account there also has a virtual account in the field **Parents**.

You can then check through your general chart of accounts as well as your virtual charts which give you another representation of the company. All the actions and states in your general account are also available in the virtual accounts.

Finally you can also make virtual charts of accounts from other virtual charts. That can give an additional dimension for financial analysis.

13.2 Journals

All your accounting entries must appear in an accounting journal. So you must, at a minimum, create a Sales Journal for customer invoices, a Purchase Journal for supplier invoices and a Cash Journal for cash and bank transactions.

13.2.1 Configuring a Journal

To view, edit or create new journals use the menu *Financial Management → Configuration → Financial Accounting → Financial Journals*.

Just like General accounts, the journals can be deactivated to make them invisible: uncheck the **Active** checkbox for that.

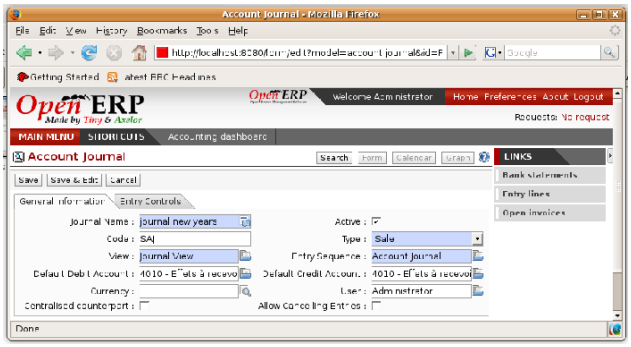


Figure 13.2: *Definition of an accounting journal*

You have to associate a view with each journal. The journal view indicates the fields that must be visible and required to enter accounting data in that journal. The view determines both the order of the fields and the properties of each field. For example the field **Account Number** must appear when entering data in the bank journal but not in the other journals.

Before creating a new view for a journal check that there's nothing similar already defined for another journal. You should only create a new view for new types of journal.

Note: *Customizing views*
You'll often have to edit a journal view. For example, for a journal in a foreign currency you add a field for the currency and this currency must be in the journal view.
Conversely, to simplify data entry the journal view for the bank is quite different from one of the invoicing journals.

You can create a sequence for each journal. This sequence gives the automatic numbering for accounting entries. Or several journals can use the same sequence if you want to define one for them all.

The credit and debit account by default permit the automatic generation of counterpart entries when you're entering data in the journal quickly. For example, in a bank journal you should put an associated bank account for default matching credits and debits, so that you don't have to create counterparts for each transaction manually.

A journal can be marked as being centralized. When you do this, the counterpart entries won't be owned by each entry but globally for the given journal and period. You'll then have a credit line and a debit line centralized for each entry in one of these journals, meaning that both credit and debit appear on the same line.

13.2.2 Controls and aids for data entry

You can carry out two types of control on Journals in Open ERP – controls over the financial accounts and access controls for groups of users. In addition to these controls you can also apply all of the rights management detailed in *Configuration & Administration*.

To avoid mistakes while entering accounts data, you can place conditions in the general accounts about who can use a given account. To do this, you must list all the accounts or valid account types in the second tab, **Entry Controls**. If you haven't added any accounts there, Open ERP applies no restriction on data entry in the accounts or journals. If you list accounts and the types of account that can be used in a journal, Open ERP prevents you from using any account not in that list. This verification step starts from the moment you save the entry.

This functionality is useful for limiting possible data entry errors. Also, in a bank journal it's possible to restrict the accounts that can be linked to a bank to classes 1 to 5. Using this you'd help prevent the user from making any false entries in the journal.

Tip: *Control of data entry*
In accounting it's not a good idea to allow a data entry directly from bank account A to bank account B. If you enter a transaction from bank A to bank B the transaction will be accounted for twice.
To prevent this problem, pass the transaction through intermediate account C. At the time of data entry the system checks the type of account that's accepted in the bank journal: only accounts that aren't of type Bank are accepted.
If your accountant defines this control properly, non-accounting users are prevented from transferring payment from one bank to another, reducing your risks.

13.3 Periods and fiscal years

Note: *Periods and fiscal years*
A fiscal year corresponds to twelve months for a company. In many countries, the fiscal year corresponds to a calendar year. That's not the case in others.
The fiscal year is divided into monthly or three-monthly accounting periods.

Open ERP's management of the fiscal year is flexible enough to enable you to work on several years at the same time. This gives you several advantages, such as creating three-year budgets, and statements straddling several calendar years.

13.3.1 Defining a period or a fiscal year

To define your fiscal year use the menu *Financial Management* → *Configuration* → *Financial Accounting* → *Periods* → *Fiscal Year*. You can create several years in advance to define long-term budgets.

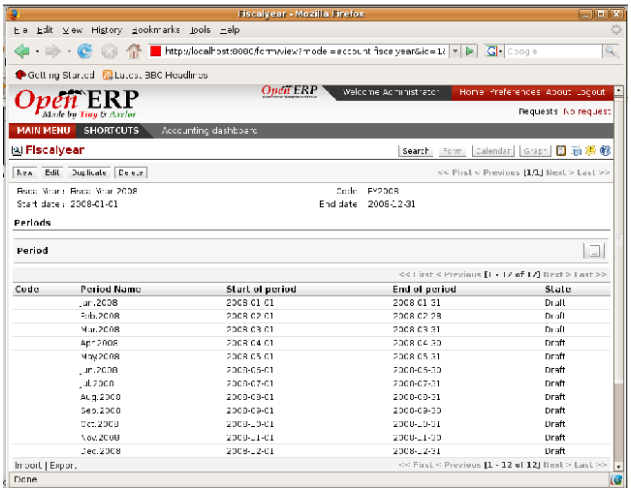


Figure 13.3: *Defining a financial year and periods*

First enter the date of the first day of your fiscal year and the last day. Then to create the periods click one of the two buttons at the bottom depending on whether you want to create twelve 1-month or four 3-month periods:

- **Create monthly periods** ,
- **Create 3-monthly periods** .

13.3.2 Closing the end of the year

To close the end the year, use the menu *Financial Management → End of year processing → Close a Fiscal Year*. A form opens asking you for the essential information it needs to create entries to start the following year.

When the year is closed you can no longer create or modify any financial transactions in that year. So you should always make a backup of the database before closing the fiscal year. Closing a year isn't obligatory and you could easily do that sometime in the following year when your accounts are finally sent to the statutory authorities, and no further modifications are permitted.

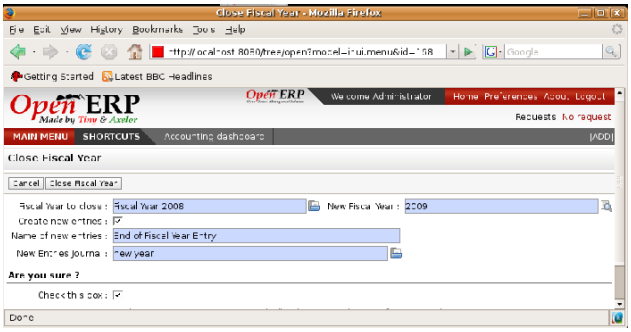


Figure 13.4: *Closing a financial year*

It's also possible to close an accounting period. You could for example close a monthly period when a tax declaration has been made. When a period is closed you can't modify any of the entries in that period. To close an accounting period use the menu *Financial Management → Configuration → Periodical Processing → End of Year Treatments → Close a Period*.

13.4 Payment Terms

You can define whatever payment terms you need in Open ERP. Payment terms determine the due dates for paying an invoice.

To define new payment terms, use the menu *Financial Management → Configuration → Payment Terms* and then click **New**.

The figure below represents the following payment term: 35% on delivery, the balance 15 days after the end of the month.

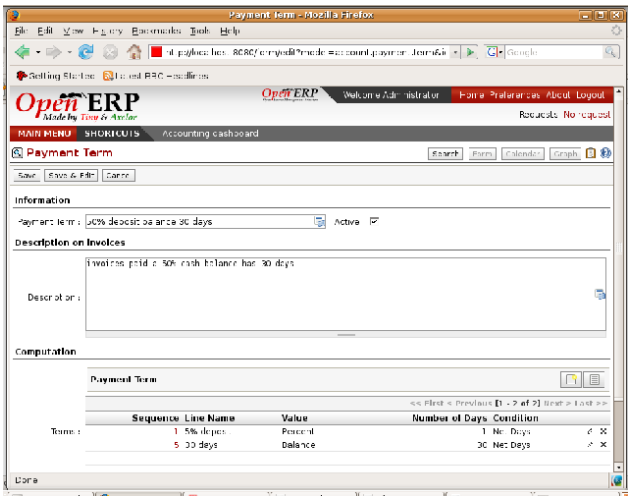


Figure 13.5: *Configuring payment terms*

To configure new conditions start by giving a name to the **Payment Term** field. Text that you put in the field **Description** is used on invoices, so enter a clear description of the payment terms there.

Then create individual lines for calculating the terms in the section **Payment Term**. You must give each line a name (**Line Name**). These give an informative title and don't affect the actual calculation of terms. The **Sequence** field lets you define the order in which the rules are evaluated.

The **Value** field enables you to calculate the amount to pay for each line:

- **Percent** : the line corresponds to a percentage of the total amount, the factor being given in **Amount**. The number indicated in the Amount must take a value between 0 and 1.
- **Fixed amount** : this is a fixed value given by the **Amount** box.
- **Balance** : indicates the balance remaining after accounting for the other lines.

Think carefully about setting the last line of the calculation to `Balance` to avoid rounding errors. The highest sequence number is evaluated last.

The two last fields, **Number of Days** and **Condition**, enable the calculation of the delay in payment for each line, The delay **Condition** can be set to `Net Days`or `End of Month` . For example if you set it to 15 days from the end of the month Open ERP adds 15 days to today's date and then sets the payment date to be the end of the month that the new date is in. So the payment date for 15 days from month end will be:

- 31 January if today is 5 January,
- 28 February if today is 20 January.

You can then add payment terms to a Partner through the **Properties** on the partner form.

13.5 Entries at the start of a year

To upgrade your various accounts, create a Journal of type **Situation** in **Centralized counterpart** mode to avoid a counterpart on each line.

For each account that needs upgrading, enter account data in the journal. For this operation use the menu *Financial Management → Entries Encoding → Entries Encoding by Line*.

You can also use Open ERP's generic import tool if you load the balance of each of your accounts from other accounting software.

Part V

Effective Management of Operations

Your company is a closely interlinked jumble of people and processes that form the whole system. If you want it to be efficient, and to be able manage it effectively, you have to organize it, make it systematic, and optimize its major operations. Isolated spots of poor management can disturb the whole added value chain.

This part presents an approach to greater efficiency, showing concrete solutions by applying Open ERP to different problems in a services company. For each enterprise function, Open ERP enables you to automate the recurring tasks, systematize complex processes, simplify the transmission of information, and control all your operations.

CHAPTER

FOURTEEN

ANALYTIC ACCOUNTS

Sitting at the heart of your company's processes, analytic accounts (or cost accounts) are indispensable tools for managing your operations well. Unlike your financial accounts they're for more than accountants - they're for general managers and project managers, too.

You need a common way of referring to each user, service, or document to integrate all your company's processes effectively. Such a common basis is provided by analytic accounts (or management accounts, or cost accounts, as they're also called) in Open ERP.

Analytic accounts are often presented as a foundation for strategic enterprise decisions. But because of all the information they pull together, Open ERP's analytic accounts can be a useful management tool, at the center of most system processes

There are several reasons for this:

- they reflect your entire management activity,
- unlike the general accounts, the structure of the analytic accounts isn't regulated by legal obligations, so each company can adapt it to its needs.

Note: *Independence from general accounts*
In some software packages, analytic accounts are managed as an extension of general accounts – for example, by using the two last digits of the account code to represent analytic accounts.
In Open ERP, analytic accounts are linked to general accounts but are treated totally independently. So you can enter various different analytic operations that have no counterpart in the general financial accounts.

While the structure of the general chart of accounts is imposed by law, the analytic chart of accounts is built to fit a company's needs closely.

Just as in the general accounts, you'll find accounting entries in the different analytic accounts. Each analytic entry can be linked to a general account, or not, as you wish. Conversely, an entry in a general account can be linked to one, several, or no corresponding analytic accounts.

You'll discover many advantages of this independent representation below. For the more impatient, here are some of those advantages:

- you can manage many different analytic operations,
- you can modify an analytic plan on the fly, during the course of an activity, because of its independence,
- you can avoid an explosion in the number of general accounts,
- even those companies that don't use Open ERP's general accounts can use the analytic accounts for management.

Tip: *Who benefits from analytic accounts?*
Unlike general accounts, analytic accounts in Open ERP aren't so much an accounting tool for Accounts as a management tool for everyone in the company. (That's why they're also called management accounts.)
The main users of analytic accounts should be the directors, general managers and project managers.

Analytic accounts make up a powerful tool that can be used in different ways. The trick is to create your own analytic structure for a chart of accounts that closely matches your company's needs.

For this chapter you should start with a fresh database that includes demo data, with `sale` and its dependencies installed and no particular chart of accounts configured.

14.1 To each enterprise [his] own analytic chart

To illustrate analytic accounts clearly, you'll follow three use cases, each in one of three different types of company:

1. An industrial manufacturing enterprise.
2. A law firm.
3. An IT services company.

14.1.1 Case 1: an industrial manufacturing enterprise

In industry, you'll often find analytic charts of accounts structured into the departments and products that the company itself is built on.

So the objective is to examine the costs, sales and margins by department and by product. The first level of the structure comprises the different departments and the lower levels represent the product ranges that the company makes and sells.

Note: *Analytic chart of accounts for an industrial manufacturing company*

1. *Marketing Department*
2. *Commercial Department*
3. *Administration Department*
4. *Production*
    - *Product Range 1*
    - *Sub-groups*
    - *Product Range 2*

In daily use it's useful to mark the analytic account on each purchase invoice. The analytic account is the one to which the costs of that purchase should be allocated. When the invoice is approved it will automatically generate the entries for both the general and the corresponding analytic accounts. So, for each entry on the general accounts there's at least one analytic entry that allocates costs to the department that incurred them.

Here's a possible breakdown of some general accounting entries for the example above, allocated to various analytic accounts:

Table 14.1: Breakdown of general and analytic accounting entries (Case 1)

General accounts					**Analytic accounts**	
Title	Account	Debit	Credit		Account	Value
Purchase of Raw Material	600	1500			Production / Range 1	1 500
Subcontractors	602	450			Production / Range 2	-450
Credit Note for defective materials	600		200		Production / Range 1	200
Transport charges	613	450			Production / Range 1	-450
Staff costs	6201	10000			Marketing	-2 000
					Commercial	-3 000
					Administrative	-1 000
					Production / Range 1	-2 000
					Production / Range 2	2 000
PR	614	450			Marketing	450

The analytic representation by department enables you to investigate the costs allocated to each department in the company.

So the analytic chart of accounts shows the distribution of the company's costs using the example above:

Table 14.2: Analytic chart of accounts (Case 1)

Account	**Total**
Marketing Department	-2 450
Commercial Department	-3 000
Administration Department	-1 000
Production	-6 200
Product Range 1	-3 750
Product Range 2	-2 450

In this example of a hierarchical structure in Open ERP you can analyze not only the costs of each product range but also the costs of the whole of production. The balance of a summary account (*Production*) is the sum of the balances of the child accounts.

A report that relates both general accounts and analytic accounts enables you to get a breakdown of costs within a given department. An analysis of the Production / Product Range 1 department is shown in this table:

Table 14.3: Report merging both general and analytic accounts for a department (Case 1)

Production / Product Range 1	
General Account	Amount
600 – Raw Materials	1 300
613 – Transport charges	- 450
6201 – Staff costs	-2 000
Total	-3 750

The examples above are based on a breakdown of the costs of the company. Analytic allocations can be just as effective for sales. That gives you the profitability (sales - costs) of different departments.

Note: *Representation by unique product range*
This analytic representation by department and by product range is usually used by trading companies and industries. A variant of this is not to break it down by sales and marketing departments but to assign each cost to its corresponding product range. This will give you an analysis of the profitability of each product range.
Choosing one over the other depends on how you look at your marketing effort. Is it a global cost allocated in some general way or does each product range have responsibility for its own marketing costs?

14.1.2 Case 2: a law firm

Law firms generally adopt management by case where each case represents a current client file. All of the expenses and products are then attached to a given file.

A principal preoccupation of law firms is the invoicing of hours worked and the profitability by case and by employee.

Mechanisms used for encoding the hours worked will be covered in detail in the following chapter, *Organization of Human Resources*. Like most system processes, hours worked are integrated into the analytic accounting. Every time an employee enters a timesheet for a number of hours, that automatically generates analytic accounts corresponding to the cost of those hours in the case concerned. The hourly charge is a function of the employee's salary. So a law firm will opt for an analytic representation which reflects the management of the time that employees work on the different client cases.

Note: Example Representation of an analytic chart of accounts for a law firm

1. *Absences*
   - *Paid Absences*
   - *Unpaid Absences*
2. *Internal Projects*
   - *Administrative*
   - *Others*
3. *Client cases*
   - *Client 1*
   - *Case 1.1*
   - *Case 1.2*
   - *Client 2*
   - *Case 2.1*

All expenses and sales are then attached to a case. This gives the profitability of each case and, at a consolidated level, of each client.

Billing for the different cases is a bit unusual. The cases don't match any entry on the general account and nor do they come from purchase or sale invoices. They're represented by the various analytic operations and don't have exact counterparts in the general accounts. They're calculated on the basis of the hourly cost per employee. These entries are automatically created on billing worksheets.

At the end of the month when you pay salaries and benefits, you integrate them into the general accounts but not in the analytic accounts, because they've already been accounted for in billing each account. A report that relates data from the analytic and general accounts then lets you compare the totals, so you can readjust your estimates of hourly cost per employee depending on the time actually worked.

The following table gives an example of different analytic entries that you can find for your analytic account:

Table 14.4: Analytic entries for the account chart (Case 2)

Title	Account	Amount		General Account	Debit	Credit
Study the file (1 h)	Case 1.1	-15				
Search for information (3 h)	Case 1.1	-45				
Consultation (4 h)	Case 2.1	-60				
Service charges	Case 1.1	280		705 – Billing services		280
Stationery purchase	Administrative	-42		601 – Furniture purchase	42	
Fuel Cost -Client trip	Case 1.1	-35		613 – Transports	35	
Staff salaries				6201 – Salaries		3 000

You'll see that it allows you to make a detailed study of the profitability of different transactions. In this example the cost of Case 1.1 is 95.00 (the sum of the analytic costs of studying the files, searching for information and service charges), but has been invoiced for 280.00, which gives you a gross profit of 185.00.

But an interest in analytical accounts isn't limited to a simple analysis of the profitability of different cases.

This same data can be used for automatic recharging of the services to the client at the end of the month. To invoice clients just take the analytic costs in that month and apply a selling price factor to generate the invoice. Invoicing mechanisms for this are explained in greater detail in *Services Management*. If the client requires details of the services used on the case, you can then print the service entries in the analytic account for this case.

Tip: *Invoicing analytic costs*
Most software that manages billing enables you to recharge for hours worked. In Open ERP these services are automatically represented by analytic costs. But many other Open ERP documents can also generate analytic costs, such as credit notes and purchases of goods.
So when you invoice the client at the end of the month it's possible for you to include all the analytic costs, not just the hours worked. So, for example you can easily recharge the whole cost of your journeys to the client.

14.1.3 Case 3 : An IT Services Company

Most IT services companies face the following problems:

- project planning,
- invoicing, profitability and financial follow-up of projects,
- managing support contracts.

To deal with these problems you'd use an analytic chart of accounts structured by project and by contract. A representation of that is given in the following example.

Note: Example Analytic representation of a chart of accounts for an IT Services company

1. *Internal Projects*
    - *Administrative and Commercial*
    - *Research and Development*
2. *Client Projects*
    - *Client 1*
    - *Project 1.1*
    - *Project 1.2*
    - *Client 2*
    - *Project 2.1*
    - *Project 2.2*
3. *Support Contracts – 20h*
    - *Customer X*
    - *Customer Y*

The management of services, expenditures and sales is similar to that presented above for lawyers. Invoicing and the study of profitability are also similar.

But now look at support contracts. These contracts are usually limited to a prepaid number of hours. Each service posted in the analytic accounts shows the remaining available hours of support. For the management of support contracts you'd use the quantities and not the amounts in the analytic entries.

In Open ERP each analytic line lists the number of units sold or used, as well as what you'd usually find there – the amount in currency units (USD or GBP, or whatever other choice you make). So you can sum the quantities sold and used on each analytic account to determine whether any hours of the support contract remain. To differentiate services from other costs in the analytic account you use the concept of the analytic journal. Analytic entries are then allocated into the different journals:

- service journal,
- expense journal,
- sales journal,
- purchase journal.

So to obtain the detailed breakdown of a support contract you only have to look at the service journal for the analytic account corresponding to the contract in question.

Finally, the analytic account can be used to forecast future needs. For example, monthly planning of staff on different projects can be seen as an analytic budget limited to the service journal. Accounting entries are expressed in quantities (such as number of hours, and numbers of products) and in amounts in units of currency (USD or GBP perhaps).

So you can set up planning on the basis just of quantities. Analyzing the analytic budget enables you to compare the budget (that is, your plan) to the services actually carried out by month end.

Tip: *Cash Budgets*
Problems of cash management are amongst the main difficulties encountered by small growing businesses. It's really difficult to predict the amount of cash that will be available when a company is young and rapidly growing.
If the company adopts management by case, then staff planning can be represented on the analytic accounts report, as you have seen.
But since you know your selling price for each of the different projects, you can see that it's easy to use the plan in the analytic accounts to more precisely forecast the amounts that you'll invoice in the coming months.

14.2 Putting analytic accounts in place

For the initial setup of good analytic accounts you should:

- set up the chart of accounts,
- create the different journals.

14.2.1 Setting up the chart of accounts

Start by choosing the most suitable analytic representation for your company before entering it into Open ERP. To create the different analytic accounts, use the menu *Financial Management → Configuration → Analytic Accounting → Analytic Accounts → New Analytic Account*.

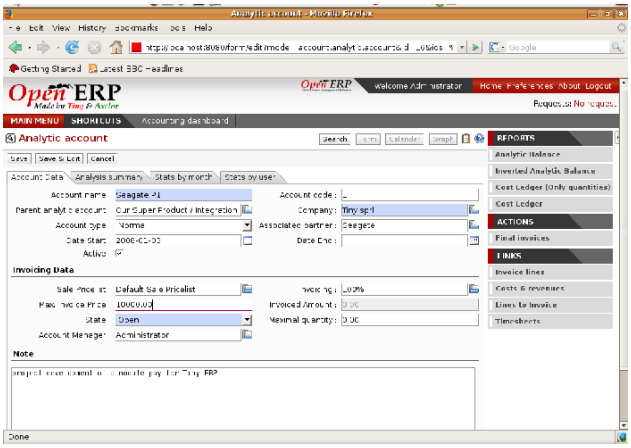


Figure 14.1: *Setting up an analytic account*

To create an analytic account you have to complete the main fields:

- the **Account Name**,
- the **Account Code** : used as a shortcut for selecting the account,
- the **Account type** : just like general accounts the `View` type is used for virtual accounts which are used only to create a hierarchical structure and for subtotals, and not to store accounting entries,
- the **Parent analytic account** : defines the hierarchy between the accounts.

If the project is for a limited time you can define a start and end date here. The **State** field is used to indicate whether the project is running (`Open`), waiting for information from the client (`Pending`), `Draft` or `Closed` .

Finally, if the analytic account is a client project you can complete the fields about the partner, which you'd need so that you can invoice the partner:

- the **Associated partner**,
- a **Sale Pricelist**, which shows how services linked to the project should be charged,
- a **Max. Invoice Price**, showing the maximum invoice price regardless of actual overspend,
- a **Max. Quantity**, for contracts with a fixed limit of hours to use,
- an **Invoicing** field, which defines an invoicing rate and whether the project should be invoiced automatically from the services represented by the costs in the analytic account.

Tip: *Invoicing*
You have several methods available to you in Open ERP for automated invoicing:

- *Service companies usually use invoicing from purchase orders, analytic accounts or, more rarely, project management tasks.*
- *Manufacturing and trading companies more often use invoicing from deliveries or customer purchase orders.*

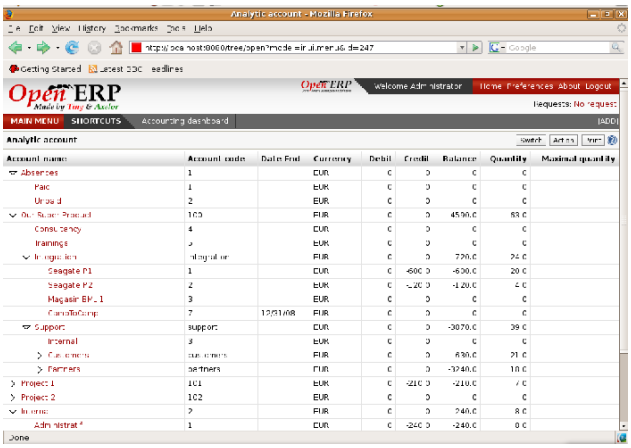


Figure 14.2: *Example of an analytic chart for projects*

Once you've defined the different analytic accounts you can view your chart through the menu *Financial Management → Charts → Analytic Chart of Accounts*.

Tip: *Setting up an analytic account*
The setup screen for an analytic account can vary greatly depending on the modules installed in your database. For example, you'll only see information about recharging services if you have the module `hr_timesheet_invoice` *installed.*
Some of these modules add helpful management statistics to the analytic account. The most useful is probably the module `account_analytic_analysis`*, which adds such information as indicators about your margins, invoicing amounts, and latest service dates and invoice dates.*

14.2.2 Creating Journals

Once the analytic chart has been created for your company you have to create the different journals. These enable you to categorize the different accounting entries by their type:

- services,
- expense reimbursements,
- purchases of materials,

- miscellaneous expenditure,
- sales,
- situation entries (special situations, such as installation of the software).

Note: *Minimal journals*
At a minimum you have to create one analytic journal for Sales and one for Purchases. If you don't create these two, Open ERP won't validate invoices linked to an analytic account because it wouldn't be able to create an analytic accounting entry automatically.

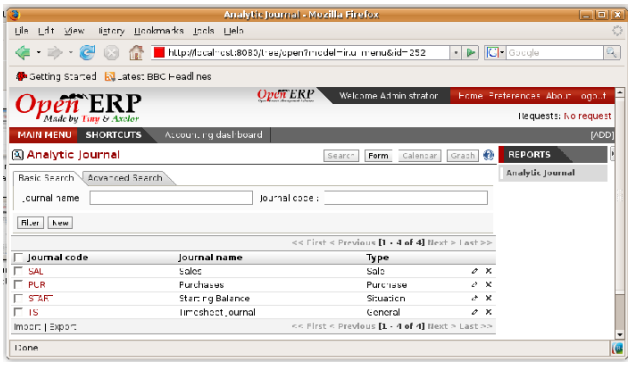


Figure 14.3: *Creating an analytic journal*

To define your analytic journals, use the menu *Financial Management* → *Configuration* → *Analytic Accounting* → *Analytic Journal Definition* then click **New**..

It's easy to create an analytic journal. Just give it a **Name**, a **Code** and a **Type**. The types available are:

- `Sales` , for sales to customers and for credit notes,
- `Purchases` , for purchases and miscellaneous expenses,
- `Cash` , for financial entries,
- `Situation` , to adjust accounts when starting an activity, or at the end of the financial year,
- `General` , for all other entries.

The type of journal enables the software to automatically select the analytic journal based on the nature of the operation. For example if you enter an invoice for a customer, Open ERP will automatically search for an analytic journal of type `Sales` .

14.3 Analytic records

Just as in general accounting, analytic entries must belong to an account and an analytic journal.

Analytic records can be distinguished from general records by the following characteristics:

- they're not necessarily legal accounting documents,
- they don't necessarily belong to an existing accounting period,
- they're managed according to their date and not an accounting period,
- they don't generate both a debit and a credit entry, but a positive amount (income) or a negative amount (cost).

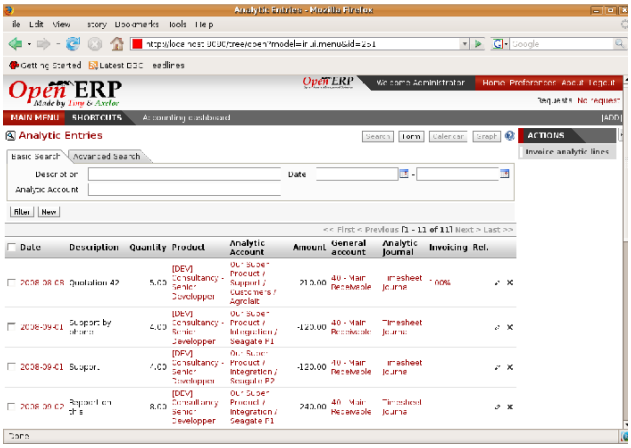


Figure 14.4: *Analytic account records for a customer project*

The figure *Analytic account records for a customer project* represents the entries on an analytic account for a customer project.

You can see there:

- the service costs for staff working on the project,
- the costs for reimbursing the expenses of a return journey to the customer,
- purchases of goods that have been delivered to the customer,
- sales for recharging these costs.

14.3.1 Automated entries

Analytic accounting is totally integrated with the other Open ERP modules, so you never have to re- enter the records. They're automatically generated by the following operations:

- confirmation of an invoice generates analytic entries for sales or purchases connected to the account shown in the invoice line,
- the entry of a service generates an analytic entry for the cost of this service to the given project,
- the manufacture of a product generates an entry for the manufacturing cost of each operation in the product range.

Other documents linked to one of these three operations produce analytic records indirectly. For example, when you're entering a customer sales order you can link it to the customer's analytic account. When you're managing by case or project, mark the project with that order. This order will then generate a customer invoice, which will be linked to the analytic account. When the invoice is validated it will automatically create general and analytic accounting records for the corresponding project.

Expense receipts from an employee can be linked to an analytic account for reimbursement. When a receipt is approved by the company, a purchase invoice is created. This invoice represents a debit on the company in favor of the employee. Each line of the purchase invoice is then linked to an analytic account which automatically allocates the costs for that receipt to the corresponding project.

To visualize the general entries following these different actions you can use one of the following menus:

1. To see all of the entries, *Financial Management → Entries Encoding → Analytic Entries → Entries Encoding by Line* and then click **Open Entries**,

2. To see the entries per account, click the **Analytic Account** field of any of the lines of Analytic Entries to see the details of that entry, then use the analytic **Account name** to start a search of all entries with that name (just click the **Date** hyperlink on a line in the web client, or double-click the line in the GTK client).

3. To see all of the entries by Journal, *Financial Management → Entries Encoding → Analytic Entries → Analytic Entries by Journal* and then click on one of the journal names.

14.3.2 Manual record entry

Even though most analytic entries are produced automatically by the other Open ERP documents it's sometimes necessary to make manual record entries. It's usually needed for certain analytic operations that have no counterpart in the general accounts.

To make manual record entries, use the menu *Financial Management → Entries Encoding→ Analytic Entries → Entries Encoding by Line*.

Note: *Analytic entries*
To make an analytic entry, Open ERP asks you to specify a general account. This is given only for information in the different cross-reports. It won't create any new entries in the general accounts.

Select a journal and complete the different fields. Write an expense as a negative amount and income as a positive amount.

Tip: *Entering a date*
To enter a date in the editable list you can use the calendar widget in the web client or, in the GTK client, if you enter just the day of the month Open ERP automatically completes the month and year when you press the tab key (Tab).

Note: *Example Cost redistribution*
One of the uses of manual data entry for analytic operations is reallocation of costs. For example, if a development has been done for a given project but can be used again for another project you can reallocate part of the cost to the other project.
In this case, make a positive entry on the first account and a negative entry for the same amount on the account of the second project.

14.4 Financial Analysis

Various reports designed for financial analysis are based on the analytic accounts. Most of those are available directly from the tree of accounts or from the form view of the account.

14.4.1 Analysis per account

From an analytic form, click on one of the **REPORTS** buttons to select a report. Open ERP provides the following financial analyses from the analytic accounts (and maybe more, depending on the additional installed modules):

- **Cost Ledger**,
- **Cost Ledger (quantities only)**.
- **Inverted Analytic Balance**,
- **Analytic Balance**,

The cost ledger

The cost ledger provides all of the detailed entries for the selected accounts. It enables you to make a detailed analysis of each operation carried out on one or several projects.

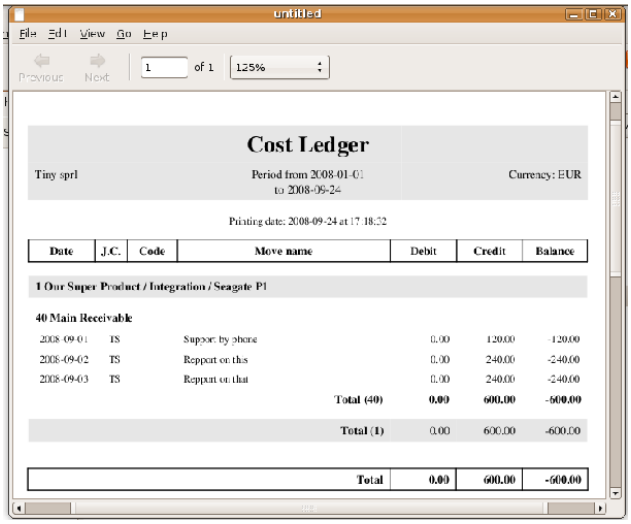


Figure 14.5: *The analytic cost ledger gives a detailed history of the entries in an analytic account*

The cost ledger (quantities only)

This report gives the detail of entries for an analytic account and a list of selected journals. Only quantities are reported for this analysis, not costs and revenues.

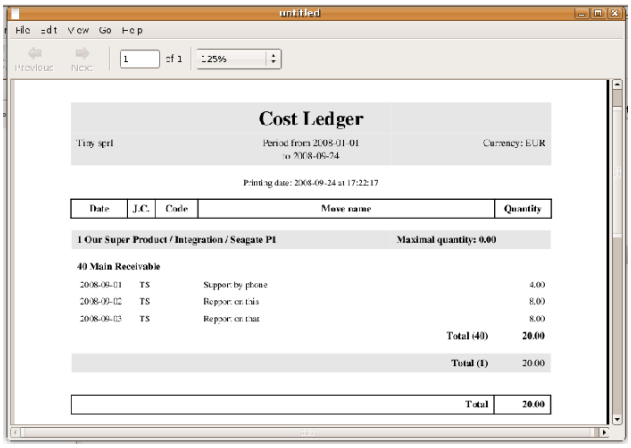


Figure 14.6: *The cost ledger (quantities only) gives a history of an analytic account*

The report is often used to print the number of hours worked on a project, without exposing the costs and revenues. So you can show it to a client as a record of the hours worked on a particular project.

To restrict the report to hours worked, without including sales and purchases, select only the services journal for printing.

Tip: *Multiple printing*
To print several analytic accounts at once you can make a multiple selection on the different accounts in the tree of accounts. Then click on the appropriate ***Report*** *in the toolbar (in the web client), or select one of the* ***Print*** *reports (in the GTK client), to export the whole selection into a single PDF document.*

Inverted Analytic Balance

The inverted analytic balance provides a summary report relating general accounts and analytic accounts. This report shows the balances of the general accounts broken down by the selected analytic accounts for a selected period.

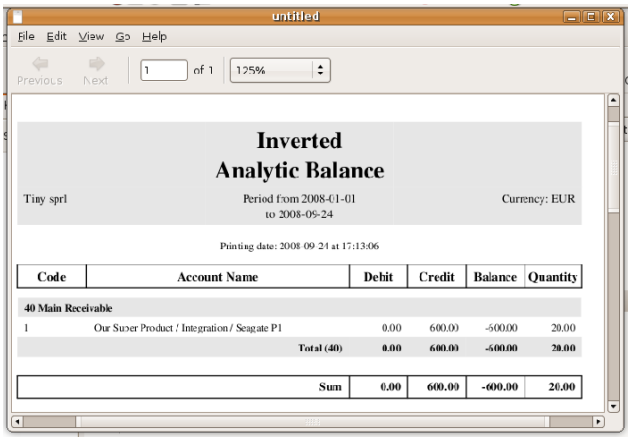


Figure 14.7: *The inverted analytic balance shows a breakdown of operations by analytic account (project)*

This enables you to analyze your costs by general account. For example, if you examine your general account for staff salaries you can obtain all your salary costs broken down by the different analytic (or project) accounts.

Analytic Balance

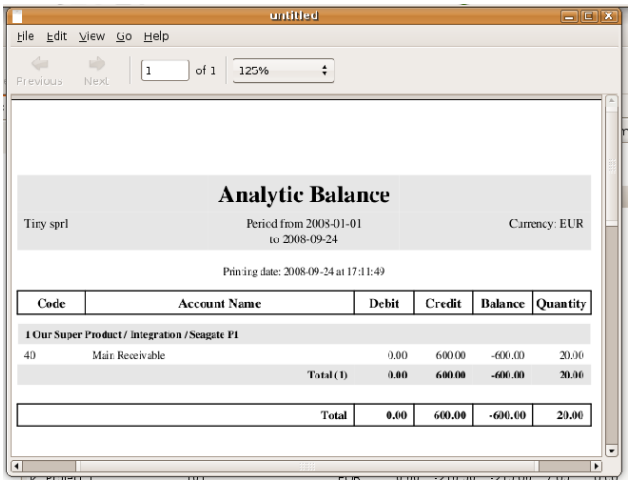


Figure 14.8: *The analytic balance shows a breakdown of each project by operation in the financial accounts*

The analytic balance is a summary report that relates the analytic accounts to the general accounts. It shows the balances of the analytic accounts broken down by general account for a selected period.

This report is useful for analyzing the profitability of projects, giving you the profitability of a project for the different operations that you used to carry out the project.

Tip: *Multi-company*
In a multi-company environment each company can have its own general chart of accounts on the same database. The two general charts of accounts are independent but can be linked in a third chart using a view account to do the consolidation.
If the different companies collaborate on joint projects they may all share the same analytic chart of accounts. In this environment, the cross-related reports like the balance and inverted balance are extremely useful because they enable you to make an analysis per company by linking up to the general accounts.

14.4.2 Key indicators

If you use analytic accounts with a structure of accounts by project client you should install the `account_analytic_analysis` module. This module adds three new tabs to the analytic account form:

- management indicators in the **Analysis summary** tab,
- monthly statistics in the **Stats by month** tab,
- statistics on each user in the **Stats by user** tab.

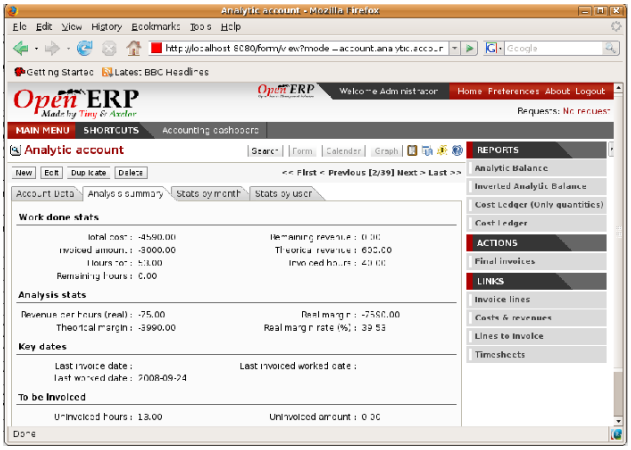


Figure 14.9: *Management indicators for an analytic account*

The figure *Management indicators for an analytic account* shows all of the management indicators.

These indicators enable you to quickly see such important information as:

- project profitability,
- whether you can still invoice any services to the client, or not,
- the amount of services to invoice,
- the different margin figures.

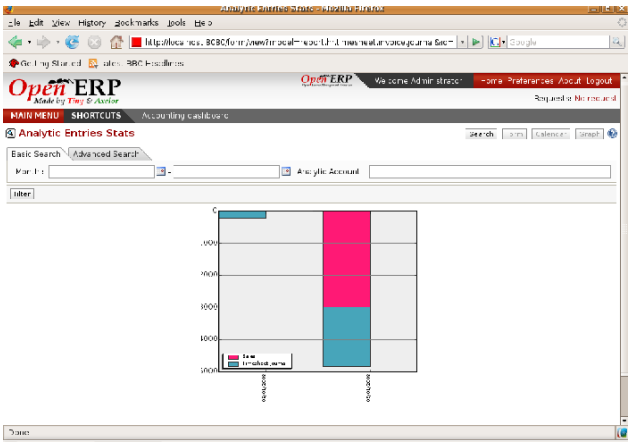


Figure 14.10: *Breakdown of monthly costs for an analytic account*

The real revenue is given by the amount invoiced to the client. The theoretical revenue is given by the sale price of different project costs which could be invoiced to the client. These give different margin figures.

For example, in the case of a fixed price project contract, the real sale price at the end of the project will be equal to the contract negotiated with the client. The theoretical price gives the amount that would have been invoiced if you had charged for all the time worked.

To give project managers a direct view of their different projects, the `account_analytic_analysis` module creates new menus in the Project management module in *Project Management → Financial Project Management → Analytic Accounts*.

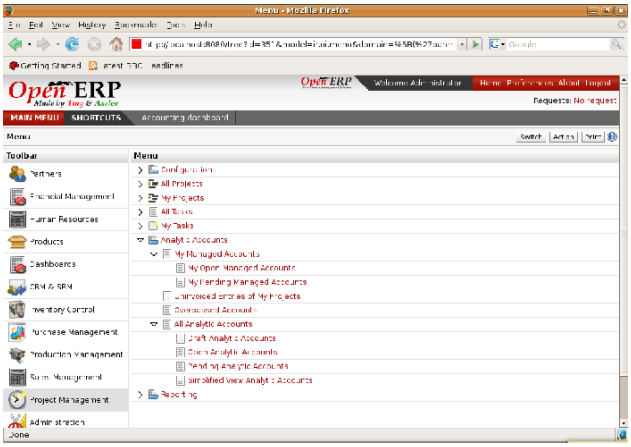


Figure 14.11: *Analytic accounts in Project Management*

These different menus give quick views that are useful for live projects. For each project you can check if there are uninvoiced services, see the last invoice date and the last uninvoiced service date, and get reports on the amounts received and those planned. So project managers have all the information necessary to manage their project, shown in a single page.

In the following chapters you'll see how project managers can use this information to carry out the various operations needed to manage the project, such as automatic invoicing, project planning, keeping customers up to date, and budgeting for resources.

Note: *Analytic Budgets*
Analytic budgets can be budgeted in the `account_budget` *module, which was developed starting at version 5 of Open ERP. They offer:*

- *forecasting projects in the medium term,*
- *controlling project costs,*
- *comparisons with general accounts.*

CHAPTER

FIFTEEN

ORGANIZATION OF HUMAN RESOURCES

This chapter describes Open ERP's core human resources and employee services features. Most of the solutions discussed after this chapter concern management by business or by project and depend mostly on analytic accounting, with each business or project represented by an analytic account.

A company's effectiveness depends on its employees' good work. Open ERP's human resource modules enable you to manage important aspects of staff work efficiently, such as their skills, contracts, and working time.

For this chapter you should start with a fresh database that includes demo data, with `hr_timesheet` and all of its dependencies installed and no particular chart of accounts configured.

15.1 Managing Human Resources

To establish a system that's integrated into a company's management you need to start with a current list of collaborators.

Note: *Don't confuse employees and users*
For Open ERP, "employee" represents all of the physical people who have an work contract with the company. This includes all types of contract: contracts with both fixed and indeterminate time periods, and also independent and freelance service contracts. A "user" is a physical person who's given access to the company's systems. Most employees are users but some users aren't employees: external partners can have access to parts of the system. You can manage them through the `portal_` modules.

Here are some examples of functions which depend on the accuracy of the employee list:

- the cost of a service, which depends on the employee's working contract,
- project planning, which depends on the work pattern of the project contributors,
- the client billing rate, which probably depends on the employee's job function,
- the chain of command, or responsibilities, which is related to the hierarchical structure of the company.

15.1.1 Management of staff

To define a new employee in Open ERP, use the menu *Human Resources → Employees → New Employee*.

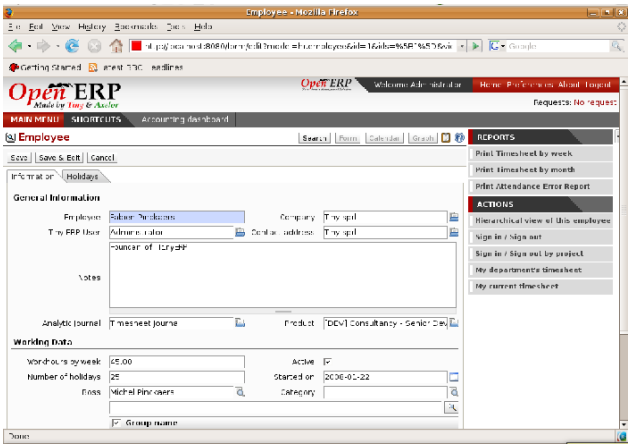


Figure 15.1: *Form describing an employee*

Start by entering the employee's name in **Employee** and the company that this employee works for in **Company**. You can then create a new user of the Open ERP system linked to this employee by filling in a new **User** form through the **Related User** field.

Even if the employee isn't a user, it's best if you create a system access for most of your staff just so that you can control their access rights from the outset (and you can do that through this field if you need to).

Tip: *Employee and User link.*
If the employee has a user account on the system you always link his or her user account to the employee form. Creating this link enables automatic completion to be done on the ***Employee*** *field in the relevant forms, such as services and expense records.*

Then enter the employee's address. This appears in the partner contact form in Open ERP. Since employees are people that have contacts with your company, it's logical that they have entries like any other partner in your database. So enter the name of the employee as a new partner Name and the address in the Contact form. Then all of the functions that apply to a partner can also be applied to an employee. This is particularly useful for tracking debits and credits in the accounts – so you can track salary payments, for example.

You can then set both an analytic journal and a linked product to this employee in the **Timesheets** tab. If you do it that way, then this information can be used to track services. For now, just complete the form with the following information:

- **Analytic Journal** : usually a `Timesheet Journal`,
- **Product** : a service product that describes how this employee would be charged out, for example as `Senior Consultant`.

15.1.2 Management of employment contracts

If you install the `hr_contract` module you can link contract details to the employee record.

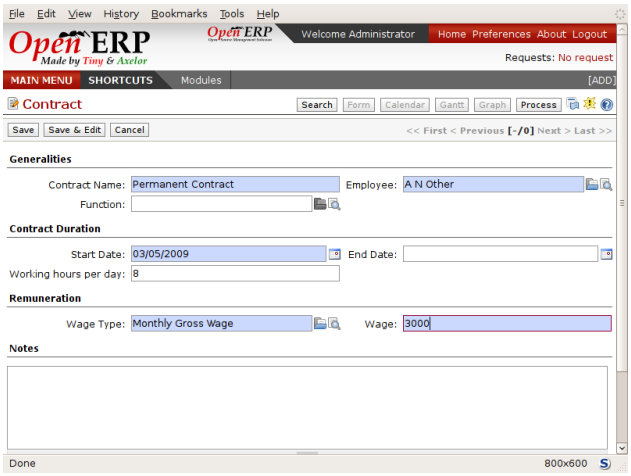


Figure 15.2: *Definition of a working contract for a given employee*

You can enter information about the employment contract for the employee, such as:

- **Contract Name**
- **Function**
- **Working hours per day**
- **Start Date**
- **End Date**
- **Wage Type** either **Monthly Gross** or **Weekly Net**

15.1.3 Sign in and out

In some companies, staff have to sign in when they arrive at work and sign out again at the end of the day. If each employee has been linked to a system user, then they can sign in on Open ERP by using the menu *Human Resources → Attendances → Sign in / Sign out*.

If an employee has forgotten to sign out on leaving, the system proposes that they sign out manually and type in the time that they left when they come in again the next day. This gives you a simple way of managing forgotten sign-outs.

Find employee attendance details from their forms in *Human Resources → Employees → All Employees*.

To get the detail of attendances from an employee's form in Open ERP you can use the three available reports:

- **Print Attendance Error Report**
- **Print Timesheet by week**
- **Print Timesheet by month**

The first report highlights errors in attendance data entry. It shows you whether an employee has entered the time of entry or exit manually and the differences between the actual and expected sign out time and the time.

The others are reports using the data recorded.

15.2 Timesheets

In most service companies where Open ERP has been integrated, service sheets, or timesheets, have revolutionized management practices. These service sheets are produced by each employee as they work on the different cases or projects that are running. Each of these is represented by an analytic account in the system.

Throughout the day, when employees work on one project or another, they add a line to the timesheets with details of the time used on each project. At the end of the day, each employee must mark all the time worked on client or internal projects to make up the full number of hours worked in the day. If an account isn't in the system then the time is added to the hours that haven't been assigned for the day.

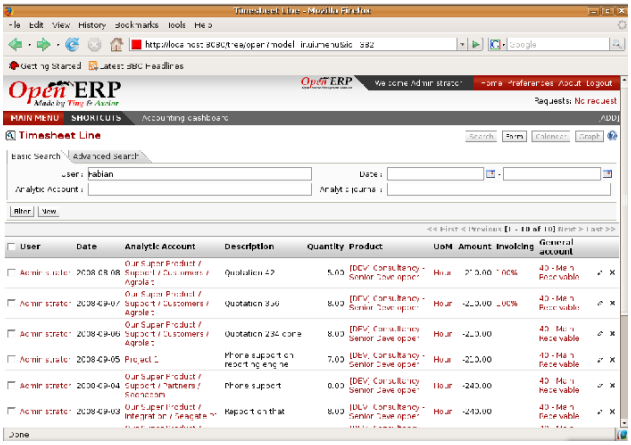


Figure 15.3: *Timesheet for a working day*

The figure *Timesheet for a working day* gives an example of a timesheet for an employee.

Note: *Don't confuse timesheets and attendence compliance*
The timesheet system isn't intended to be a disguised attendance form. There's no control over the service times and the employee is free to encode 8 or 9 hours or more of services each day if they want.
If you decide to put such a system into place, it's important to clarify this point with your staff. The objective here isn't to control hours, because the employees decide for themselves what they'll be entering – but to track the tasks running and the allocation of costs between them.

Amongst the many uses of such a timesheet system for a company, here are some of the most important:

- enabling tracking of the true costs of a project by accounting for the time used on it,
- tracking the services provided by different employees,
- comparing the hours really used on a project with the initial planning estimates,
- automatically invoicing based on the service hours provided,
- obtaining a list of the service hours for a given client,
- knowing the costs needed to run the company, such as the marketing costs, the training costs for a new employee, and the invoicing rates for a client.

15.2.1 Timesheet categories

The different timesheet categories (working time sessions) can be defined in the menu *Human Resources* → *Configuration* → *Working Time Categories* and select one of the groups there such as **38 Hours/Week**.

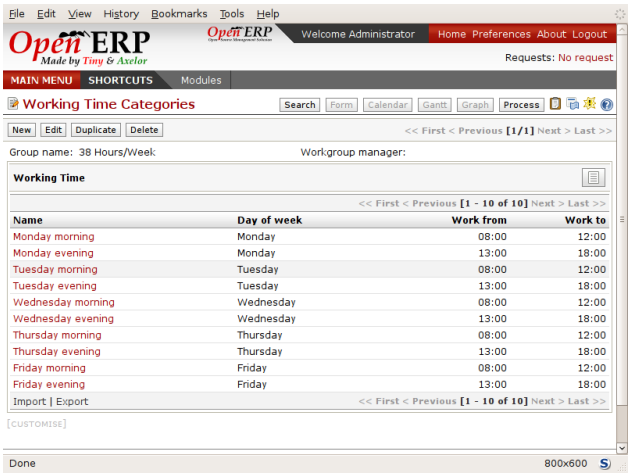


Figure 15.4: *Timesheet category for full time 38 hours per week*

15.2.2 Employee configuration

To be able to use the timesheets at all, you must first define those employees who are system users. The employee definition forms contain the information necessary to use that sheet, such as the job title, and hourly costs.

Two fields will be of particular interest to you for managing timesheets: the **Analytic Journal** and the **Product**.

In the analytic journal will be stored all the analytic entries about the costs of service times. These enable you to isolate the cost of service from other company costs such as the purchase of raw materials, expenses receipts and subcontracting. You can use different journals for each employee to separate costs by department or by function.

The employee is also associated with a product in your database in Open ERP. An employee is linked with a product so they can be 'bought' (subcontracting) or 'invoiced' (project management). You have to create a product for each job type in your company.

The following information is important in the product form:

- **Name** : `Secretary` `Salesperson` `Project Manager`
- **Product Type** : `Service`
- **Unit of Measure** : `Hour` `Day`
- **List Price**
- **Standard Price**

Tip: *Price Indexation*
The module `product_index` lets you generate indexes connected to the change of purchase or sale price for individual products.
In human resources, this module can be used to change your prices or costs in step with a national index.

In summary, each company employee corresponds, in most cases, to:

- **Partner**
- an **Employee** form,
- **System User**.

And each company job position corresponds to a **Product**.

Note: *Time charge rates*
By default the hourly cost of an employee is given by the standard cost of t
you install the `hr_contract` *module it's possible to manage contracts d*
is then automatically calculated from their employment contract when they
To do this, the software uses a factor defined in the contract type (for exar
per day). Ideally this factor should take into account the salary costs, and
associated with pay.

15.2.3 Entering timesheet data

To be able to use timesheets fully, install the module `hr_timesheet_sheet`. Once this module has been installed and the employees configured, the different system users can enter their timesheet data in the menu *Human Resources → Working Hours → My Working Hours → My Working Hours of The Day*, the click **New**.

Tip: *Shortcut to timesheets*
It's a good idea if all employees who use timesheets place this menu in their shortcuts. That's because they'll need to return to them several times each day.

For a new entry:

1. The **User** : proposed by default, but you can change it if you're encoding the first timesheet for another company employee.
2. The **Date** : automatically proposed as today's date, but it's possible to change it if you're encoding the timesheet for a prior day.
3. **Analytic Account** : for the project you've been working on - obviously it should be predefined.
4. **Description** : a free text description of the work done in the time.
5. **Quantity** : number of units of time (the units are defined as part of the product).

The other fields are automatically completed but can be modified: the **Product** which is the service product such as consultancy, the **Unit of Measure** (predefined, and could perhaps be minutes, hours or days), the **Cost** of the service (which is calculated by default), and the associated **General Account**.

The hours are then encoded throughout the day by each employee. It helps to revisit the list at the end of the day to verify that the number of hours of attendance in the company has been properly accounted for. The total entered is shown at the bottom right of the list of service hours.

The accuracy of the services entered is crucial for calculating the profitability of the different jobs and the recharging of services. Different reports are therefore available for verifying employees' data entry. Employees can verify their own timesheet using the following reports:

- Printing the timesheets per month, using the menu *Human Resources → Reporting → Timesheet → Print my timesheet*.
- Reviewing all service entries using the menu *Human Resources → Timesheets → My Timesheets → My timesheets to confirm*. You can then use the filters to analyze your services by project, by period or by product.

Tip: *Hiding service costs*
By default, Open ERP is configured to show the cost of each service when an employee encodes the number of hours per project. You can modify this field by adding the attribute invisible=True in the timesheet view.
The value in this field shows employees the cost of their time used in the company, so masking this field might not always be the best option.

Managers can draw on different reports for managing timesheets quite easily. You can print a summary in the form of a table per user and per day in the menu *Human Resources → Reporting → Timesheet → Employees timesheet*. This helps you spot when an employee has forgotten to enter her timesheet details on a certain day.

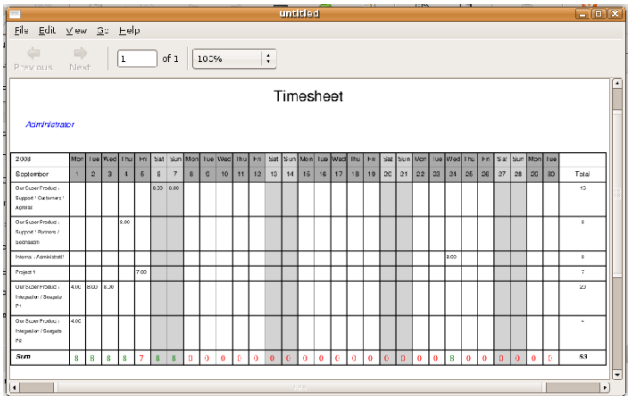


Figure 15.5: *Employees' monthly summary timesheet*

If you install the module `report_timesheet` you'll have many more reports available. Some new graphs become available through the menus *Human Resources → Reporting → This Month* and *Human Resources → Reporting → All Months*, for example:

- **Timesheet by User**
- **Timesheet by Invoice**
- **Daily Timesheet by Account**
- **Timesheet by Account**

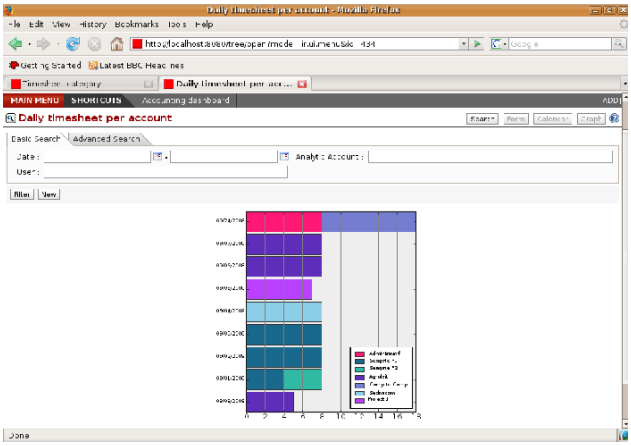


Figure 15.6: *Chart of timesheet by account*

The data making up these graphs can be varied using the filters available in the upper part of the screen. If you want to see more detail, switch to the list view.

Note: *Project dashboard when signing in*
The dashboard for managing projects has a graphical view that summarizes the current user's timesheet for the last seven days.
you can assign a dashboard to users so that it appears when they sign into Open ERP. Then each employee will be able to see if they forgot to complete their timesheet next time they sign into the system. To use this dashboard, install the module `board_project`.

15.2.4 Evaluation of service costs

You already know that timesheets are closely linked with analytic accounts. The different projects reported on the timesheets correspond to analytic accounts. The timesheet entries themselves are analytic entries.

These entries comprise various analytic operations that don't correspond to any of the general accounts. Therefore all operations that modify and create timesheet lines automatically impact the corresponding analytic line and, conversely are automatically modified by changes in that line.

Note: *Timesheets and analytical data*
The implementation of timesheets in Open ERP relating to analytic entries is managed by an inheritance mechanism: the timesheet object inherits the analytic entry object.
The information is therefore not encoded into the database as two separate events, which avoids many synchronization problems. They are stored in two different tables, however, because a service is an analytical entry, but an analytical entry isn't necessarily a service.

This isn't a classical approach but it's logical and pragmatic. Employee timesheets are a good indication of how the costs of a service enterprise are spread across different cases as reported in the analytic accounts. An analytic account should be reflected in the general accounts, but there's no direct counterpart of these analytic accounts in the general accounts. Instead, if the hourly costs of the employees are correctly accounted for, the month's timesheet entries should be balanced by the salary + benefits package paid out to all the employees at the end of the month.

Despite all this it's quite difficult to work out the average hourly cost of an employee precisely because it depends on:

- the extra hours that they've worked,
- holidays and sickness,
- salary variations and all the linked costs, such as social insurance charges.

The reports that enable you to relate general accounts to analytic accounts are valuable tools for improving your evaluation of different hourly costs of employees. The difference between product balances in the analytic account and in the general accounts, divided by the total number of hours worked, can then be applied to the cost of the product. Some companies adjust for that difference by carrying out another analytic operation at the end of the month in an account created for that purpose. This analytic account should have a balance that tends towards zero.

Because you've got a system with integrated timesheets you can then:

- track the profitability of projects in the analytic accounts,
- look at the history of timesheet entries by project and by employee,
- regularly adjust hourly costs by comparing your rates with reality,

Important: *Project Cost Control*
Controlling the costs and the profitability of projects precisely is very important.
It enables you to make good estimates and to track budgets allocated to different services and their projects, such as sales and, R&D costs. You can also refine your arguments on the basis of clear facts rather than guesses if you have to renegotiate a contract with a customer following a project slippage.

The analyses of profitability by project and by employee are available from the analytic accounts. They take all of the invoices into account, and also take into account the cost of the time spent on each project.

15.2.5 Managing by department

When they're used properly, timesheets can be a good control tool for project managers and can provide awareness of costs and times.

When employee teams are important, a control system must be implemented. All employees should complete their timesheets correctly because this forms the basis of planning control, and the financial management and invoicing of projects

You'll see in *Services Management* that you can automatically invoice services at the end of the month based on the timesheet. But at the same time some contracts are limited to prepaid hours. These hours and their deduction from the original limit are also managed by these timesheets. In such a situation, hours that aren't coded into the timesheets represent lost money for the company. So it's important to establish effective follow-up of the services timesheets and their encoding. To set up a structure for control using timesheets you should install the module `hr_timesheet_sheet`.

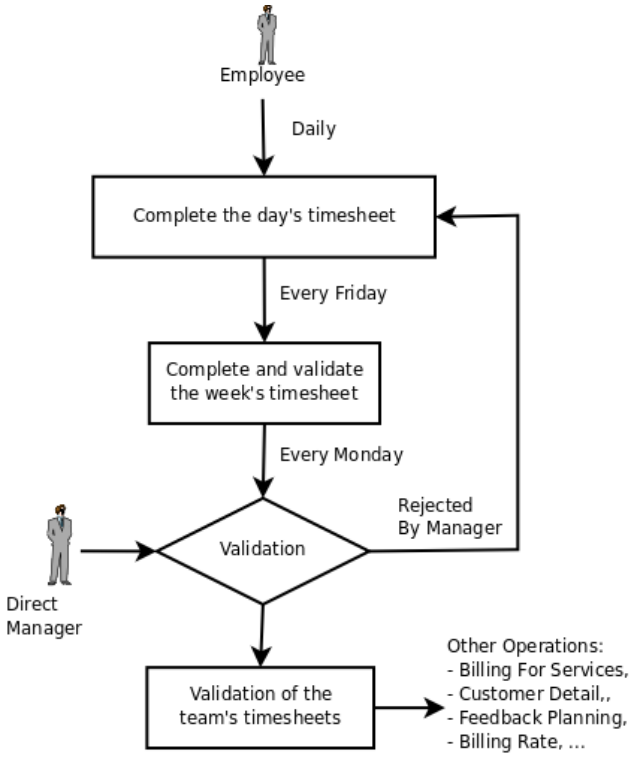


Figure 15.7: *Process of approving a timesheet*

This module supplies a new screen enabling you to manage timesheets by period. Timesheet entries are made by employees each day. At the end of the week, employees validate their week's sheet and it's then passed to the services manager, who must approve his team's entries. Periods are defined in the company forms, and you can set them to run monthly or weekly.

To enter timesheet data each employee uses the menu *Human Resources → Timesheets → My Timesheets → My Current Timesheet*.

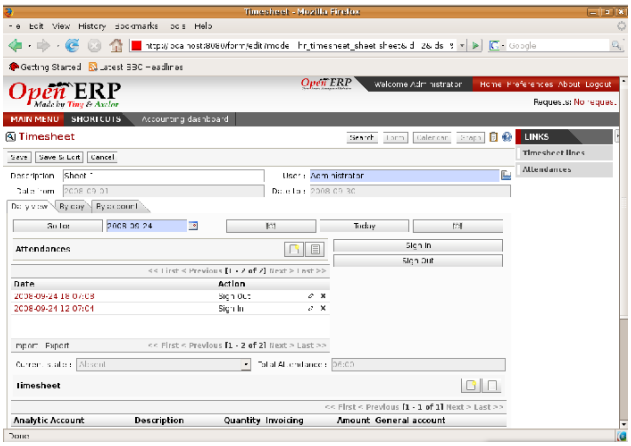


Figure 15.8: *Form for entering timesheet data*

In the upper part of the screen the user starts with the sign-in and sign-out times. The system enables the control of attendance day by day. The two buttons Sign in and Sign out enable the automatic completion of hours in the area to the left. These hours can be modified by employee, so it's not a true management control system.

The area to the bottom of the screen represents a sheet of the employee's time entries for the selected day. In total, this should comprise the number of hours worked in the company each day. This provides a simple verification that the whole day's attendance time has been coded in properly.

The second tab of the timesheet **By day** gives the number of hours worked on the different projects. When there's a gap between the attendance and the timesheet entries, you can use the second tab to detect the days or the entries that haven't been correctly coded in.

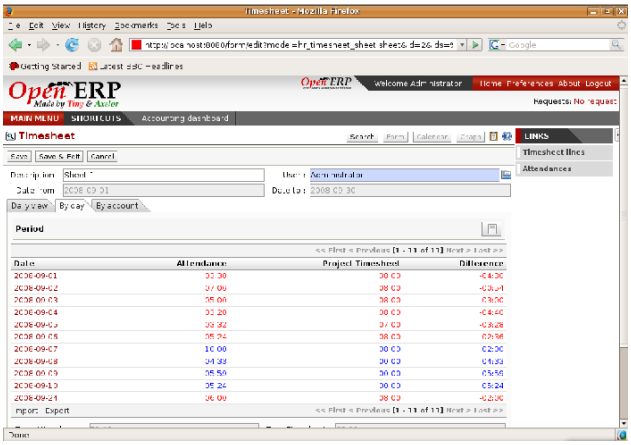


Figure 15.9: *Detail of hours worked by day for an employee*

The third tab **By account** shows the time worked on all the different projects. That enables you to step back to see an overview of the time an employee has worked spread over different projects.

At the end of the week or the month, the employee confirms his timesheet. If the attendance time in the company corresponds to the encoded entries, the whole timesheet is then confirmed and sent to his department manager, who is then responsible for approving it or asking for corrections.

Each manager can then look at a list of his department's timesheets waiting for approval using the menu *Human Resource → Timesheets → My Department's Timesheets → Timesheets to validate*. He then has to approve them or return them to their initial state.

To define the departmental structure, use the menu *Administration → Users → Departments → Departments*.

Tip: *Timesheet approval*
At first sight, the approval of timesheets by a department manager can seem a bureaucratic hindrance. This operation is crucial for effective management, however. We have too frequently seen companies in the situation where managers are so overworked that they don't know what their employees are doing.
So this approval process supplies the manager with an outline of each employee's work at least once a week. And this is carried out for the hours worked on all the different projects.

Once the timesheets have been approved you can then use them for cost control and for invoicing hours to clients.

Contracts and their rates, planning, and methods of invoicing are the object of the following chapter, *Services Management*.

CHAPTER

SIXTEEN

SERVICES MANAGEMENT

This chapter focuses on the management of contracts, and the services associated with that. The complete process of managing services is studied here: from defining prices and contracts to automatically invoicing the services, through planning and the treatment of additional costs such as expense receipts.

For this chapter you should start with a fresh database that includes demo data, with `sale`, `project` and all of their dependencies installed, and no particular chart of accounts configured.

16.1 Managing Service Contracts

Contracts can take different forms within Open ERP, depending on their nature. So you can have several distinct types of services contract, such as:

- fixed-price contracts,
- cost-reimbursement contracts, invoiced when services are completed,
- fixed-price contracts, invoiced monthly as services are carried out.

Tip: *Contract quotations*
Some companies commit to contracts on the basis of a requested volume at a certain price for a defined period. In such a case the contract is represented by a pricelist for that specific customer.
*The pricelist is linked in the **Properties** tab of the customer's **Partner** form, so that it is brought up whenever anything is bought from or sold to this partner (depending on whether it's a purchase or sales agreement). Open ERP automatically selects the price based on this agreed pricelist.*

16.1.1 Fixed Price contracts

Fixed price contracts for the sale of services are represented in Open ERP by a Sales Order. In this case, the supply of services is managed just like all other stockable or consumable products.

You can add new orders using the menu *Sales Management → Sales Orders → New Quotation*.

The new Sales Order document starts in the `Quotation` state, so the estimate has no accounting impact on the system until it's confirmed. When you approve the document, your estimate moves into the state `In Progress` .

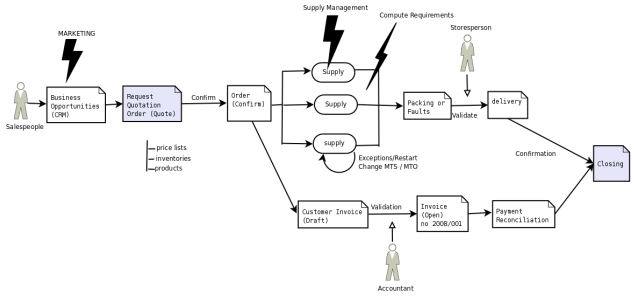


Figure 16.1: *Process for handling a Sales Order*

Once the order has been approved, Open ERP will automatically generate an invoice and/or a delivery document proposal based on the parameters you set in the order.

The invoice will be managed by the system depending on the setting of the field **Shipping Policy** on the order's second tab **Other data** :

- **Payment before delivery** : Open ERP creates an invoice in the `Draft` state. Once this is confirmed and paid the delivery is activated.
- **Invoice on Order After Delivery** : the delivery order is produced when the order is validated. A draft invoice is then created when the delivery has been completed.
- **Shipping & Manual Invoice** : Open ERP starts the delivery from the confirmation of the order, and adds a button which you manually click when you're ready to create an invoice.
- **Invoice from the Packing** : invoices are created from the packing stage.

Note: *Delivery of an order*
The term 'delivery' should be taken in the broadest sense in Open ERP. The effect of a delivery depends on the configuration of the sold product.
If its type is either Stockable Product or Consumable, Open ERP will make a request for it to be sent for packing. If the product's type is Service Open ERP's scheduler will create a task in the project management system, or create a subcontract purchase order if the product's Procure Method is Make to Order.
Invoicing after delivery does as it says: invoicing for the services when the tasks have been closed.

When you sign a new contract you can just enter the order into the system and Open ERP will track the order.

This works well for small orders. But for larger value services orders you might want to invoice several times through the contract, for example:

- 30% on order,
- 40% on completion,
- 30% one month after the system has gone into production.

In this case you should create several invoices for the one Sales Order. You've two options for this:

- Don't handle invoicing automatically from the Sales Order but carry out manual invoicing instead,
- Create draft invoices and then link to them in the third tab **History** of the Sales Order, in the **Related Invoices** section. When you create an invoice from the order, Open ERP deducts the amounts of the invoices already linked to the order to calculate the proposed invoice value.

16.1.2 Cost-reimbursement contracts

Some contracts aren't invoiced from a price fixed on the order but from the cost of the services carried out. That's usually what happens in the building sector or in large projects. The approach you use for this is totally different because instead of using the sales order as the basis of the invoice you use the analytic accounts. For this you have to install the module `hr_timesheet_invoice`.

An analytic account is created for each new contract. The following fields must be completed in this analytic account:

- **Partner** : partner associated with the contract,
- **Sale Pricelist**,
- **Invoicing**.

The selection of an invoicing rate is an indirect way of specifying that the project will be invoiced on the basis of analytic costs. This can take different forms, such as delivery of services, purchase of raw materials, and expense reimbursements.

Note: *Pricelists and billing rates*
You can select a pricelist on the analytic account without having to use it to specify billing rates.
An example of this is a client project that is to be invoiced only indirectly from the analytic costs. Putting the price list on the analytic account makes it possible to compare the actual sales with a best case situation where all the services would be invoiced. To get this comparison you have to print the analytic balance from the analytic account.

Services are then entered onto timesheets by the various people who work on the project. Periodically the project manager or account manager uses the following menu to prepare an invoice *Financial Management → Periodical Processing → Entries to Invoice → Uninvoiced Entries*.

Open ERP then displays all of the costs that haven't yet been invoiced. You can filter the proposed list and click the appropriate action button to generate the corresponding invoices. You can select the level of detail which is reported on the invoice, such as the date and details of the services.

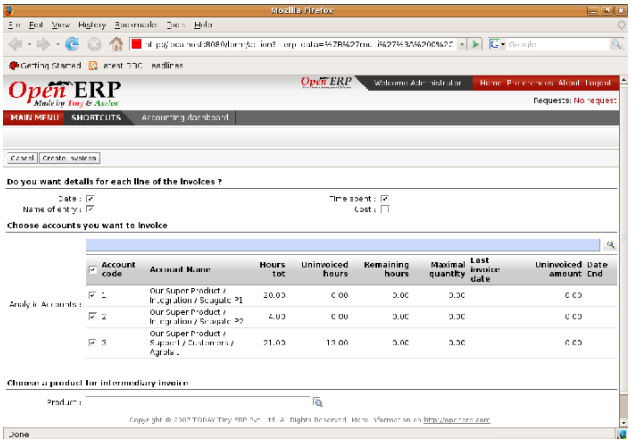


Figure 16.2: *Screen for invoicing services*

Note: *Project Management and analytic accounts*
The menu Project Management → Financial Project Management → Analytic Accounts *is only available once you have installed the module* `account_analytic_analysis`. *It provides various global financial and operational views of a project manager's projects.*

Select a project and open its analytic entries using the **Costs to invoice** button. You'll find a list of costs that can be invoiced to the client:

- time worked,

- expenses reimbursement,
- purchase of raw materials.

You can then invoice the selected lines using the action **Invoice costs**.

16.1.3 Fixed-price contracts invoiced as services are worked

For larger-value projects, fixed-price invoicing based on the sales order isn't always appropriate. In the case of a services project planned to run for about six months. invoicing could be based on the following:

- 30% on order,
- 30% at the project mid-point,
- 40% at delivery.

Such an approach is often used in a company but there are other options. This method of invoicing can pose many problems for the organization and invoicing of the project:

- It's extremely difficult to determine if the project is on track or not. The endpoint is fuzzy, which can result in a tricky discussion with the client at the moment of final invoicing.
- If the project takes more or less time than forecast, it will effectively result in under- or over-invoicing during the project.
- Whether you get a proper return can depend on the client. For example if the client takes a long time to sign off on project acceptance you can't invoice the remaining 40% even though you might have supplied the agreed service properly.
- The account manager and the project manager are often different people (see the section *Assigning roles: account manager and project manager* in the chapter *Internal Organization and Project Management*). The project manager has to alert the account manager the moment that the client can be invoiced, but that moment easily can be forgotten or mistaken.
- The project can be fixed for service costs but have agreed extras, such as reimbursement for travel expenses. Invoicing from the order doesn't adapt well to such an approach.

Open ERP provides a third method for invoicing services that can be useful on long projects. This consists of invoicing the project periodically on the basis of time worked up to a fixed amount that can't be exceeded. At the end of the project a final invoice or a credit note is generated to meet the total amount of value fixed for the project.

To configure such a project you must set an invoicing rate, a pricelist and a maximum amount on the analytic account for the project. The services are then invoiced throughout the project by the different project or account managers, just like projects that are invoiced by time used. The managers can apply a refund on the final invoice if the project takes more time to complete than permitted under the contract.

When the project is finished you can generate the closing invoice using the *Final Invoice* button on the analytic account. This automatically calculates the final balance of the bill, taking the amounts already charged into account. If the amount already invoiced is greater than the maximum agreed amount then Open ERP generates a draft credit note.

This approach offers many advantages compared with the traditional methods of invoicing in phases for fixed-price contracts:

- Fixed-price contracts and cost-reimbursable contracts are invoiced in the same way, which makes the company's invoicing process quite simple and systematic even when the projects are mixed.

- Everything is invoiced on the basis of worked time, making it easy to forecast invoicing from plans linked to the different analytical accounts.
- This method of proceeding educates project managers just as much as the client because refunds have to be given for work done if the project slips.
- Invoicing follows the course of the project and avoids a supplier's dependence on the goodwill of the client in approving certain phases.
- Invoicing of expenses follows the same workflow and is therefore very simple.

Note: *Negotiating contracts*
In contract negotiation, invoicing conditions are often neglected by the client. So it can often be straightforward to apply this method of invoicing.

16.1.4 Contracts limited to a quantity

Finally certain contracts are expressed in terms of a quantity rather than a fixed amount. Support contracts comprising a number of prepaid hours are a case in point. To generate such contracts in Open ERP you should start by installing the module `account_analytic_analysis`.

Then you can set a maximum number of hours for each analytic account. When employees enter their time worked on the support contract in the timesheets, the hours are automatically deducted from the maximum set on each analytic account.

You must also name someone in the company responsible for renewing expired contracts. They become responsible for searching through the list of accounts showing negative remaining hours.

The client contract can be limited to a certain quantity of hours, and it can also be limited in time. For that, you set an end date for the corresponding analytic account.

16.2 Planning that improves leadership

Planning in a company often takes the form of a regular meeting between the different teams. Each team has a certain number of projects and objectives that they must organize and establish priorities for.

Ideally these planning meetings should be short but regular and systematic. They can be weekly or monthly depending on the type of activity. A planning meeting often runs in three phases:

1. Minutes of the preceding period, and analysis of the work done compared with the planned work.
2. Introduction of new projects.
3. Planning the next period.

The planning function covers several objectives which will be described in this section:

- planning live projects against the commitments that have been made to clients,
- determining staffing (HR) requirements in the coming month,
- setting work for each employee or team for the periods to come,
- analyzing the work done in the preceding periods,
- passing the high-level objectives to lower levels in the company's hierarchy.

Tip: *The social role of planning*
Some project managers think that they can manage planning on their own. They're commonly overworked and think that meetings are a waste of time.
Even if staff really can manage their work for themselves, you should recognize that this regular meeting is also aimed at reassurance. Without it you can get into unduly stressful situations from:

- *feelings of overwork because they have lost sight of their priorities,*
- *lack of feedback and tracking of the work actually completed,*
- *an impression of poor organization if that hasn't been made explicit.*

So the social role of planning shouldn't be neglected. We have often experienced a background of stress in a company stemming from a lack of communication and planning.

16.2.1 Planning by time or by tasks?

There are two major approaches to enterprise planning: planning by task and planning by time. You can manage both with Open ERP.

In planning by task, the project manager assigns tasks from the different projects to each employee over a given period. Employees then carry out precisely the work they've been assigned by the project manager. Planning by time consists of allocating, for each employee, some time on each of the different projects for the period concerned. The tasks for each project are ordered by priority and can be directly assigned to a user or left unassigned. Each employee then chooses the task that he or she will do next, based on the plans and the relative priorities of the tasks.

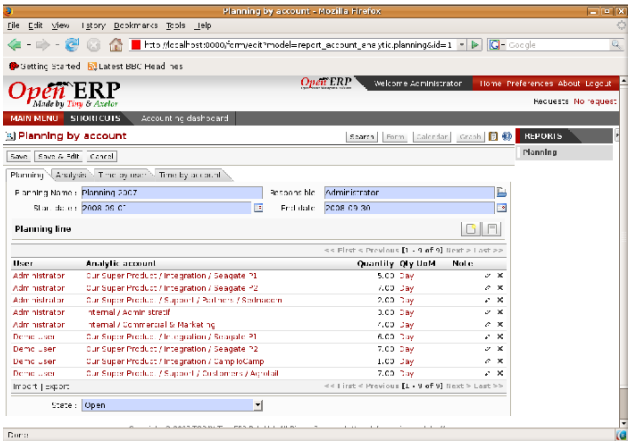


Figure 16.3: *Monthly planning for work time of each employee*

The figure *Monthly planning for work time of each employee* shows a monthly planning session where plans are being made for each employee to spend a number of days' work on various different projects.

In this time-focused planning approach, clients' priorities don't feature in the planning any more, but are explicit in the task list instead. So this approach helps you separate the planning of human resources on projects from the task prioritization within a project.

Note: *Comparing the two planning methods*
To illustrate the difference between planning by time and planning by task, take the case of an IT project that's estimated to be around six months of work. This project is managed by iterative cycles of development of around a month and a presentation is made to the client at the end of each cycle to track the progress of the project. At this meeting you plan what must be carried out for the following month. At the end of the month the account manager for the project invoices the client for the work done on the project.
Suppose that the project encounters a delay because it is more complex than expected. There are two ways of resolving the delay if you have no further resources: you can be

- *late in your delivery of the planned functions, or*
- *on time, but with fewer functions than planned.*

If your planning is based on phases and tasks you'll report at the client meeting that it will take several weeks to complete everything that was planned for the current phase. Conversely, if you're planning by time you'll keep the meeting with the client to close the present development phase and plan the new one, but only be able to present part of the planned functionality.
If the client is sensitive to delay, the first approach will cause acute unhappiness. You'll have to re-plan the project and all of its future phases to take account of that delay. Some problems are also likely to occur later with invoicing, because it will be difficult for you to invoice any work that has been completed late but hasn't yet been shown to the client.
The second approach will require you to report on the functions that haven't been completed, and on how they would fit into a future planning phase. That won't involve a break in the working time allocated to the project, however. You'd then generate two different lists: a staffing plan for the different projects, and the list of tasks prioritized for the client's project. This approach offers a number of advantages over the first one:

- *The client will have the choice of delaying the end of the project by planning an extra phase, or letting go of some minor functions to be able to deliver a final system more rapidly,*
- *The client may re-plan the functions taking the new delay into account.*
- *You'll be able to make the client gradually aware of the fact that project progress has come under pressure and that work is perhaps more complex than had been estimated at the outset.*
- *A delay in the delivery of several of the functions won't necessarily affect either monthly invoicing or project planning.*

Being able to separate human resource planning from task prioritization simplifies your management of complex issues, such as adjusting for employee holidays or handling the constantly changing priorities within projects.

16.2.2 Creating plans

Install the module `report_analytic_planning` to get additional functions that help with both planning and reporting on projects. Start a plan by using the menu *Human Resources → Planning → New Planning*. On each planning line you should enter the user, the analytic account concerned, and the quantity of time allocated. The quantity will be expressed in hours or in days depending on the unit of measure used. For each line you can add a brief note about the work to be done.

Once the plan has been saved, use the other tabs of the planning form to check that the amount of time allocated to the employees or to the projects is right. The time allocated should match the employees' employment contracts, for example 37.5 hours per week. The forecast time for the project should also match the commitments that you've made with client.

You should ideally complete all the planning for the current period. You can also complete some lines in the planning of future months – reserving resources on different project in response to your client commitments, for example. This enables you to manage your available human resources for the months ahead.

16.2.3 Good planning

Plans can be printed and/or sent to employees by email. If you install the module `board_project`, each employee can be given access to a dashboard that graphically shows the time allocated to him or her on a project and the time that's been worked so far. So each employee can decide which projects should be prioritized.

The employee then selects a task in the highest priority project. She ideally chooses either a task that has been directly assigned to her, or one which is high on the priority list that she's capable of completing, but is not yet directly assigned to anybody.

At the end of the period you can compare the duration of effective work on the different project to that of the initial estimate. Print the plan to obtain a comparison of the planned working time and the real time worked.

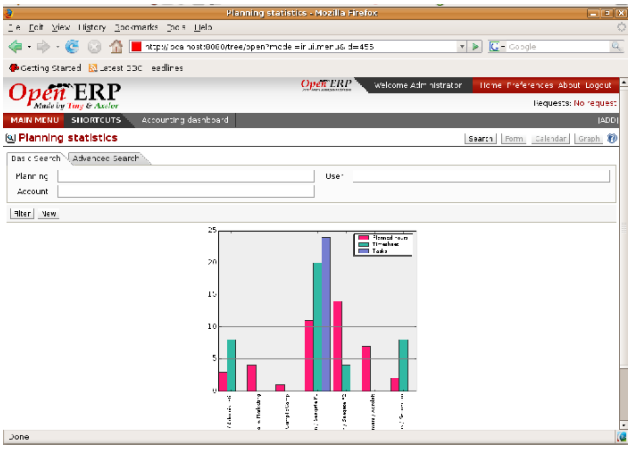


Figure 16.4: *Comparison of planned hours, worked hours and the productivity of employees by project*

You can also study several of your project's figures from the menus in *Human Resources → Reporting → Planning*.

16.2.4 Planning at all levels of the hierarchy

To put planning in place across the whole company you can use a system of planning delegation. For this, install the module `report_analytic_planning_delegate` from the addons-extra directory.

When you've installed this module, the planning entry form changes to reflect the hierarchical structure of the company. To enter data into a plan line you can:

- assign time on a project to an employee,
- assign time on a project to a department manager for his whole team.

You can now allocate the working time on projects for the whole of a department, without having to detail each employee's tasks. Then when a department manager creates his own plan he will find what's required of his group by his management at the bottom of the form. At the top of the form there's the place for assigning project work in detail to each member of department.

If you don't have to plan time to work on a final draft you can do it on an analytic account that relies on child accounts. This means that you can create plans to meet top-level objectives of the senior management team and then cascade them down through the different departments to establish a time budget for each employee. Each manager then uses his own plans for managing his level in the hierarchy.

16.3 Treatment of expenses

Employee expenses are charges incurred on behalf of the company. The company then reimburses these expenses to the employee. The receipts encountered most frequently are:

- car travel, reimbursed per unit of distance (mile or kilometer),
- subsistence expenses, reimbursed based on the bill,
- other purchases, such as stationery and books, destined for the company but carried out by the employee.

16.3.1 An integrated process

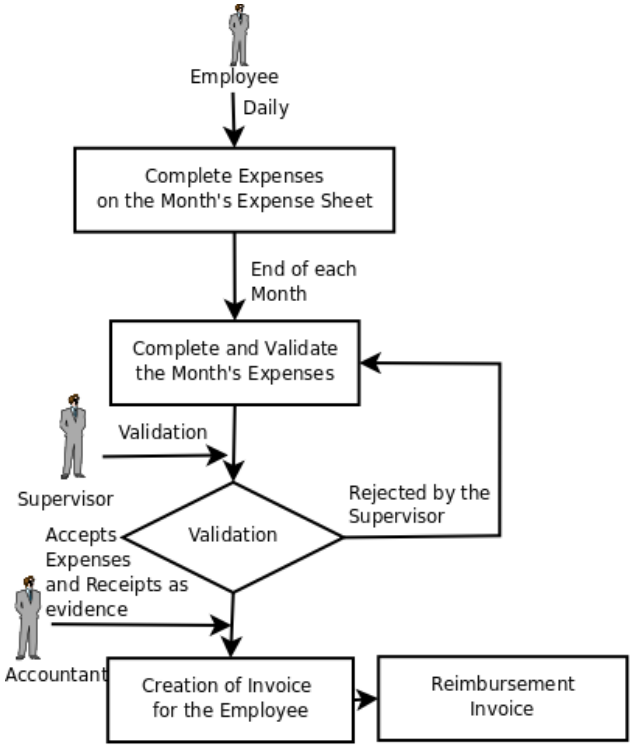


Figure 16.5: *Process for dealing with expense reimbursements*

Expenses generated by employees are grouped into periods of a week or a month. At the end of the period the employee confirms all of her expenses and a summary sheet is sent to the department manager. The manager is responsible for approving all the expense requests generated by his team. The expenses sheet must be signed by the employee, who also attaches her receipts there.

Once the sheet has been approved by the head of department it is sent to accounts, who register the company's liability to the employee. Accounting can then pay this invoice and reimburse the employee who originally advanced the money.

Some receipts are for project expenses, so these can then be attached to an analytic account. The costs incurred are then added to the supplementary cost of the analytic account when the invoice is approved.

You often need to invoice expenses to a client, depending on the precise contract that's been negotiated. Travelling and subsistence expenses are generally handled this way. These can be recharged to the client at the the end of the month if the contract price has been negotiated plus expenses.

If you have to go through many steps to reclaim expenses, it can all quickly become too cumbersome, especially for those employees who claim large numbers of different expense lines. If you've got a good system that integrates the management of these claims, such as the one described, you can avoid many problems and subtly increase staff productivity.

If your systems handle expenses well then you can avoid significant losses by setting your terms of sale effectively. In fixed-price contracts, expense reimbursements are usually invoiced according to the actual expense. It's in your interests to systematize their treatment, and automate the process to the maximum, to recharge as much as you are contractually able.

16.3.2 Claiming expenses

Install the module `hr_expense` to automate the management of expense claims. Users can then enter their expenses using the menu *Human Resources → Expenses → New Expenses Sheet* and review them using menus in *Human Resources → Expenses → My Expenses*.

Templates for the various expenses accepted by the company must previously have been created using Open ERP's product form. You could, for example, create a product with the following parameters for the reimbursement of travel expenses by car at 0.25 per kilometer:

- **Product** : `Car travel` ,
- **Unit of measure** : `km` ,
- **Standard Cost** : `0.25` ,
- **Sale price** : `0.30` ,
- **Type of product** : `Service` .

The employee keeps her expenses sheet in the `Draft` state while completing it throughout the period. At the end of the period (week or month) she can confirm her expense form using the **Confirm** button on the form. This puts it into the state `Waiting for validation` .

At the end of the period the department manager can access the list of expense forms waiting for approval using the menu *Human Resources → Expenses → All expenses → Expenses waiting validation*.

Tip: *Role Management*
*You must assign the role **Human Resources – Expenses** to a user to enable that user to approve these expenses. You'd generally assign this role only to those people responsible for projects or departments.*
*You can also assign the role **Human Resources – Invoicing Expenses** to users responsible for creating invoices. These roles may overlap (so the same person who approves your accounting group's expenses may also be responsible for creating invoices).*
To find out more about the management of roles look at Configuration & Administration.

The department manager can then approve the expenses, which automatically creates a supplier invoice in the employee's name so that the employee can be reimbursed. An analytic account is coded onto each line of the invoice. When the invoice is confirmed, general and analytic accounting entries are automatically generated as they would be with any other invoice.

If you establish your invoicing on the basis of service time or analytic costs, the expense will automatically be recharged to the client when the client invoice is generated for services associated with the project.

Invoicing from timesheets lets you prepare your invoices all within the one integrated system - all the expenses and timesheets for a project's client.

CHAPTER

SEVENTEEN

INTERNAL ORGANIZATION AND PROJECT MANAGEMENT

If you have good systems for managing tasks, then your whole company will benefit. Open ERP's project management modules enable you to manage and track tasks efficiently, work on them effectively, delegate them quickly, and track the delegated tasks closely. Open ERP also helps people in the company to organize their personal time, and this chapter proposes a methodology aimed at improving the productivity of managers.

For this chapter you should start with a fresh database that includes demo data, with `sale`, `project` and all of their dependencies installed, and no particular chart of accounts configured.

17.1 Project management

In the previous chapter you dealt with the financial management of projects, which was based on Open ERP's analytic accounts, structured into cases. This way of working enables you to analyze time plans and budgets, to control invoicing, and to manage your different contracts.

In this chapter you can use operational project management to organize tasks and plan the work you need to get the tasks completed. All of the necessary operations are carried out through the menu *Project Management*.

Note: *Project*
In Open ERP a project is represented by a set of tasks for completion. Projects have a tree structure that can be divided into phases and sub-phases. This structure is very useful for work organization.
Whereas analytic accounts look at the past activities of the company, project management's role is to plan the future. Even when there's a close link between the two (such as where a project has been planned and then completed through Open ERP) they are still two different concepts, each making its own contribution to a flexible workflow.

Most client projects are represented by:

- one or several analytic accounts in the accounts system for tracking the contract and its different phases,
- one or several projects in project management for tracking the project and the different tasks to be completed.

17.1.1 Defining a project and its tasks

To define a new project, go to the menu *Project Management* → *Projects* → *New Project*. Give your new project a **Project Name**.

You can put this project into a hierarchy, as a child of a **Parent Project**, and give it a **Project Manager**. You can also give it a general duration by completing **Starting Date** and **Expected End**.

By checking the box **Warn manager**, you configure the system to send the project manager an Open ERP request every time that a task is closed. You can also link to a **Working Time** category, and an **Analytic Account**. And you add **Project Members** as you need.

Note: *Warn Customer setup*
*If you check **Warn customer**, you should define a page header and footer in the **Partner Info** tab for use in an email. Open ERP prepares an email that the user can send to the client each time that a task is completed. The contents of this email are based on details of the project task, and can be modified by the user before the email is sent.*

The status of a project can take the following values:

- `Open` : while the project is being carried out,
- `Pending` : while the project is paused,
- `Canceled` : if the project has been canceled and therefore aborted,
- `Done` : the project has been successfully completed.

Note: *Study of client satisfaction*
Some companies run a system where emails are automatically sent at the end of a task requesting the client to complete an online survey. This survey enables them to ask different questions about the work carried out, to gauge client satisfaction as the project progresses.
This function can be used by companies certified to ISO 9001, to rate client satisfaction.

Once a project has been defined you can code in the tasks to be done. You've two possibilities for this:

- from the **ACTION** link button **Create a task** to the right of the project form,
- from the menu *Project Management → All Tasks*, create a new task and assign it to an existing project.

17.1.2 Managing tasks

Each task must adopt one of the following states:

- `Draft` : the task has been entered but hasn't yet been validated by the person who will have to do it,
- `Open`
- `Closed`
- `Cancelled`
- `Pending`

A task can be assigned to a user, who then becomes responsible for closing it. But you could also leave it unassigned so that nobody specific will be responsible: various team members instead are made jointly responsible for taking on tasks that they have the skills for.

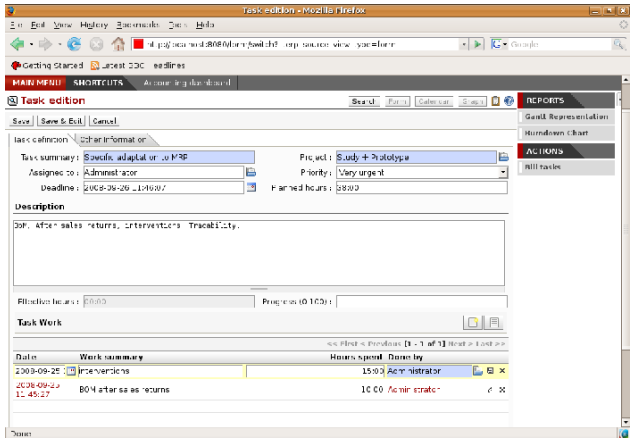


Figure 17.1: *Tasks in project management*

Each user then manages his or her own task using the different available menus. To open the list of unclosed tasks that you have been assigned specifically use the menu *Project Management* → *Tasks* → *My Tasks*. Or to open the unassigned tasks, go to *Project Management* → *Tasks* → *All Tasks* → *Unassigned Tasks* and then select `Draft`and `Open` tasks from that list.

Tip: *Shortcuts*
Every user should create a link in their own shortcuts to the My Tasks *menu because they'll have to consult this menu several times a day.*

17.1.3 Assigning roles: account manager and project manager

In some companies two distinct responsibilities are defined for each important project:

- someone responsible for the client,
- someone responsible for managing the project technically.

The person responsible for the client, the client account manager, approves client requests, writes sales proposals, and assures that these activities and the invoicing progress properly. He is responsible for the functional definition of the client's needs. The account manager would have a sales, technical sales or financial profile.

The person responsible for the technical tracking of the project is called the project manager. She makes the project happen, organizing and sub-contracting the different project tasks. The project manager would often be responsible for a development team to carry the project out, and generally has a technical profile.

If you don't make any such distinction in the roles then put the same person in both fields.

17.1.4 Invoicing tasks

Several methods of invoicing have already been described:

- invoicing from a sales order,
- invoicing on the basis of analytic costs (service times, expenses),
- invoicing on the basis of deliveries,
- manual invoicing.

Although invoicing tasks might appear useful, in certain situations it's best to invoice from the service or purchase orders instead. These methods of invoicing are more flexible, with various pricing levels set out in the pricelist, and different products that can be invoiced. And it's helpful to limit the number of invoicing methods in your company by extending the use of an invoicing method that you already have.

If you want to connect your Sales Order with Project Management tasks you should create such products as `Consultant` , and `Senior Developer` . These products should be configured with **Product Type** `Service`, a **Procure Method** of `Make to Order` , and a **Supply Method** of `Produce` . Once you've set this up, Open ERP automatically creates a task in project management when the order is approved.

You can also change some of the order parameters, which affects the invoice:

- **Shipping Policy** : `Payment before delivery`or `Invoice on Order After Delivery`(when the task is closed),
- **Invoice On** : `Ordered Quantities` or `Shipped Quantities` (actual hours in the task).

17.1.5 Planning and managing priorities

Several methods can be used for ordering tasks by their respective priorities. Open ERP orders tasks based on a function of the following fields: **Sequence**, **Priority**, and **Deadline**.

Use the **Sequence** field on the second tab, **Other Information**, to plan a project made up of several tasks. In the case of an IT project, for example, where development tasks are done in a given order, the first task to do will be sequence number 1, then numbers 2, 3, 4 and so on. When you first open the list of project tasks, they're listed in their sequence order.

You can use one of these three ordering methods, or combine several of them, depending on the project.

Note: *Agile methods*
Open ERP implements the agile methodology Scrum for IT development projects in the `scrum` *module.*
Scrum supplements the task system with the following concepts: long-term planning, sprints, iterative development, progress meetings, burndown chart, and product backlog.
Look at the site: http://controlchaos.com for more information on the Scrum methodology.

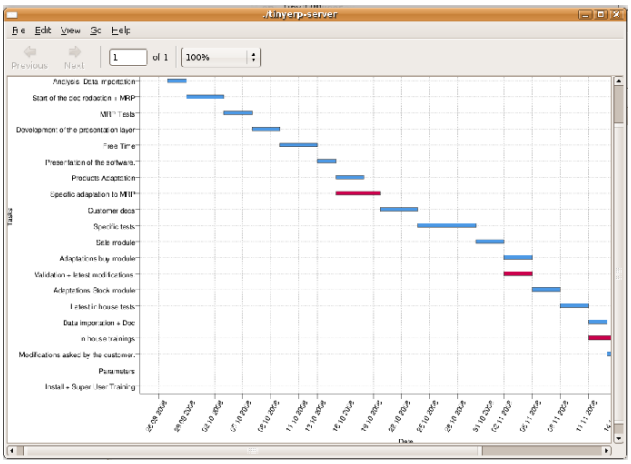
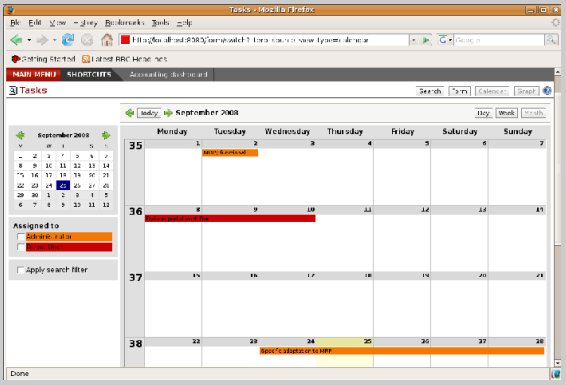


Figure 17.2: *Gantt plan, calculated for earliest delivery*

You can set an attendance grid (or the timesheets) in the project file. If you don't specify anything, Open ERP assumes by default that you work 8 hours a day from Monday to Sunday. Once a grid is specified you can call up a project Gantt chart from right-hand toolbar. The system then calculates a project plan for earliest delivery using task ordering and the attendance grid.

Tip: *Calendar view*

Open ERP can give you a calendar view of the different tasks in both the web client and the GTK client. This is all based on the deadline data and displays only tasks that have a deadline. You can then delete, create or modify tasks using simple drag and drop.



Calendar view of the system tasks

17.1.6 Task delegation

To delegate a task to another user you can just change the person responsible for that task. However the system doesn't help you track tasks that you've delegated, such as monitoring of work done, if you do it this way.

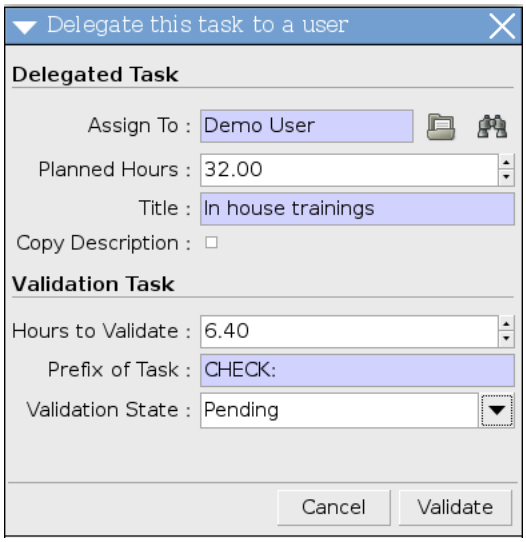


Figure 17.3: *Form for delegating a task to another user*

Instead, you can use the button **Delegate** on a task.

The system enables you to modify tasks at all levels in the chain of delegation, to add additional information. A task can therefore start as a global objective and become more detailed as it is delegated down in the hierarchy.

The second tab on the task form gives you a complete history of the chain of delegation for each task. You can find a link to the parent task there, and the different tasks that have been delegated.

17.2 The art of productivity without stress

Now you can take a slight detour away from pure enterprise management by looking at some tools offered by Open ERP to improve your own personal time management. It's not much of a detour because good organization is the key to better productivity in your daily work. Open ERP's `project_gtd` module was inspired by the work of two books focusing on efficient time management:

- Getting Things Done – The Art of Stress-Free Productivity, by David Allen (2001), most often referred to by its initials **GTD** (trademark registered since 2005). This book is built around the principle that people should clearly write down all their outstanding tasks and store the details about these tasks in a trustworthy system.

  They then don't have to worry about holding all of this stuff in their head. Since they can be quite sure that it's recorded safely, they can allow themselves to relax and so have the energy and time to concentrate on handling the tasks themselves systematically.

  Note: *Managing time efficiently*
  David Allen, Getting Things Done, Penguin Books, New York, 2001, 267 pages. (ISBN : 978-0142000281). Also see the site: http://davidco.com

  > *Stephen R. Covey, The 7 Habits of Highly Effective People, Free Press, 1989, 15th Anniversary Edition : 2004, 384 pages. (ISBN : 978-0743269513).*

  Tip: *De-stress yourself !*
  Clear the tasks that clutter your thoughts by registering them in an organized system. This immediately helps you to de-stress yourself and organize your work in the best possible way.
  If you feel stressed by too much work, do the following exercise to convince yourself about the benefits. Take some sheets of blank paper and write down everything that passes through your head about the things you need to do. For each task, note the next action to do on an adjacent line, and rank it by the date that you'll commit yourself to doing it. At the end of the exercise you'll feel better organized, considerably de-stressed and remarkably free of worries !

- The 7 Habits of Highly Effective People by Stephen R. Covey (1989) : the author advises organizations on the use of these practices, and reports on the productivity improvements in the organization that result.

The objective in this detour is not to detail the whole methodology but to describe the supporting tools provided by Open ERP's `project_gtd` module.

17.2.1 Not everything that is urgent is necessarily important

The first modification brought by the module to the basic Open ERP system is a separation of the concepts of urgency and importance. Tasks are no longer classified by a single criterion but by the product of the two criteria, enabling you to prioritize matters that are both urgent and important in a single list

Many managers with a heavy workload use urgency as their sole method of prioritization. The difficulty is then in working out how to plan for substantive tasks (like medium term objectives). These aren't urgent but are nevertheless very important.

Note: *Example Distinction between urgency and importance*
If you're very well organized, urgent tasks can (and should often) be given lower precedence than important tasks. Take an example from daily life as an illustration: the case of having some time with your children.
For most people this task is important. But if you have a busy professional life, the days and weeks flow on with endless urgent tasks to be resolved. Even if you manage your time well, you could let several months pass without spending time with your children because the task of seeing them is never as urgent as your other work, despite its importance.

In Open ERP urgency is given by the **Deadline** of the task and importance by the **Priority**. The classification of the tasks then results from the product of the two factors. The most important tasks and the most urgent both appear at the top of the list.

17.2.2 Organizing your life systematically

A methodology of organizing yourself using the concepts of context and timebox is presented in this section.

Context

The context is determined by the work environment you must be in to deal with certain tasks. For example you could define the following contexts:

- *Office* : for tasks which have to be dealt with at your workplace (such as telephone a customer, or write a document),
- *Car* : for tasks that you need to do on the move (such as going shopping, or going to the post office),
- *Travel* : for tasks that you can handle on the plane or in the train while you're doing travelling on business (tasks such as writing an article, or analyzing a new product),
- *Home* : for tasks which have to happen at your private address (such as finding a cleaning contractor, or mowing the lawn).

An employee / system user can create his or her own contexts using the menu *Project Management → Configuration → Time Management → Contexts*.

Timebox

You then have to define the timeboxes. You have to complete the tasks in the time interval specified by a timebox. You usually define timeboxes with the following periods:

- *Daily* : for tasks which must be handled today,
- *Weekly* : for tasks that have to be dealt with this week,
- *Monthly* : for tasks which have to be completed within the month,
- *Long term* : for tasks that can be dealt with in more than one month.

A task can be put in one and only one timebox at a time.

You should distinguish between a timebox and the deadline for completing a task because the deadline is usually fixed by the requirements of the project manager. A timebox, by contrast, is selected with reference to what an individual can do.

To define timeboxes for your company, use the menu *Project Management → Configuration → Time Management → Timeboxes → My timeboxes*.

Methodology and iterative process

To organize your tasks efficiently, Open ERP uses a method based on the following systematic and iterative process:

1. Identify all the tasks that you have to deal with, including everything that keeps you awake at night, and enter them in your Inbox, which you'll find in the menu *Project Management → Time Management → My Inbox*.

2. Classify the tasks in your Inbox periodically, assigning them a context and a timebox. This indicates both when and where the task should be handled. If a task takes less than 10 minutes then maybe it could be handled immediately.

3. Every day, carry out the following process:

   - First thing in the morning, select those tasks contained in the current week's timebox that you want to deal with today. These are presented in order of importance and urgency, so you should select the tasks closest to the top of the list.
   - Carry out each task, that's to say either work on the task yourself or delegate it to another user,
   - Last thing at the end of the day's work, empty that day's timebox and return all unclosed tasks into the week's timebox.

4. Repeat the same process each week and each month for the respective timeboxes.

Tip: *Don't confuse **Agenda** and **Timebox***
The idea of timebox is independent from that of an agenda. Certain tasks, such as meetings, must be done on a precise date. So they can't be managed by the timebox system but by an agenda.
The ideal is to put the minimum of things on the agenda and to put there only tasks that have a fixed date. The timebox system is more flexible and more efficient for dealing with multiple tasks.

So start by entering all the tasks required by project management. These could have been entered by another user and assigned to you. It's important to code in all of the tasks that are buzzing around in your head, just to get them off your mind. A task could be:

- work to be done,
- a short objective, medium or long term,
- a complex project that hasn't yet been broken into tasks.

A project or an objective over several days can be summarized in a single task. You don't have to detail each operation if the actions to be done are sufficiently clear to you.

You have to empty your Inbox periodically. To do that, use the menu *Project Management → Time Management → My Inbox*. Assign a timebox and a context to each task. This operation shouldn't take more than a few minutes because you aren't dealing with the tasks themselves, just classifying them.

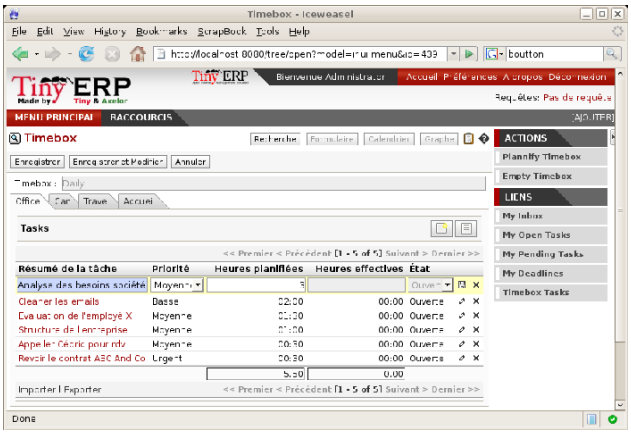


Figure 17.4: *Timebox for tasks to be done today*

Then click on the button at the top right **Plan the timebox**. This procedure lets you select the tasks for the day from those in the timebox for the week. This operation gives you an overview of the medium term tasks and objectives and

makes you review them there at least once a day. It's then that you'd decide to allocate a part of your time that day to certain tasks based on your priorities.

Since the tasks are sorted by priority, it's sufficient to take the first from the list, up to the number of hours in your day. That'll only take a minute, because the selection isn't taken from every task you know about in the future, but just from those selected for the current week.

Once the timebox has been completed you can start your daily work on the tasks. For each task you can start work on it, delegate it, close it, or cancel it.

At the end of the day you empty the timebox using the button at the top right. All the tasks that haven't been done are sent back to the weekly timebox to sit in amongst the tasks that will be planned next morning.

Do the same each week and each month using the same principles, but just using the appropriate timeboxes for those periods.

Shortcuts to the right of the timebox help you use the system efficiently with:

- a direct link to the Inbox,
- the list of all of your open tasks,
- the list of your waiting tasks,
- your deadlines,
- a link to all of the tasks in the timebox.

Some convincing results

After a few days of carefully practising this method, users have reported the following improvements:

- a reduction in the number of tasks and objectives that were forgotten,
- a reduction in stress because people felt more in control of their situation,
- a change of the priorities in the types of tasks carried out daily,
- more notice taken of the urgency and importance of tasks and objectives in the long-term organization of time,
- better management of task delegation and the selection of which tasks were better to delegate,

Finally, it's important to note this system is totally integrated with Open ERP's project management function. Staff can use the system or not depending on their own needs. The system is complementary to the project management function that handles team organization and company-wide planning.

Part VI

Stock and Manufacturing

This part of the book concentrates on physical materials - the handling of stock and the transformation of materials by assembly and manufacture.

Stocks are the physical embodiment of their product specification, things rather than datasheets. So they need to be stored and moved between locations, and tracked in sets and individually. They have a size, a weight, and a cost. Open ERP manages all of this in some rather useful and unique ways.

Manufacture is the transformation of materials and components, perhaps using measurable resources, into other products and services, adding value to your company on the way.

CHAPTER

EIGHTEEN

LOGISTICS AND STOCK MANAGEMENT

Open ERP's stock management is at once very simple, flexible and complete. It's based on the concept of double entry that revolutionized accounting. The system can be described by Lavoisier's maxim "nothing lost, everything changed" or, better, "everything moved". In Open ERP you don't talk of disappearance, consumption or loss of products: instead you speak only of stock moves from one place to another.

Just as in accounting, the Open ERP system manages counterparts to each of its main operations such as receipts from suppliers, deliveries to customers, profits and losses from inventory, and consumption of raw materials. Stock movements are always made from one location to another. To satisfy the need for a counterpart to each stock movement, the software supports different types of stock location:

- Physical stock locations,
- Partner locations,
- Virtual counterparts such as production and inventory.

Physical locations represent warehouses and their hierarchical structure. These are generally the locations that are managed by traditional stock management systems.

Partner locations represent your customers' and suppliers' stocks. To reconcile them with your accounts, these stores play the role of third-party accounts. Reception from a supplier can be shown by the movement of goods from a partner location to a physical location in your own company. As you see, supplier locations usually show negative stocks and customer locations usually show positive stocks.

Virtual counterparts for production are used in manufacturing operations. Manufacturing is characterized by the consumption of raw materials and the production of finished products. Virtual locations are used for the counterparts of these two operations.

Inventory locations are counterparts of the stock operations that represent your company's profits and losses in terms of your stocks.

The figure *Stores location structure when Open ERP has just been installed* shows the initial configuration of the stores locations when the software is installed.

Figure 18.1: *Stores location structure when Open ERP has just been installed*

Note: *Hierarchical stock locations*
In Open ERP locations are structured hierarchically. You can structure your locations as a tree, dependent on a parent-child relationship. This gives you more detailed levels of analysis of your stock operations and the organization of your warehouses.

Tip: *Locations and Warehouses*
*In Open ERP **warehouses** represent your places of physical stock. A warehouse can be structured into several locations at multiple levels. Locations are used to manage all types of storage place, such as at the customer and production counterparts.*

For this chapter you should start with a fresh database that includes demo data, with `stock` and its dependencies installed and no particular chart of accounts configured.

18.1 Understanding double-entry stock management

To illustrate this concept of stock management, see how stock moves are generated by the following operations:

- Receiving products from a supplier,

- Delivery to a customer,
- Inventory operation for lost materials,
- Manufacturing.

The structure of stock locations is shown by the figure *Stores location structure when Open ERP has just been installed*. Stocks are assumed to be totally empty and no operation is in progress nor planned.

If you order '30 bicycles' from a supplier, Open ERP will then do the following operations after the receipt of the products:

Table 18.1: Stock Move operation from Suppliers to Stock

Location	Products
Partner Locations > Suppliers > Suppliers	-30 bicycles
Physical Locations > Tiny SPRL > Stock	+30 bicycles

If you deliver 2 bicycles to a European customer you will get the following transactions for the delivery:

Table 18.2: Stock Move operation from Stock to European Customers

Location	Products
Physical Locations > Tiny SPRL > Stock	-2 bicycles
Partner Locations > Customers > European Customers	+2 bicycles

When the two operations are complete you'll then get the following stock in each location:

Table 18.3: Resulting stock situation

Location	Products
Partner Locations > Suppliers > Suppliers	-30 bicycles
Physical Locations > Tiny SPRL > Stock	+28 bicycles
Partner Locations > Customers > European Customers	+2 bicycles

So you can see that the sum of the stocks of a product in all the locations in Open ERP is always zero. In accounting you'd say that the sum of the debits is equal to the sum of the credits.

Partner locations (customers and suppliers) aren't located under your company in the hierarchical structure, so their contents are not considered as part of your own stock. So if you look just at the physical locations inside your own company those two bicycles are no longer in your company. They're not in your own physical stock but it's still very useful to see them in your customer's stock because that helps when you carry out detailed stock management analysis.

Note: *Accounts*
In managing stock, a gap between the data in the software and real quantities in stock is difficult to avoid. Double-entry stock management gives twice as many opportunities to find an error. If you forget two items of stock this error will automatically be reflected in the counterpart's location.

You can make a comparison with accounting, where you'll easily find an error because you can look for an anomaly in an account or in the counterparts: if there's not enough in a bank account then that's probably because someone's forgotten to enter a customer's invoice payment. You always know that the sum of debits must equal the sum of the credits in both accounting and Open ERP's stock management.

In accounting, all documents lead to accounting entries that form the basis of management accounting. If you create invoices or code in statements of account, for example, the results of the operations are accounting entries on accounts. And it's the same for stock management in Open ERP. All stock operations are carried out as simple stock moves. Whether you pack items, or manufacture them, or carry out a stock inventory operation, stock moves are carried out every time.

You've seen a fairly simple example of goods receipt and product delivery, but some operations are less obvious – a stock inventory operation, for example. An inventory operation is carried out when you compare the stock shown in software with real stock numbers counted in the stores. In Open ERP, with its double-entry stock management, you'd use stock moves for this inventory operation. That helps you manage your stock traceability. If there are 26 Bicycles in real stock but Open ERP shows 28 in the system. You then have to reduce the number in Open ERP to 26. This reduction of 2 units is considered as a loss or destruction of products and the correction is carried out as in the following operation:

Table 18.4: Inventory operation to adjust stock

Location	Products
Physical Locations > Tiny SPRL > Stock	-2 bicycles
Virtual Locations > Inventory Loss	+2 bicycles

The product stock under consideration then becomes:

Table 18.5: Real and counterpart stocks when operations are completed

Location	Products
Partner Locations > Suppliers > Suppliers	-30 bicycles
Physical Locations > Tiny SPRL > Stock	+26 bicycles
Partner Locations > Customers > European Customers	+2 bicycles
Virtual Locations > Inventory Loss	+2 bicycles

This example shows one of the great advantages of this approach in terms of performance analysis. After a few months, you can just make a stock valuation of the location `Virtual Locations > Inventory Loss` to give you the value of the company's stock losses in the given period.

Now see how the following manufacturing operation is structured in Open ERP. To make a bicycle you need two wheels and a frame. This means that there should be a reduction of two wheels and a frame from real stock and the addition of a bicycle there. The consumption / production is formalized by moving products out of and into physical stock. The stock operations for this are as follows:

Table 18.6: Stock situation resulting from manufacture

Location	Products	Step
Virtual Locations > Default Production	+2 Wheels	Consumption of raw materials
Physical Locations > Tiny SPRL > Stock	-2 Wheels	Consumption of raw materials
Virtual Locations > Default Production	+1 Frame	Consumption of raw materials
Physical Locations > Tiny SPRL > Stock	-1 Frame	Consumption of raw materials
Virtual Locations > Default Production	-1 Bicycle	Manufacture of finished products
Physical Locations > Tiny SPRL > Stock	+1 Bicycle	Manufacture of finished products

So you've now got the outcome you need from the consumption of raw materials and the manufacture of finished products.

Note: *Assessing created value*
You might already have noticed a useful effect of this approach: if you do a stock valuation in the `Default Production` location you get a statement of value created by your company (as a negative amount). Stock valuation in any given location is calculated by multiplying quantities of products in stock by their cost. In this case the raw material value is deducted from the finished product value.

18.2 Complete workflow from supplier to customer

Now you'll follow a practical example by adapting stock management operations. In order you'll see:

- defining a new product,
- initial setting of inventory,
- receiving products from a supplier,
- delivering to a customer,
- analysis of the state of stock.

18.2.1 Defining a new product

To start, define the following product:

Table 18.7: Product Definition

Field	Value
Name	Central Heating Type 1
Code	CCT1
Product Type	Stockable Product
Supply Method	Buy

Use the menu *Products* → *Products*, then click **New** to define a new product.

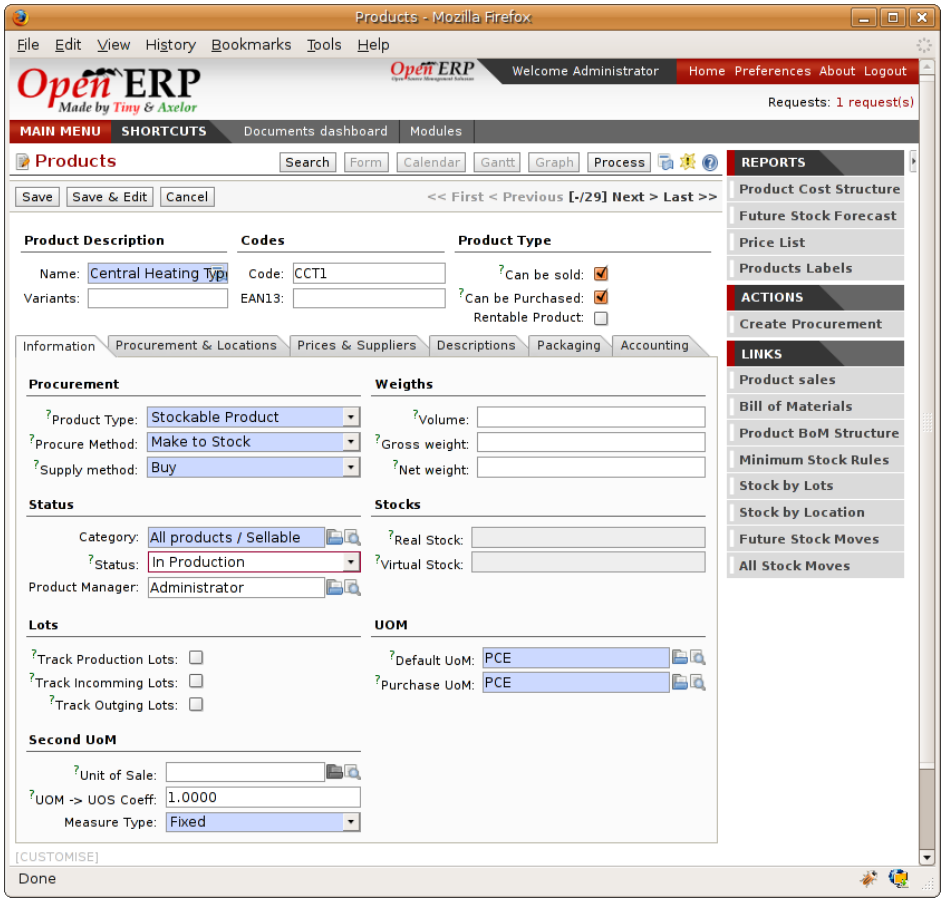


Figure 18.2: *Definition of a new product*

Three fields are important for stock management when you're configuring a new product:

- **Product Type**,
- **Procure Method**,
- **Supply Method**.

18.2.2 Product Types

The product type indicates if the product is handled in stock management and if Open ERP manages its procurement. The three distinct product types are:

- **Stockable Product** : this product is used in stock management and its replenishment is more or less automated as defined by the rules established in the system. Examples, a bicycle, a computer or a central heating system.
- **Consumable** : handled in stock management, you can receive it, deliver it and make it. But its stock level isn't managed by the system. Open ERP assumes that you've got sufficient levels in stock at all time, so it doesn't restock it automatically. Example, nails.
- **Service** : doesn't appear in the various stock operations. Example, a consulting service.

18.2.3 Procure Methods – Make to Stock and Make to Order

The procure method determines how the product will be replenished:

- **Make to Stock** : your customers are supplied from available stock. You procure a set quantity of each product when its stock is too low. Example, a classic distributor.
- **Make to Order** : when a customer order is confirmed, you then procure or manufacture the products for this order. A customer order 'Make to Order' won't modify stock in the medium term because you restock with the exact amount that was ordered. Example, computers from a large supplier assembled on demand.

You find a mix of these two modes used for the different final and intermediate products in most industries. The procurement method shown on the product form is a default value for the order, enabling the salesperson to choose the best mode for fulfilling a particular order by varying the sales order parameters as needed.

The figures *Change in stock for a product managed as Make to Stock* and *Change in stock for a product managed as Make to Order* show the change of stock levels for one product managed Make to Order and another managed Make to Stock. The two figures are taken from Open ERP's **Future Stock Forecast** report, available from the product form.

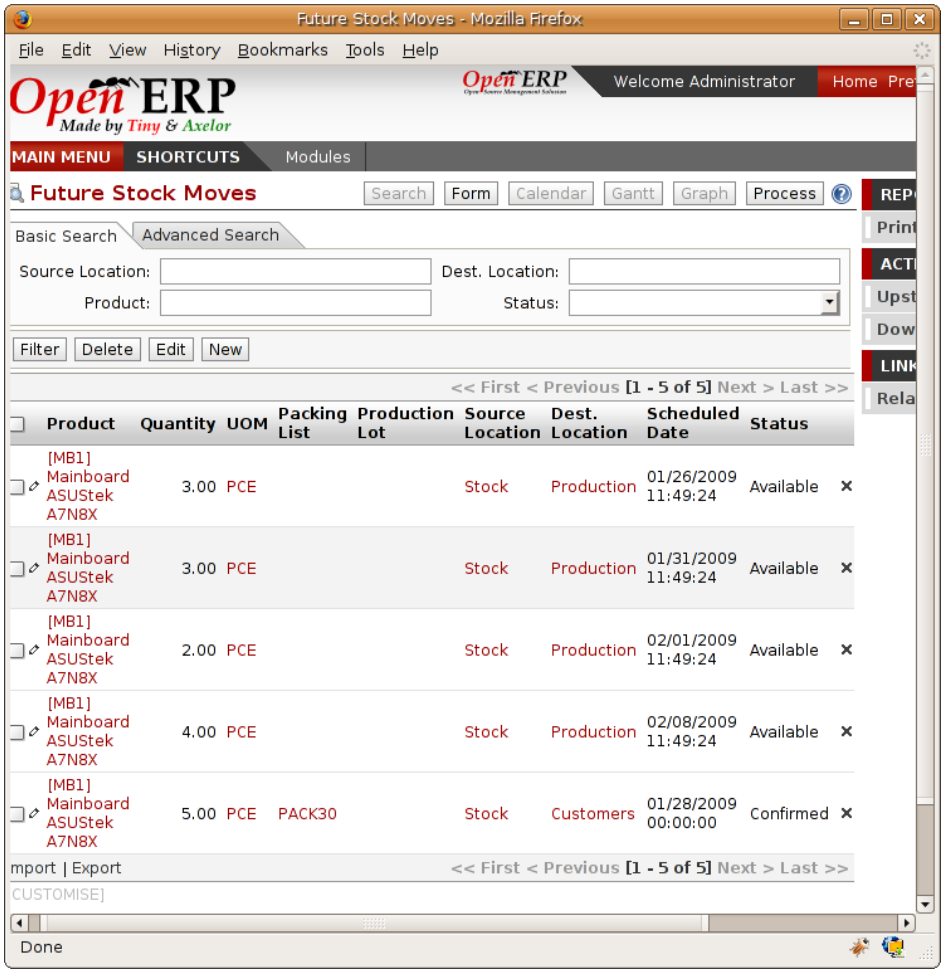


Figure 18.3: *Change in stock for a product managed as Make to Stock*

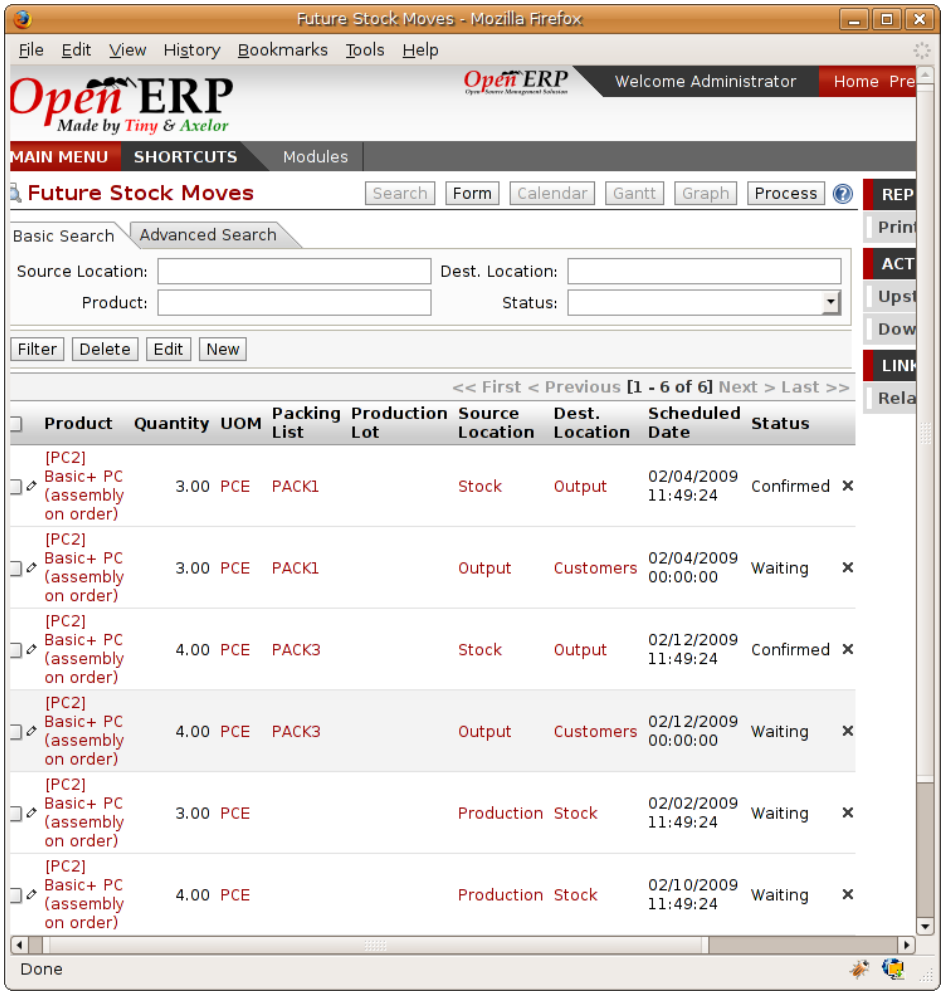


Figure 18.4: *Change in stock for a product managed as Make to Order*

Note: *Logistical Methods*
*The **Make to Stock** logistical approach is usually used for high volumes and when the demand is seasonal or otherwise easy to forecast. The **Make to Order** approach is used for products that are measured, or very costly to stock or have a short re-stocking time.*

18.2.4 Supply Methods

Open ERP supports two supply methods:

- Produce: when the product or service is supplied from internal resources,
- Buy: when the product is bought from a supplier.

These are just the default settings used by the system during automated replenishment. The same product can be either manufactured internally or bought from a supplier.

These three fields (**Supply Method**, **Procurem Method**, **Product Type**) determine the system's behaviour when a product is required. The system will generate different documents depending on the configuration of these three fields when satisfying an order, a price quotation to a supplier or a manufacturing order.

Open ERP manages both stockable products and services. A service bought from a supplier in **Make to Order** mode, will generate a subcontract order from the supplier in question.

Figure *Workflow for automatic procurement, dependent on the configuration of the product* illustrates different cases for automatic procurement.

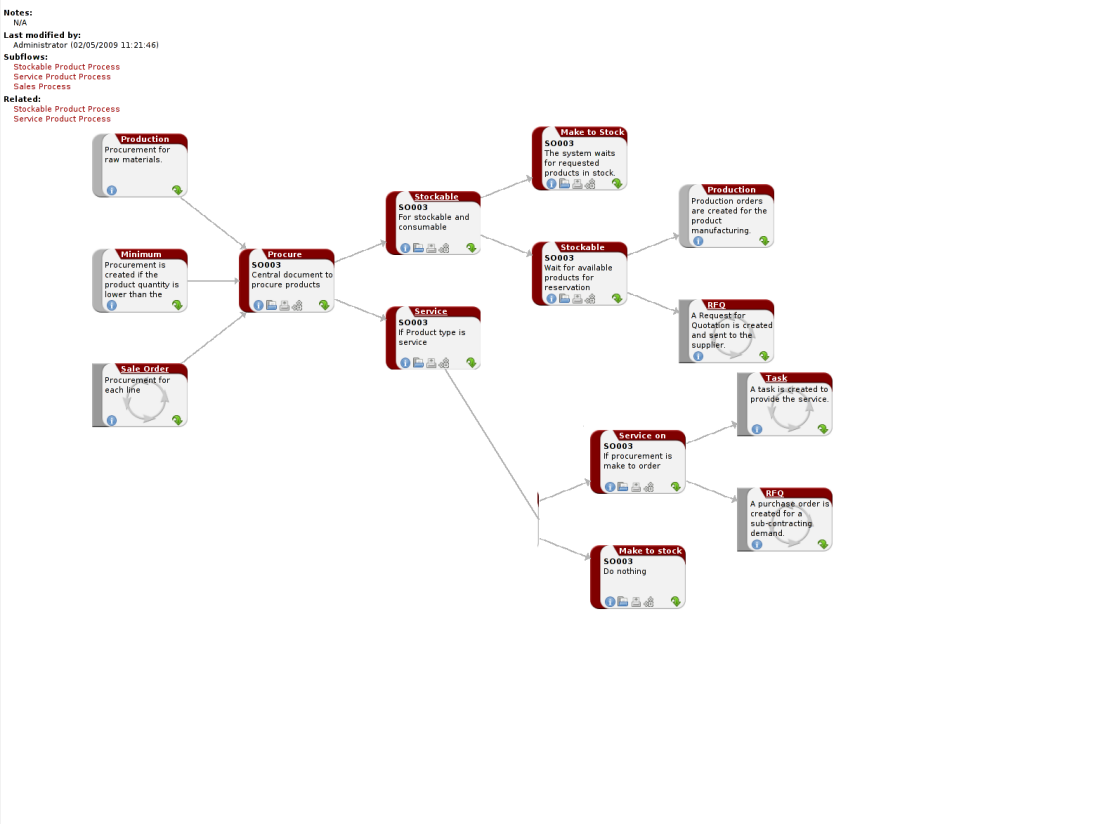


Figure 18.5: *Workflow for automatic procurement, dependent on the configuration of the product*

The table below shows all possible cases for the figure *Workflow for automatic procurement, dependent on the configuration of the product*.

Table 18.8: Consequences of Procurement Methods Make to Stock and Make To Order

Procurement Method	Produce	Buy
MTS	Wait for availability	Wait for availability
MTO	Production Order	Supplier Order

Table 18.9: Consequences of Procurement Methods when using Services

Procurement Method	Produce	Buy
MTS	/	/
MTO	Create task	Subcontract

You'll see the automated management processes for procurement in detail further on in this chapter.

18.2.5 Units of Measure

Open ERP supports several units of measure. Quantities of the same product can be expressed in several units of measure at once. For example you can buy grain by the tonne and resell it by kg. You just have to make sure that all the units of measure used for a product are in the same units of measure category.

Note: *Categories of units of measure*
All units of measure in the same category are convertible from one unit to another.

The table below shows some examples of units of measure and their category. The factor is used to convert from one unit of measure to another as long as they are in the same category.

Table 18.10: Example Units of Measure

UoM	Category	Factor
Kg	Weight	1
Gram	Weight	1000
Tonne	Weight	0.01
Hour	Working time	8
Day	Working time	1
Half-day	Working time	2
Item	Unit	1
100 Items	Unit	0.01

Depending on the table above you have 1Kg = 1000g = 0.001 Tonnes. A product in the `Weight` category could be expressed in Kg, Tonnes or Grammes. You can't express them in hours or pieces.

Use the menu *Products → Configuration → Units of Measure → Units of Measure* to define a new unit of measure.

In the definition of a Unit of Measure, you have a **Rounding precision** factor which shows how amounts are rounded after the conversion. A value of 1 gives rounding to the level of one unit. 0.01 gives rounding to one hundredth.

Note: *Secondary Units*
Open ERP supports double units of measure. When you use this, the whole of the stock management system is encoded in two units that don't have a real link between them.
This is very useful in the agro-food industry, for example: you sell ham by the piece but invoice by the Kg. A weighing operation is needed before invoicing the customer.

To activate the management options for double units of measure, assign the group **Useability / Product UoS View** to your user.

In this case the same product can be expressed in two units of measure belonging to different categories. You can then distinguish between the unit of stock management (the piece) and the unit of invoicing or sale (kg).

In the product form you can then set one unit of measure for sales and stock management, and one unit of measure for purchases.

These units are given suggested titles. For each operation on a product you can use another unit of measure, as long as it can be found in the same category as the two units already defined. If you use another unit of measure, Open ERP automatically handles the conversion of prices and quantities.

So if you have 430 Kg of carrots at 5.30 EUR/Kg, Open ERP will automatically make the conversion if you want to sell in tonnes – 0.43 tonnes at 5300 EUR / tonne. If you had set a rounding factor of 0.1 for the **tonne** unit of measure then Open ERP will tell you that you have only 0.4 tonnes available.

18.3 Stocks

In the product form you can find a report that will give you the stock levels of the various different products in any selected location. If you haven't selected any location, Open ERP calculates stocks for all of the physical locations.

Note: *Availability of stock*
Depending on whether you look at the product from a customer order or from the menu of a product form you can get different values for stock availability. If you use the product menu you get the stock in all of the physical stock locations. Looking at the product from the order you will only see the report of the warehouse selected in the order.

The two fields are:

- **Real Stock** : quantity physical present in your warehouse,
- **Virtual Stock** : calculated this way: real stock – outgoing + incoming.

Note: *Virtual Stock*
Virtual stock is very useful because it shows what the salespeople can sell. If it's more than real stock it's because products will be coming in and if it's smaller than real stock then it's because certain products are reserved for other sales orders or works orders.

Tip: *Detail of future stock*
To get more detail about future stock, you can click ***Future Stock Forecast*** *to the right of the product form to get the report* Printout of forecast stock levels *below. Open ERP shows a graph of the change of stock in the days to come, varying as a function of purchase orders, confirmed production and sales orders.*

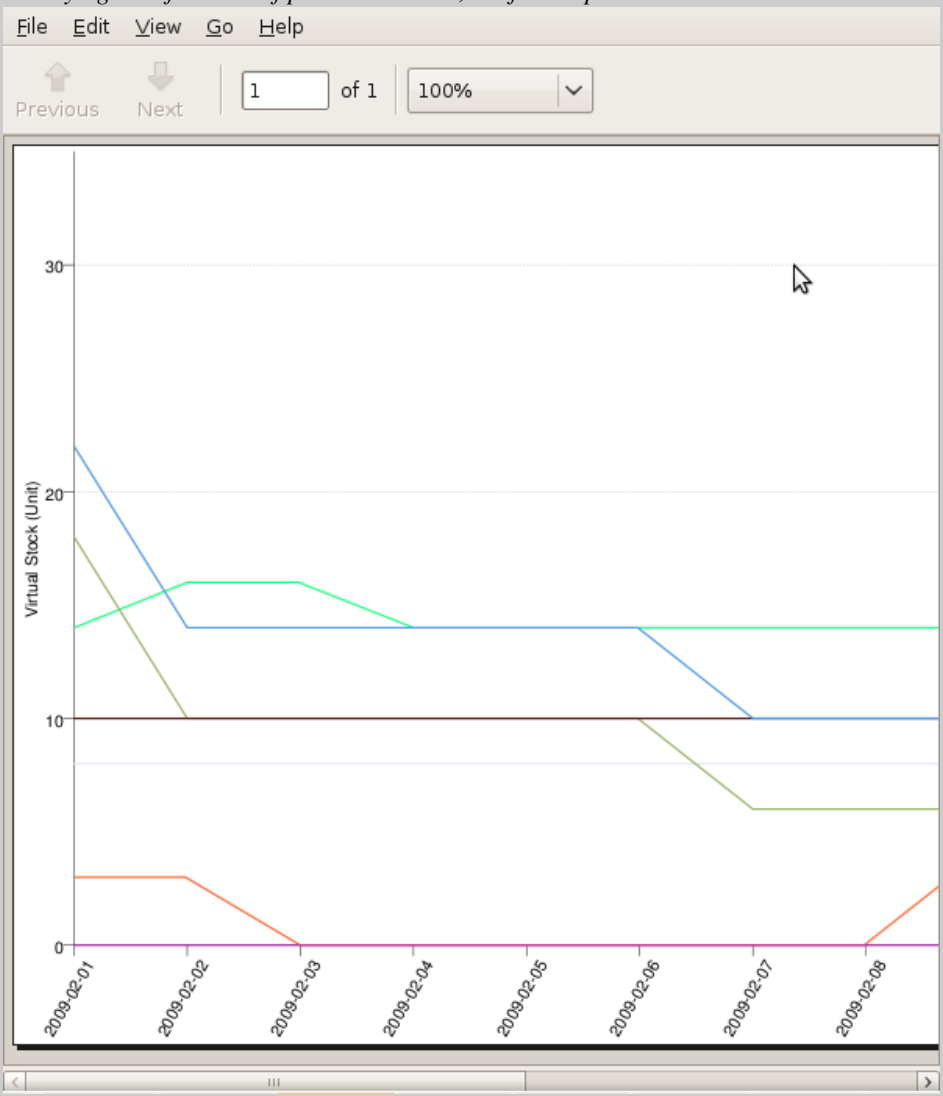


Figure 18.6: Printout of forecast stock levels

18.3.1 Lead times and locations

The tab **Procurement & Locations** contains information about different lead times and locations. Three lead time figures are available:

- **Customer Lead Time** : lead time promised to the customer, expressed in number of days between the order and the deliver to the customer,
- **Manufacturing Lead Time** : lead time, in days, between a production order and the end of production of the finished product,
- **Warranty (months)** : length of time in months for the warranty for the delivered products.

Note: *Warranty*
The warranty period is used in the management of repairs and after-sales service. You can find more information on this subject in Manufacturing.

Fields in the section **Storage Localisation** are given for information – they don't have any impact on the management of stock.

Counterpart locations are automatically proposed by the system but the different values can be modified. You'll find counterpart locations for:

- **Procurement**,
- **Production**,
- **Inventory**.

A procurement location is a temporary location for stock moves that haven't yet been finalized by the scheduler. When the system doesn't yet know if procurement is to be done by a purchase or production, Open ERP uses the counterpart location **Procurement**. You'll find there everything that hasn't yet been planned by the system. The quantities of product in this location cancel each other out.

18.3.2 Initial Inventory

Once a product has been defined, use an initial inventory operation to put actual current quantities into the system by location for the products in stock. Use the menu *Stock Management → Periodical Inventory → New Periodical Inventory* for this.

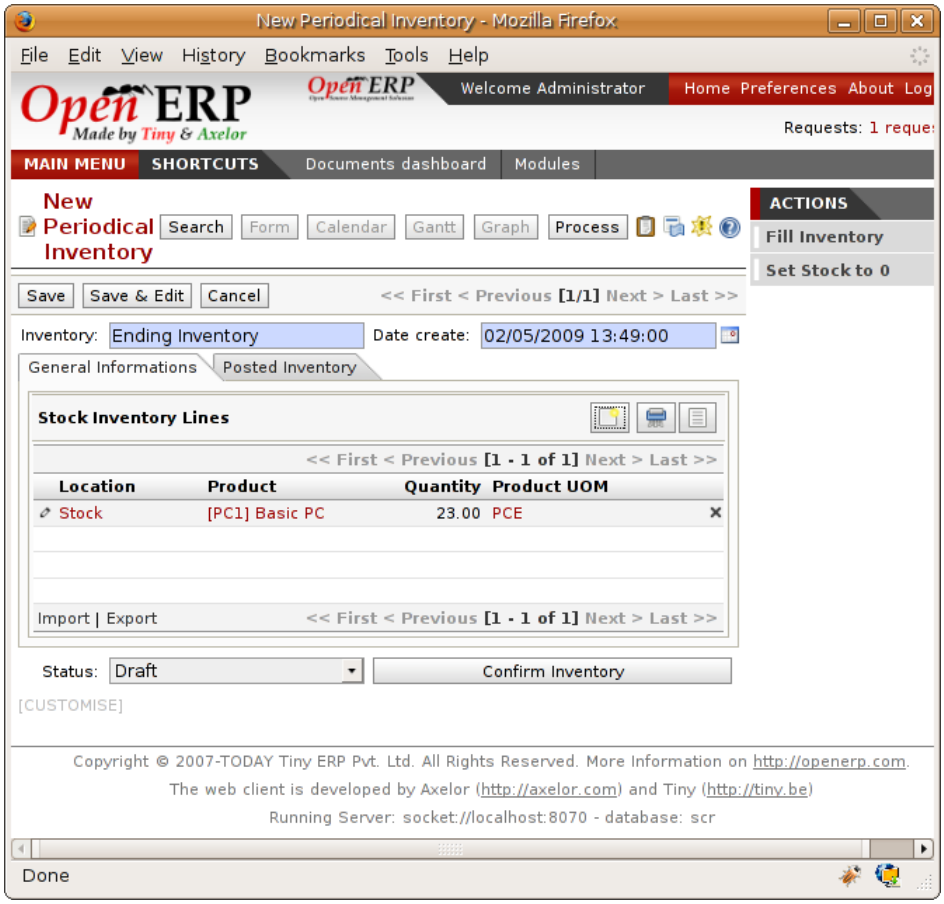


Figure 18.7: *Defining a new inventory operation*

Give a name (for example `Initial Inventory` or `Lost Product XYZ`) and a date for each inventory operation. You can then enter data about the quantities available for each product by location. Start by showing the location, for example `Stock` , and then select the product. Open ERP automatically completes the actual quantity actually available for that product in the location shown. You can then change that value to correct the value in stock.

Enter data for a single line in your inventory:

- **Location** : Stock,
- **Product** : PC1 Computers,
- **Quantity** : 23 Units.

Tip: *Periodical Inventory*
You are usually legally required to do a stock check of all your products at least once a year. As well as doing a complete annual stock check, Open ERP also supports the method of periodical inventory.
That means you can check the stock levels of a proportion of your products every so often. This system is accepted in France as long as you can guarantee that all of your products have been counted at least once per year. To do this, use the report Stock Management → Reporting → Dates of Inventories.
This gives you the last inventory date by product.
You can do this the same way for all products and all locations, so you only carry out small inventory operations through the year rather than a single large stock check at one point in the year (which usually turns out to be at an inconvenient time).

When your inventory operation is finished you can confirm it using the button to the bottom right of the form. Open ERP will then automatically create the stock moves to close the gaps, as mentioned at the start of this chapter. You can verify the moves generated using the second tab of the inventory operation form.

The correct levels of your product are now in your stock locations. A simple way of verifying this is to reopen the product form to see the quantities available in stock.

18.3.3 Receipt of a supplier order

Supplier goods receipt forms are automatically prepared by Open ERP by the purchase management process. You'll find a list of all the awaited receipts in the menu *Stock Management → Incoming Goods → Packing to Process*. Use the order number or the supplier name to find the right goods receipt form for confirmation of a goods in. This approach enables you to control quantities received by referring to the quantities ordered.

Figure 18.8: *List of items waiting*

You can also do goods-in data entry manually if there's no order, using the same menu *Stock Management → Incoming Goods → New Reception Packing*.

A new goods-in data entry form then opens. Enter the supplier data in the **Partner** field and you can type in the reference number from your supplier in the field **Origin**. You should then enter data about the products received in the lines.

The source location is already completed by default because of your supplier selection. You should then give the destination location where you will place the products. For example, enter `Stock`. At this stage you can set a lot number for traceability (this function will be described later in this chapter, so leave this field empty for the moment).

Once the form has been completed you can confirm the receipt of all the products at the same time using the **Process Now** button. If you want to enter data for a goods receipt that you're still waiting for click the button **Process Later**.

Figure 18.9: *Form for entering goods received from a supplier order*

The products then arrive in stock and should reflect the quantities shown on the product form.

In the goods receipt form, the field **Invoicing Control** lets you influence the way you send invoices to suppliers. If this is set to `To be invoiced` a supplier invoice will now be generated automatically in the draft state, based on the goods received. Your accountant then has to confirm this pre-invoicing once the supplier's invoice is received. This enables you to verify that the invoiced quantities correspond to the quantities received.

18.3.4 Customer delivery

Everything about goods receipt can also be done manually for a customer delivery. But this time, use the automated product delivery processes based on customer orders. Install the `sale` module so that you can proceed further in this section of the chapter.

Now create a new customer order from the menu *Sales Management → Sales Orders → New Quotation*. Enter the following data in this order:

- **Shop** : Tiny SPRL
- **Customer** : Agrolait
- **Order Line** :
  - **Product** : PC1 Computer,

- **Quantity** : 3 PCE
- **Procurement Method** : from stock.

You've seen already that Open ERP shows you the available product stock when you've selected list mode. The real stock is equal to the virtual stock because you've nothing to deliver to customers and you're not waiting for any of these products to be received into stock. The salesperson then has all the information needed to take orders efficiently.

Figure 18.10: *Entering an order for three computers*

Then confirm the quotation to convert it to an order. If you return to the product form you'll see the virtual stock is now smaller than the real stock. That happens because three products have been reserved by the order that you created, so they can't be sold to another customer.

Start the scheduler through the menu *Manufacturing* → *Compute All Schedulers*. Its functionality will be detailed in *Manufacturing*. This manages the reservation of products and places orders based on the dates promised to customers, and the various internal lead times and priorities.

Tip: *Just in Time*
Install the module `mrp_jit` *to schedule each order in real time after it's been confirmed. This means that you don't have to start the scheduler or wait for its periodical start time.*

You can now look at the the list of deliveries waiting to be carried out using the menu *Stock Management* → *Outgoing Products* → *Available Packings*. You find a line there for your order representing the items to be sent. Double-click the line to see the detail of the items proposed by Open ERP.

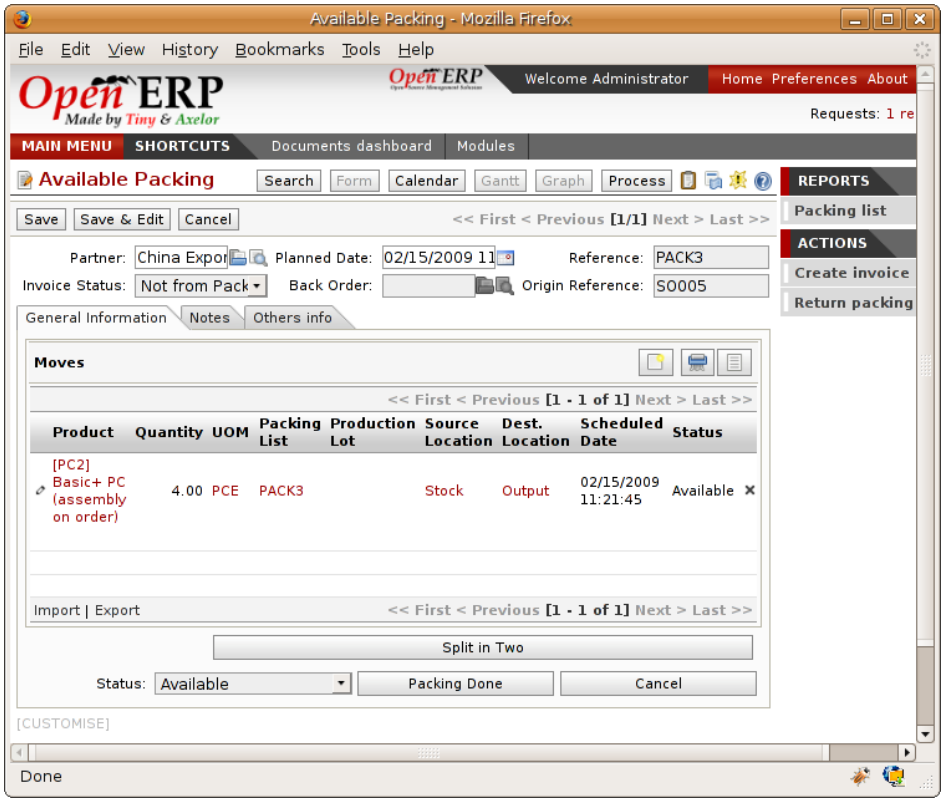


Figure 18.11: *Items on a customer order*

Tip: *States*
Open ERP distinguishes between the states ***Confirmed*** *and* ***Assigned****.*
You say that an item is ***Confirmed*** *when it's needed but the available stock is insufficient. You say that an item is* ***Assigned*** *when it's available in stock and the storesperson reserves it: the necessary products have been reserved for this specific operation.*

You can confirm a customer delivery using the **Confirm** button. A window then opens where you can enter the quantities actually delivered. If you enter a value less than the forecast one, Open ERP automatically generates a partial delivery notes and a new order for the remaining items. For this exercise, just confirm all the products.

If you return to the list of current orders you will see that your order has now been marked as delivered (done). A progress indicator from 0% to 100% is shown by each order so that the salesperson can follow the progress of their orders at a glance.

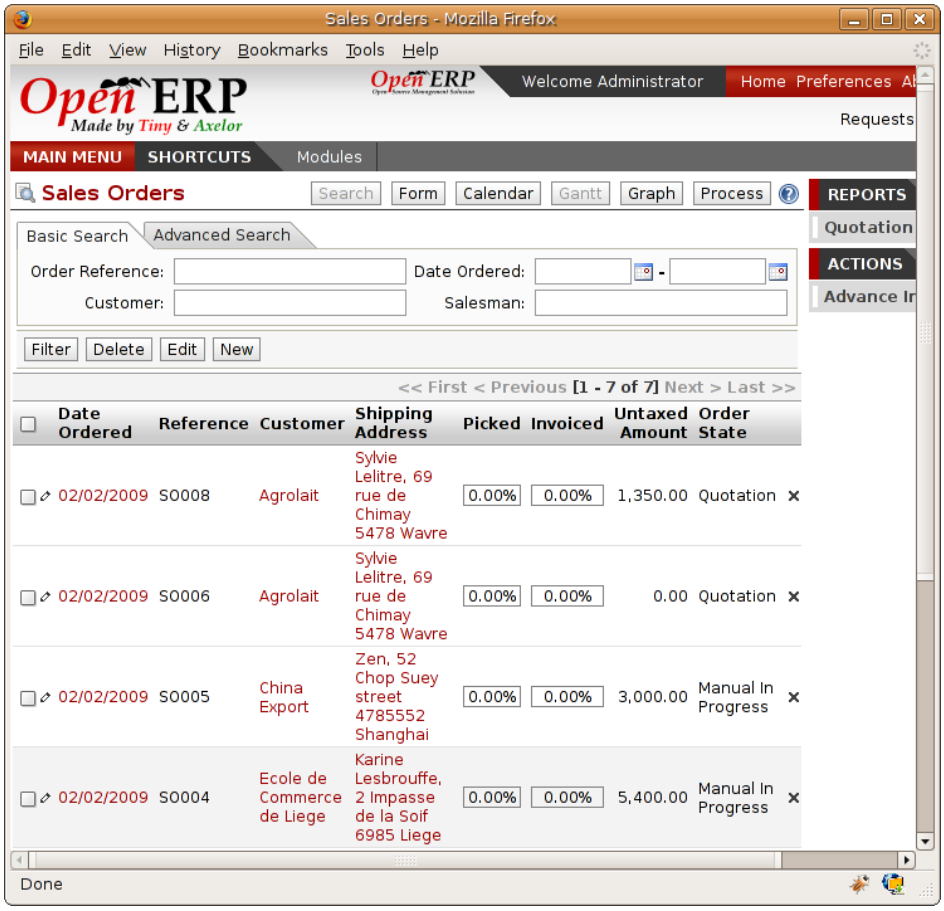


Figure 18.12: *List of orders with their delivery state*

Note: *Negative Stock*
Stock Management is very flexible so that it can be more effective. For example if you forget to enter products at goods in, this won't prevent you from sending them to customers. In Open ERP you can force all operations manually using the button ***Force assignment****. In this case your stocks risk falling negative. You should monitor all stocks for negative levels and carry out an inventory correction when that happens.*

18.3.5 Analysing stock

Now look at the effect of these operations on stock management. There are several ways of viewing stocks:

- from the product form,
- from the locations,
- from the orders.

Start by opening the product form from the menu *Products* → *Products* and looking at the list of items. You'll immediately see the following information about the products:

- **Real Stock**,
- **Virtual Stock**.

If you want more information you can use the actions to the right of the form. If you click the report **Future Stock Forecast**, Open ERP opens a graphical view of the stock levels for the selected products changing with time over the days and weeks to come. The value at the left of the graph is the real stock (today) and the value at the right is the virtual stock (stock in the short term future).

To get the stock levels by location use the button **Stock by Location**. Open ERP then gives you the stock of this product split out over all the possible locations. If you only want to see the physical locations in your company just filter this list using the Location Type **Internal Locations**. By default, physical locations are already colored red to distinguish them better. Consolidate locations (the sum of several locations, following the hierarchical structure) are colored blue.

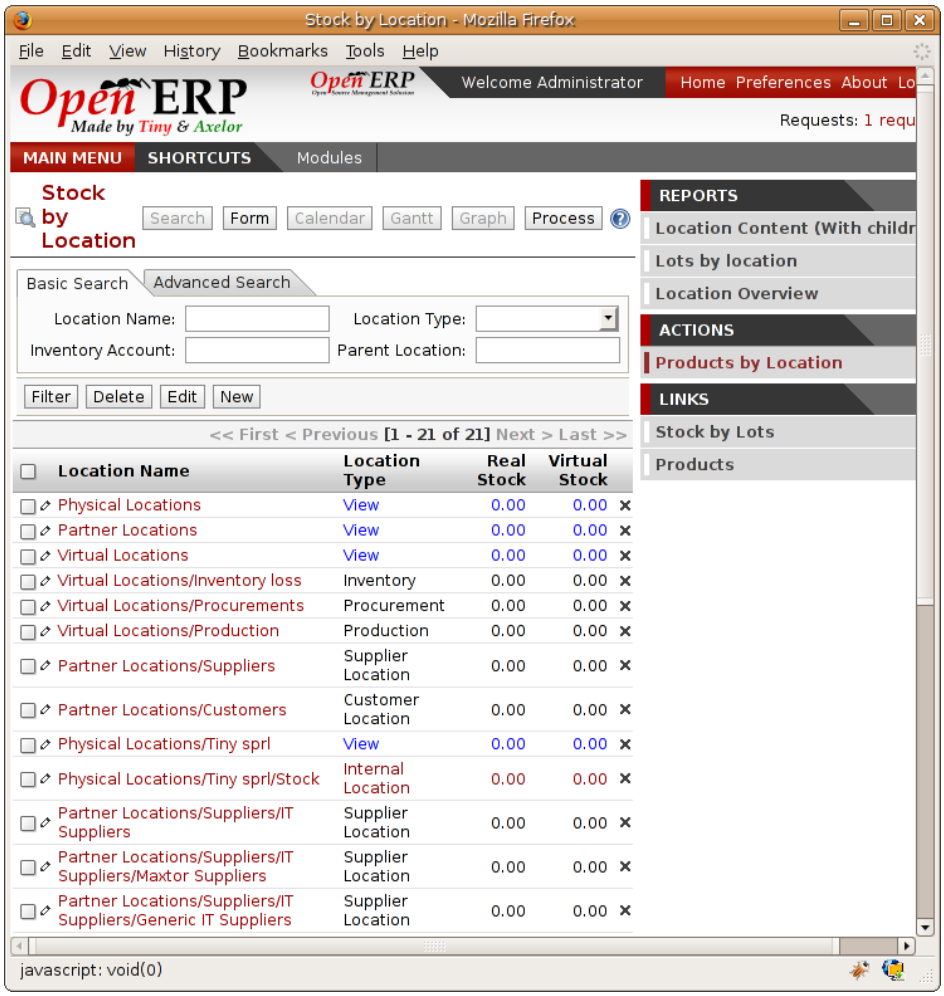


Figure 18.13: *Stock quantities by location for a given product*

You can get more detail about all the stock moves from the product form. You'll then see each move from a source location to a destination location. Everything that influences stock levels corresponds to a stock move.

You could also look at the stocks available in a location using the menu *Stock Management → Stock Locations Structure*. You can then use the structure shortcuts at the and the location tree in the main window. Click a location to look at the stocks by product. A location containing child locations shows the consolidated contents for all of its child locations.

You should now check the product quantities for various locations to familiarize yourself with this double-entry stock management system. You should look at:

- supplier locations to see how goods receipts are linked,

- customer locations to see how packing notes are linked,
- inventory locations to see the accumulated losses and profits,
- production locations to see the value created for the company.

Also look at how the real and virtual stocks depend on the location selected. If you enter a supplier location:

- the real stock shows all of the product receipts coming from this type of supplier,
- the virtual stock takes into account the quantities expected from these suppliers (+ real stock + quantities expected from these suppliers). It's the same scheme for customer locations and production locations.

18.4 Logistics Configuration

In this section you'll see how to configure stock management to match your company's needs. Open ERP can handle many different situations by configuring it to behave as required.

18.4.1 Stock locations

You've seen in the preceding sections that the whole of stock management is built on a concept of stock locations. Locations are structured hierarchically to account for the subdivision of a warehouse into sections, aisles, and/or cupboards. The hierarchical view also enables you to structure virtual locations such as production counterparts. That gives you a finer level of analysis.

Use the menu *Stock Management* → *Configuration* → *Locations* then click **New** to define new locations.

Figure 18.14: *Definition of a stock location*

You should then give a name to your stock location. Now look at location types and localization.

18.4.2 Location types

The location must have one of the following types:

- View: shows that the location is only an organizational node for the hierarchical structure, and can't be involved in stock moves itself. The view type is not usually made into a leaf node in a structure – it usually has children.
- Customer: destination for products sent to customers,
- Supplier: source of products received from suppliers,
- Internal: locations for your own stock,
- Inventory: the counterpart for inventory operations used to correct stock levels,
- Production: the counterpart for production operations; receipt of raw material and sending finished products,
- Procurement: the counterpart for procurement operations when you don't yet know the source (supplier or production). Products in this location should be zero after the scheduler run completes.

You can have several locations of the same type. In that case your product, supplier and warehouse configurations determine the location that's to be used for any given operation.

The counterparts for procurement, inventory and production operations are given by the locations shown on the product form. The counterparts of reception and delivery operations are given by the locations shown on the partner form. The choice of stock location is given by the configuration of the warehouse, linked to a Shop.

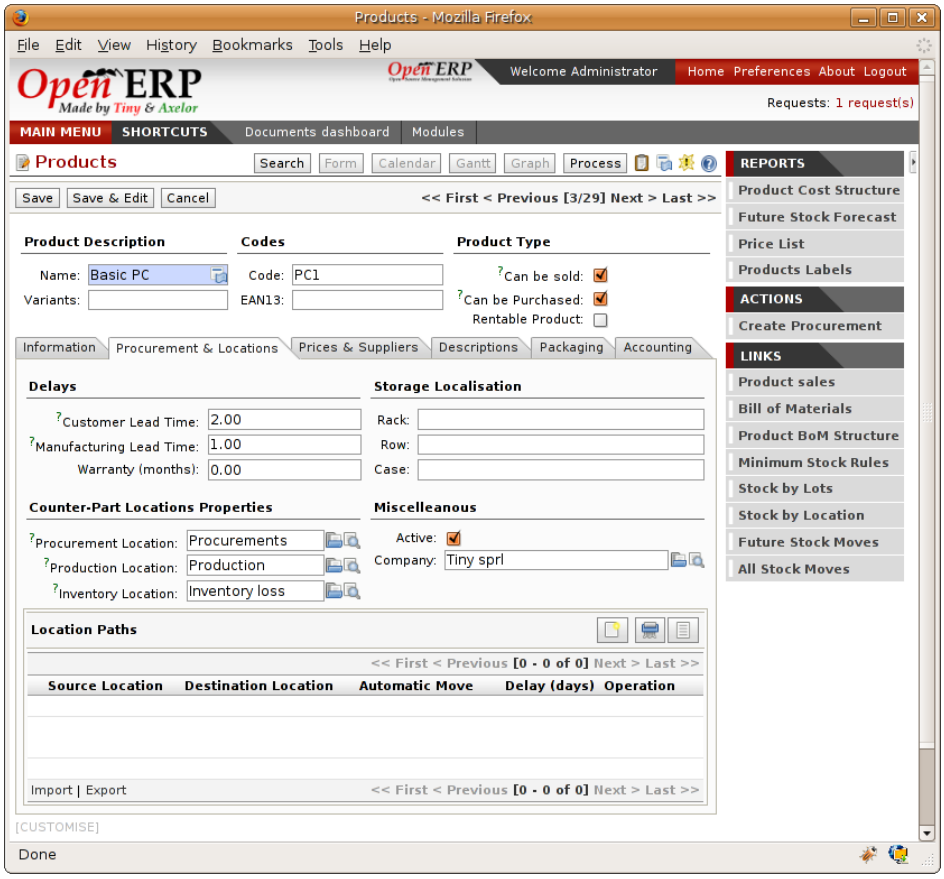


Figure 18.15: *Definition of stock locations on the product form*

Figure 18.16: *Definition of stock locations on the partner form*

18.4.3 Localization

Each location can be given an address. That enables you to create a location for a customer or a supplier, for example. You can then give it the address of that customer or supplier. You should indicate to Open ERP on the partner form that it should use this location rather than the default location given to partner deliveries.

Tip: *Subcontracting production*
You'll see in the chapter, Manufacturing, that it is possible to assign a location to a manufacturing workcenter. If this location is at a supplier's you must give it an address so that Open ERP can prepare a delivery order for the supplier and a receive operation for the manufactured goods.
Creating a location specifically for a partner is also a simple solution for handled consigned stocks in Open ERP.

Note: *Consigned Stock*
Consigned stock is stock that is owned by you (valued in your accounts) but is physically stocked by your supplier. Or, conversely, it could be stock owned by your customer (not valued by you) but stocked in your company.

To enable you to consolidate easily at a higher level, the location definition is hierarchical. This structure is given by the field **Parent location**. That also enables you to manage complex cases of product localization. For example, you could imagine the following scenario.

Example Structure for two warehouses

A company has a warehouse in Paris and in Bordeaux. For some orders you must deliver the products from Paris, and for others from Bordeaux. But you should also specify a fictitious warehouse that Open ERP uses to calculate if it should deliver products from Paris or from Bordeaux.

To do this in Open ERP, you'd create a third warehouse 'France' which consolidates the warehouses in Paris and Bordeaux. You create the following physical locations:

- Company
  - Output
    - Warehouses France
      - Warehouse Paris
      - Warehouse Bordeaux

Open ERP will then deliver the goods from the warehouse that has the ordered product in stock. When products are available in several warehouses, Open ERP will select the nearest warehouse. To formalize the notion of distance between warehouses you should use the geographic co-ordinates (X, Y, Z) of the different stores to enable Open ERP to search for the nearest goods.

The same co-ordinates could also be used to structure the shelves, aisles and interior rooms in a warehouse.

18.4.4 Accounting valuation in real time

If you have experience of managing with traditional software you'll know the problem of getting useful indicators. If you ask your accountant for a stock valuation or the value added by production he'll give you a figure. If you ask for the same figure from your stores manager you'll get an entirely different amount. You have no idea who's right!

In Open ERP the management of stock is completely integrated with the accounts, to give strong coherence between the two systems. The double-entry structure of locations enables a very precise correspondence between stocks and accounts.

Each stock movement also generates a corresponding accounting entry in an accounting journal to ensure that the two systems can stay in permanent synchronization.

To do that, set up a general account for each location that should be valued in your accounts. If a product goes to one location or another and the accounts are different in the two locations, Open ERP automatically generates the corresponding accounting entries in the accounts, in the stock journal.

If a stock move will go from a location without an account to a location where an account has been assigned (for example goods receipt from a supplier order), Open ERP generates an accounting entry using the properties defined in the product form for the counterpart. You can use different accounts per location or link several location to the same account, depending on the level of analysis needed.

You use this system for managing consigned stocks:

- a supplier location that is valued in your own accounts or,
- a location in your own company that isn't valued in your accounts.

18.4.5 Linked locations

Locations in Open ERP can be linked between each other to define paths followed by products. So you can then define rules such as: all products that enter the warehouse must automatically be sent to quality control. The warehouse and quality control are represented by two different locations.

Then when a product arrives in a location, Open ERP can automatically suggest that you send the product to another linked location. Three link modes are available:

- Manual,
- Automatic,
- Automatic without steps.

The manual mode will create an internal move order to the linked location once products arrive in the source locations. This order will wait for a confirmation of the move by a user. This enables you to have a list of moves to do, proposed by the system and confirmed by the storesperson.

Tip: *Product Logistics*
The module `stock_location` lets you generate paths to follow, not just at the level of locations but also at the level of products. It then enables you to manage default locations for a given product or to refer to the products as a function of operations such as quality control, supplier receipt, and after-sales service.
A more detailed explanation of this module, with examples, is given at the end of this chapter.

The automatic mode will do the same but won't wait for a confirmation from the user. Products will automatically be sent to the linked location without any intervening manual operation to do. This corresponds to the case where, for simplicity, you delete a step in the process so the end user can set off the process automatically.

The `automatic without steps` mode won't include the additional stock move but will change the destination move transparently to assign the linked the location. You could then assign a destination location to which you send all the products that arrive in your warehouse. The storesperson will modify the goods receipt note.

If there is a linkage to do, the field **Type of linked location** lets the destination location be determined. If the field is set to 'customer', the location is given by the properties of the partner form. If the field is set to `fixed` , the destination location is given by the field **Location if link is fixed**.

Some operations take a certain time between order and execution. To account for this lead time, you can set a value in days in the field **Link lead time**. Then the extra move (automatic or not) will be carried out several days after the original move. If you use the mode `automatic without steps`, the lead time is inserted directly into the initial order. In this way you can add security lead times at certain control points in the warehouse.

18.4.6 Case of structuring locations

You'll see in the next part that linking locations lets you manage a whole series of complex cases in managing production efficiently:

- handling multiple operations for a customer order,
- tracking import and export by sea transport,
- managing a production chain in detail,
- managing rented products,
- managing consigned products.

To show these concepts, five cases of structuring and configuring these locations are given below. Many other configurations are possible depending on needs.

18.4.7 Handling customer orders

Customer orders are usually handled in one of two ways:

- item note (or preparation order), confirmed when the item is ready to send,
- delivery order (or freight note), confirmed when the transporter has delivered the item to a customer.

You use the following stock move in Open ERP to simulate these operations:

- Packing Note: Stock > Output,
- Delivery Order: Output > Customer.

The first operation is automatically generated by the customer order. The second is then generated by the stock management by showing that the `Output` location is linked to the `Customer` location. That then gives the two operations waiting. If the `Output` location isn't situated beneath the stock location you then have to move the item from stock to the place that the item is prepared.

Some companies don't want to work in two steps, because it just seems like extra work to have to confirm a delivery note in the system. You can then set the link mode to 'Automatic' to make Open ERP automatically confirm the second step. It's then assumed the all the items have automatically been delivered to the customer.

18.4.8 Linked Production

The `stock_location` module enables you to manage the linkages by product in addition to doing that by location. You can then create a location structure that represents your production chain by product.

The location structure looks like this:

- Stock
  - Level 1
  - Level 2
    - Link 1
      - Operation 1
      - Operation 2
      - Operation 3
      - Operation 4

You can then set the locations a product or a routing must go through on the relevant form. All products that enter the production chain will automatically follow the predetermined path.

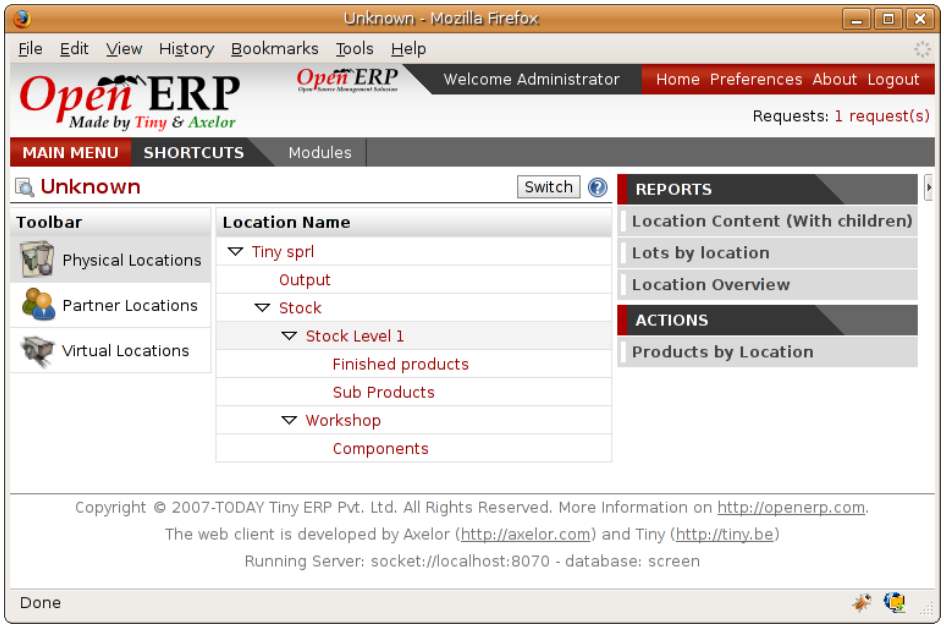


Figure 18.17: *Logistics for a given product*

To improve your logistics, you'll see further on in this chapter how you can put minimum stock rules onto different locations to guarantee security stocks for assembly operators. Reports on the state of stocks in different locations will rapidly show you the bottlenecks in your production chain.

18.5 Import / Export

Managing import / export with foreign companies can sometimes be very complex. Between a departure port and destination company, products can get stopped for several weeks at sea or somewhere in the numerous transportation stages and customs. To manage such deliveries efficiently it's important to:

- know where your products are,
- know when they're likely to arrive at their destination,
- know your value in transit,
- follow the development of the different steps.

Linked locations in Open ERP enable this all to be managed rather elegantly. You can use a structure like this:

- Suppliers
  - European Suppliers
  - Chinese Suppliers
- In transit
  - Shanghai Port
  - Pacific Ocean
  - San Francisco Port
  - San Francisco Customs

18.5.1 Stock

The transit location are linked between themselves with a manual confirmation step. The internal stock move is validated at each port and customs arrival. Open ERP prepares all the linked moves automatically.

Note: *Intrastat*
Companies that do import / export should install the module `report_intrastat`*. This enables them to prepare the reports needed to declare product exports.*

You can use the lead times between different locations to account for real delays. Your lead times and stock forecasts are calculated by Open ERP to estimate the arrival of incoming products so that you can respond to a customer's needs as precisely as possible.

You can also value the products in transit in your account depending on the chosen stock location configuration.

18.5.2 Rental locations

You can manage rental locations in Open ERP very simply using the same system of linked locations. Using the module `stock_location` you can set a return date for rental items sent to customer location after a certain rental period.

Then the set of real and virtual stocks is maintained daily in real time. The different operations such as delivery and receipt after a few days are automatically suggested by Open ERP which simplifies the work of data entry.

You then have the product list found in the customer locations and your own stock in your stock location. The list of goods receipts waiting is automatically generated by Open ERP using the location links.

The same principle is used for internal stock to generate the quality control for certain products.

18.5.3 Consigned Products

The principle of linked locations is used to manage consigned products. You can specify that certain products should be returned to you a certain number of days after they have been delivered to customers.

When the products have been delivered Open ERP automatically creates goods receipts for the consigned product. The specified date is obviously approximate but enables you to forecast returns.

18.6 Warehouses

Warehouses are designed for physical locations from which you can deliver to the customer and to which you receive raw materials. Then when you buy products from a supplier you should take account of which Warehouse you use for this purchase. This also enables the end user to not have to choose from a list of locations but simply a real warehouses.

Use the menu *Stock Management* → *Configuration* → *Warehouses* then click **New** to configure a new warehouse.

A warehouse is defined by a link between three locations:

- The **Location Stock** field shows the place of products available for delivery to a customer direct from this warehouse. Availability is given by all the products in that location and any child locations.
- The **Location Input** field shows where ordered products are received from a supplier to that warehouse. It can be the same as the stock location if, for example, you want to do a quality control operation on your incoming raw materials.
- The **Location Output** field (called `Output` in the demonstration database) is designed as a buffer zone in which you store all the items that have been picked but not yet delivered to a customer. You're strongly advised

not to put this location within the stock hierarchy but instead at a level higher or the same.

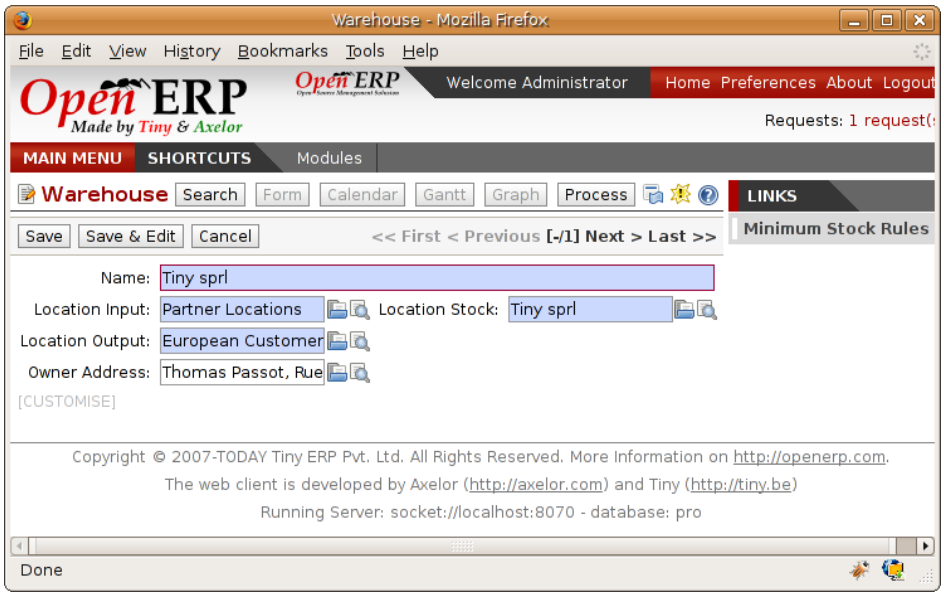


Figure 18.18: *Warehouse parameters*

You can also set an address for the warehouse. This address should ideally be an address for your company. Once the warehouse has been defined it can be used in:

- Minimum stock rules,
- Supplier orders,
- Customer orders (using the definition of a point of sale, which is linked to a warehouse).

18.6.1 Automatic procurement

Several methods of automatically procuring products can be carried out by Open ERP:

- the workflow used by products that have the procurement mode **Make to Order**,
- using minimum stock rules for **Make to Stock** products,
- using the master production schedule for **Make to Stock** products.

The two last methods are described below.

18.6.2 Minimum stock rules

To automatically make stock replenishment proposals, you can use minimum stock rules. To do this use the menu *Stock Management → Automatic Procurements → Minimum Stock Rules*.

The rule is the following: if the virtual stock for the given location is lower than the minimum stock indicated in the rule, the system will automatically propose a procurement to increase the level of virtual stock to the maximum level given in the rule.

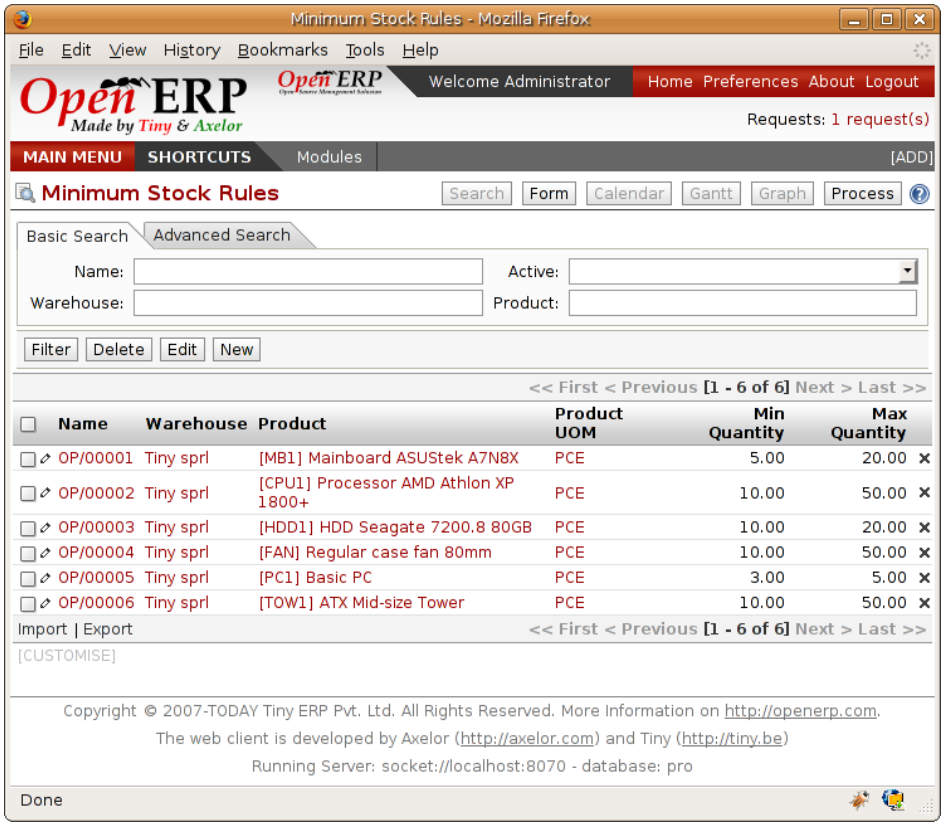


Figure 18.19: *List of minimum stock rules*

Tip: *Conflict resolution*
You may find that draft production or procurement orders don't happen correctly. That can happen if the system is badly configured (for example if you've forgotten to set the supplier on a product).
To check this, look at the list of procurements in the exception state in the menu Stock Management → Automatic Procurements → Exceptions Procurements. *More detail on handling these exceptions is given in* Manufacturing.

It's important to underline that the rule is based on virtual quantities and not just on real quantities. It then takes account of the calculation of orders and receipts to come.

Take the following example:

- Products in stock: 15
- Products ordered but not delivered: 5
- Products in manfacture: 2

The rules defined are:

- Minimum stock: 13
- Maximum stock: 25.

Once the rules have been properly configured the purchasing manager only needs to look at the list of orders for confirmation with the supplier using the menu *Purchase Management → Purchase Orders → Requests for Quotation*.

Note that the procurement doesn't require that you buy from a supplier. If the product has a **Supply method** of `Produce` the scheduler will generate a production order and not a supplier order.

You can also set multiple quantities in the minimum stock rules. If you set a multiple quantity of 3 the system will propose procurement of 15 pieces not the 13 it really needs. In this case it automatically rounds the quantity upwards.

In a minimum stock rule, when you indicate a warehouse it suggests a stock location by default in that warehouse. You can change that location by default when the scheduler completes, by location and not by warehouse.

18.7 Scheduling

The master production plan, sometimes called the MPS (Master Production Schedule), enables you to generate forecasts for incoming and outgoing material. It's based on forecasts of inputs and outputs by the logistics manager.

Note: *MPS, Procurement and Production*
Open ERP distinguishes between Production, Purchase and Production.
Production is manufacture, Purchase is the acquisition of goods from another party, and Procurement is either or both of those. So it would be better to call the MPS the Master Procurement Schedule. Which Open ERP does!

Tip: *Product trading*
Also called the Production Plan, this tool is also very useful for traded products which aren't manufactured. You can then use it for stock management with purchased and manufactured products.

To be able to use the production plan, you must install the `stock_planning` module. This can be found amongst Open ERP's `addons-extra` rather in the main set of `addons`. (Beware! One reason it is not in the core of Open ERP at the time of writing could be because some screens have no navigation controls, so you can't always easily get back to the main Open ERP system).

18.7.1 Sales Forecasts

The first thing to do to work with a production plan is to define the periods for stock management. Some companies plan daily, others weekly or monthly.

Tip: *Stock Management interval*
The interval chosen for managing stock in the production plan will depend on the length of your production cycle. You generally work daily, weekly or monthly.
If your products take several days to assemble it's preferable to have a weekly plan. If your manufacturing cycles are several months you can work with a monthly plan.

To do this use the menu *Sales Management → Configuration → Create Sales Periods*. A window appears enabling you to automatically define the next periods that will be provided for stock management.

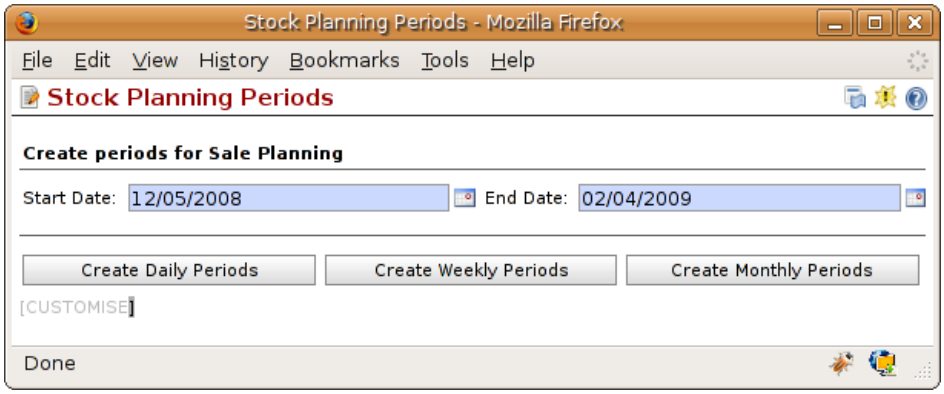


Figure 18.20: *Defining periods for stock management*

Salespeople can then enter their sales forecasts by product and by period using the menu *Sales Management → Sales*

Forecasts → My Sales Forecasts. The forecasts can be made by quantity or by value. For a forecast by amount Open ERP automatically calculates for you the quantity equivalent to the estimated amount. This can be modified manually as needed before completion.

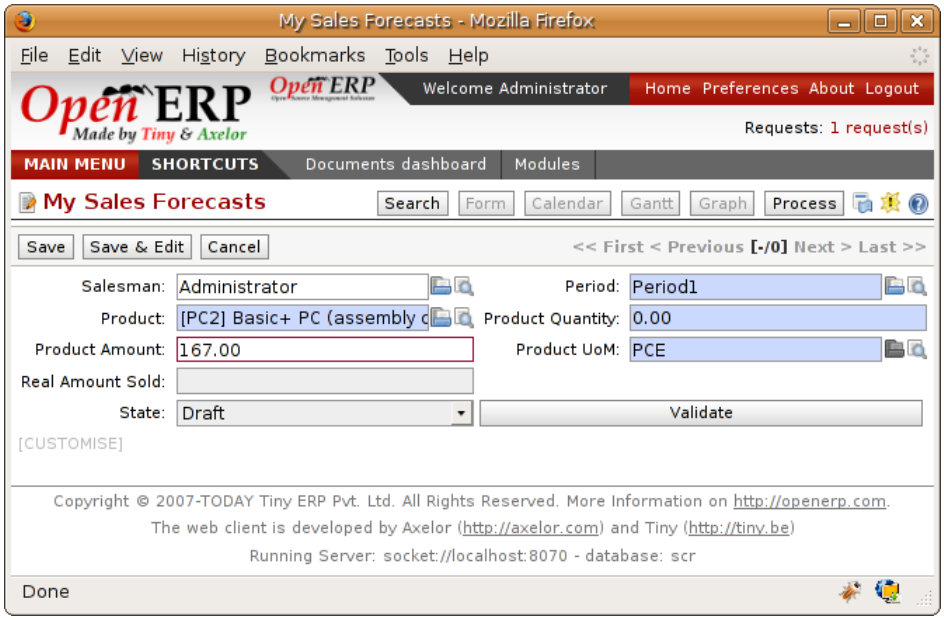


Figure 18.21: *Sales Forecast to help create a master production plan*

18.7.2 Production Plan

The manager responsible for logistics then plans receipts (manufacturing or purchases) and outgoings (consumption or customer deliveries) by period. To do this use the menu *Stock Management → Planning → Master Procurement Schedule*.

For each period and product Open ERP gives you the following information:

- stock estimated at the end of the period, calculated as stock in the following period less total estimated outgoings plus total estimated inputs,
- closed entries, coming from production or confirmed purchases,
- forecast inputs for the period, calculated using the incoming entries less the closing amounts,
- planned inputs entered manually by the logistics manager,
- closed outgoings which are the consumption of manufacturing waiting and deliveries to be made to customers,
- forecast outgoings, calculated from the planned outgoings, less the closing amounts,
- planned outgoings, manually entered by the logistics manager,
- sales forecasts, which represent the sum of forecasts made by the salespeople.

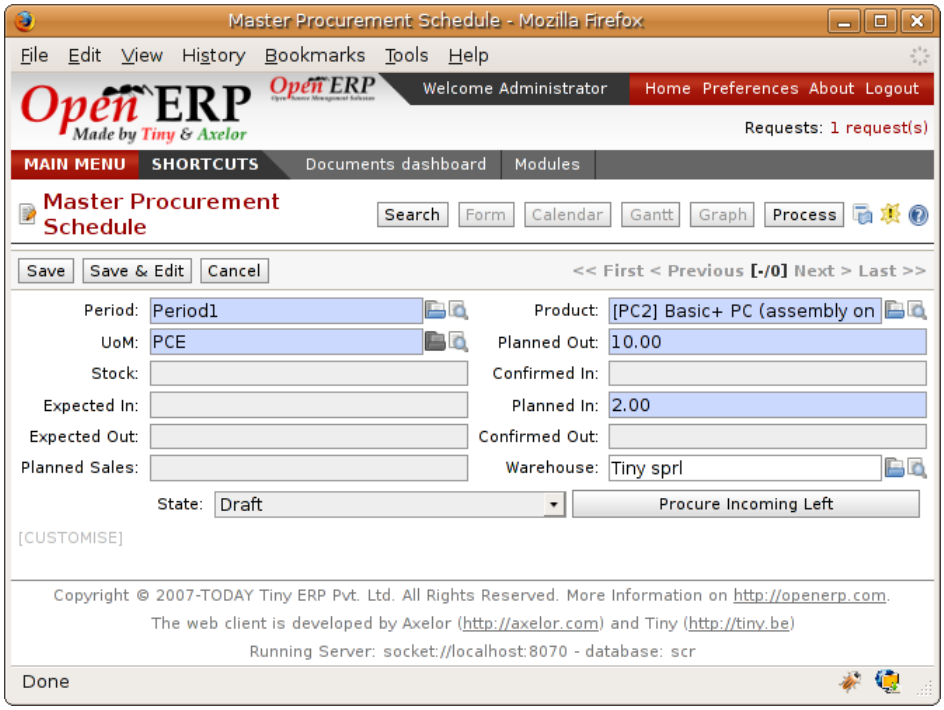


Figure 18.22: *The master production schedule (MPS)*

The production plan then enables the logistics manager to play with the forecast income and outgoings and test the impact on the future stock for the product under consideration. It enables you for example to check that the stock doesn't fall below a certain level for the product under consideration.

You can also open the production plan for past periods. In this case Open ERP shows you the real stock moves, by period for forecast reports.

If you don't have automated procurement rules for a product you can start procurement at any time based on the estimates of the production plan. To do this press the button **Procure Incoming Left** (i.e. remaining) on the **Master Procurement Schedule**. Open ERP plans procurement for an amount equal to the entries forecast.

18.8 Management of lots and traceability

The double-entry management in Open ERP enables you to run very advanced traceability. All operations are formalized in terms of stock moves, so it's very simple to search for the cause of any gaps in stock moves.

Note: *Upstream and downstream traceability*
Upstream *traceability runs from the raw materials received from the supplier and follows the chain to the finished products delivered to customers. (Note that the name is confusing - this would often be considered a downstream direction. Think of it as* ***Where Used****.)*
Downstream *traceability follows the product in the other direction, from customer to the different suppliers of raw material. (Note that the name is confusing - this would often be considered an upstream direction. Think of it as* ***Where Supplied****.)*

18.8.1 Stock Moves

Use the menu *Stock Management → Traceability → Low Level → Stock Moves* to track past stock transactions for a product or a given location. All the operations are available. You can filter on the various fields to retrieve the

operations about an order, or a production activity, or a source location, or any given destination.

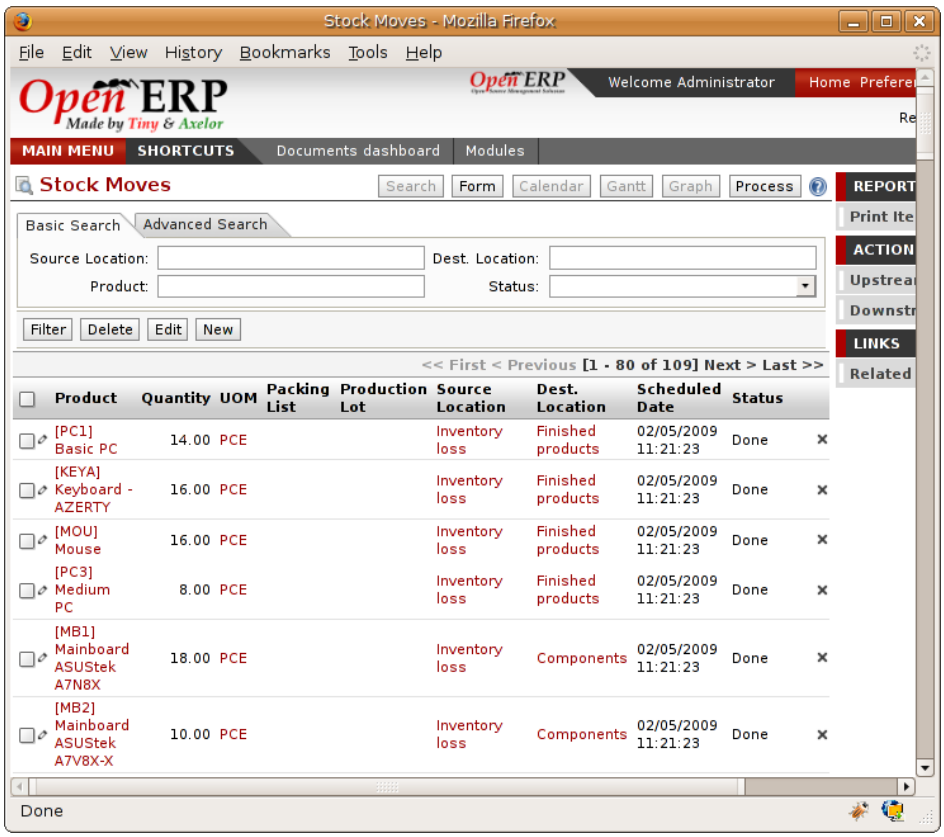


Figure 18.23: *History of stock movements*

Each stock move is in a given state. The different possible states are:

- `Draft` : the move has so far had no effect in the system. The transaction hasn't yet been confirmed,
- `Confirmed` : the move will be done, so it will be counted in the calculations of virtual stock. But you don't know whether it will be done without problem because the products have been reserved for the move,
- `Validated` : the move will be done and the necessary raw material have been reserved for the transaction,
- `Done` : the stock move has been done, and entered into the calculations of real stock,
- `Waiting` : in the case of transactions `From Order` , this state shows that the stock move is blocked waiting for the end of another move,
- `Cancelled` : the stock move wasn't carried out, so there's no accounting for it in either real stock or virtual stock.

Delivery orders, goods receipts and internal picking lists are just documents that group a set of stock moves. You can also consult the history of these documents using the menu *Stock Management → Traceability → Low level → Packing*.

18.8.2 Lots

Open ERP can also manage product lots. Two lot types are defined:

- Production lots (batch numbers) are represented by a unique product or an assembly of identical products leaving the same production area. They are usually identified by bar codes stuck on the products. The batch can be marked with a supplier number or your own company numbers.
- Tracking numbers are logistical lots for identifying the container for a set of products. This corresponds, for example, to the pallet numbers on which several different products are stocked.

These lots can be encoded onto all stock moves and, specifically, on goods-in lines, internal moves and product deliveries.

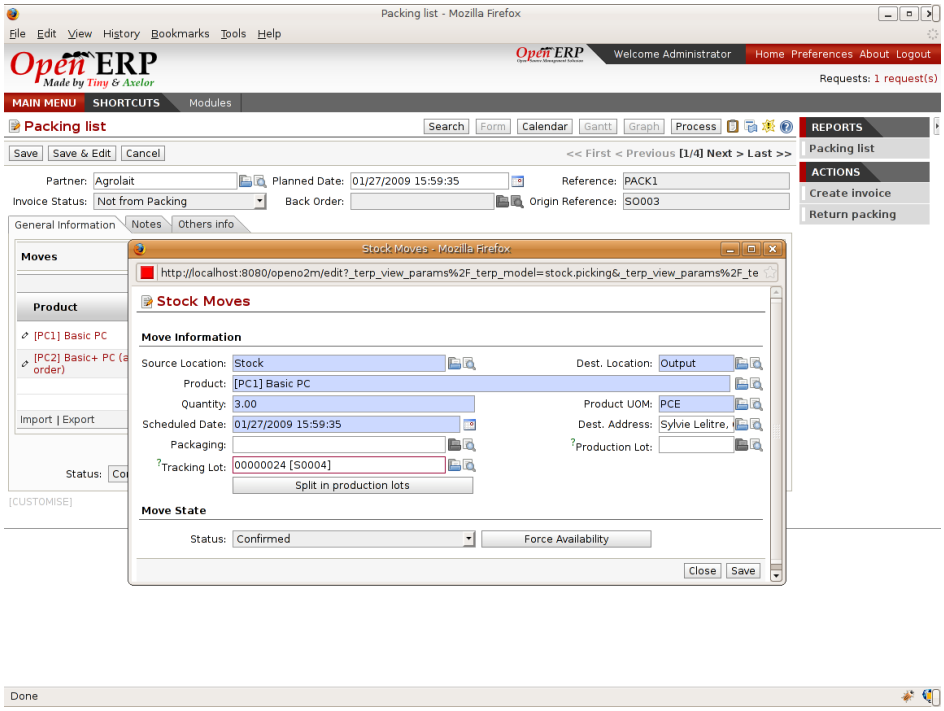


Figure 18.24: *Entering a line for production receipt*

To enter the lot number in an operation you can use an existing lot number or create a new lot. A production lot (batch number) is used for a single product. A tracking number can be used several times for different products, so you can mix different products on a pallet or in a box.

Note: *Simplified View*
*In the `Simplified View` the tracking numbers can't be seen: the field is hidden. To get to `Extended View` mode, assign the group **Usability – Extended View** to the current user.*

You can also specify on the product form the operations in which a lot number is required. You can then compel the user to set a lot number for manufacturing operations, goods receipt, or customer packing.

You don't have to encode the lot number one by one to assign a unique lot number to a set of several items. You only need to take a stock move for several products line and click the button **Split in Production Lots**. You can then give a lot number prefix (if you want) and Open ERP will complete the prefix in the wizard with a continuing sequence number. This sequence number might correspond to a set of pre-printed barcodes that you stick on each product.

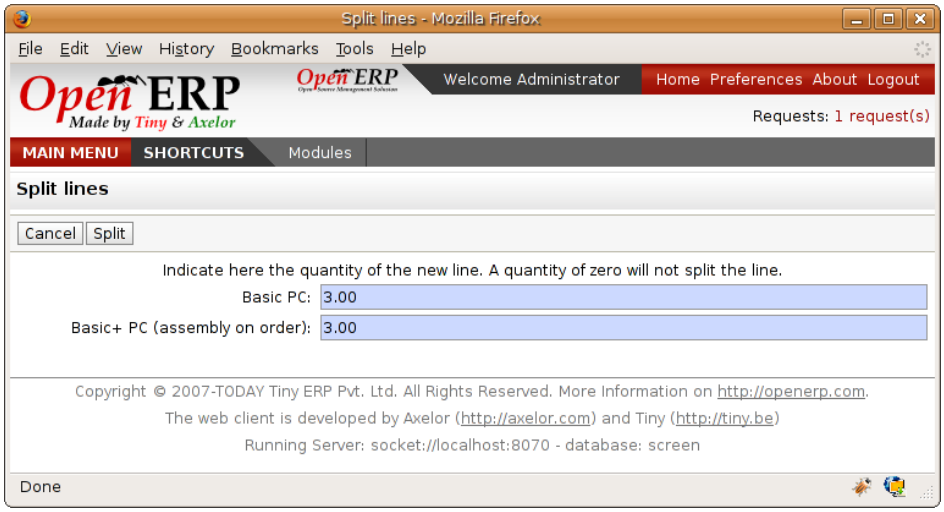


Figure 18.25: *Splitting a lot into uniquely identified parts*

18.8.3 Traceability

If you code in the lot numbers for stock moves as described above you can then investigate the traceability of any given lot number. To do this use the menu *Stock Management → Traceability → Production Lots*, or *Stock Management → Traceability → Tracking Lots*.

Tip: *Product Shortcuts*
From the product form, the toolbar to the right offers useful information:

- ***Minimum stock rules***,
- ***Stocks by location***,
- ***Sales detail***,
- ***Stocks by lot***,
- ***Bills of Materials***.

Search for a particular lot using the filters for the lot number, the date or the product. Once you can see the form about this lot several actions are possible:

- **Traceability upstream** : from supplier through to customers,
- **Traceability downstream** : from customer back to suppliers,
- Stock in all the physical and virtual locations.

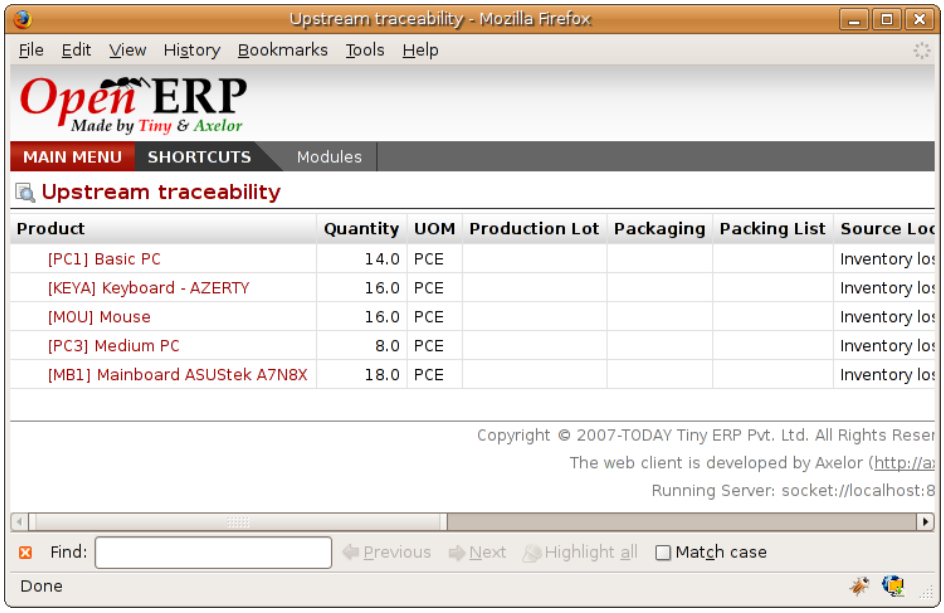


Figure 18.26: *Tracing upstream in Make to Order*

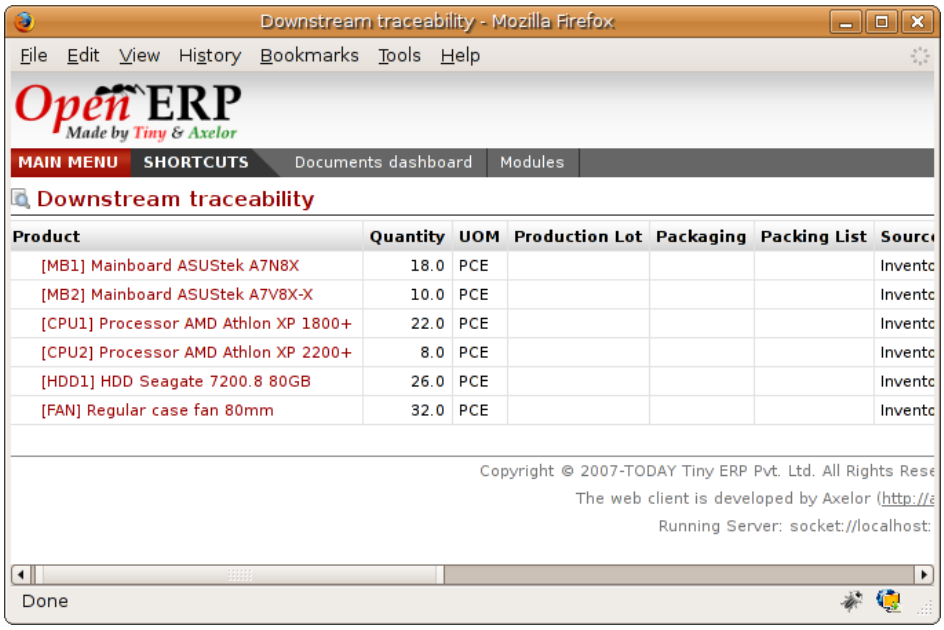


Figure 18.27: *Tracing downstream in Make to Stock*

Finally, on a lot, you can enter data on all the operations that have been done on the product. That forms a useful history of the pre-sales operations.

18.9 Management by Journal

You can manage stock through journals in the same way as you can manage your accounts through journals. This approach has the great advantage of being able to define journals in various ways as you need them to meet your company's needs.

For example, a large company may want to organize deliveries by department or warehouse. You can then create a journal and a manager for each department. The different users can then work in a journal as a function of their position in the company. That enables you to structure your information better.

A company that does a lot of transport can organize its journals by delivery vehicle. The different delivery orders will then be assigned to a journal representing a particular vehicle. Then if the vehicle has left the company you can confirm all the orders that are found in the journal all at the same time.

18.9.1 The different journals

Install the module `sale_journal` to work with journals. This adds three new concepts to Open ERP:

- Invoicing journals,
- Order journals,
- Delivery journals.

Invoicing journals are used to assign purchase orders and/or delivery order to a given invoicing journal. Everything in the journal can be invoiced in one go, and you can control the amounts by journal. For example you can create the following journals: daily invoicing, end-of-week invoicing, and end-of-month invoicing. It's also possible to show the invoicing journal by default in the partner form.

Order journals look like orders and are automatically transferred to orders for the corresponding items. These enable you to classify the orders in various ways, such as by department, by salesperson, or by type. Then if a salesperson looks at her own journals after an order she can easily see the work on current items compared with her own orders.

Tip: *Default Values*
To enter all the orders in their own order journal, a salesperson can use the default values that are entered in the fields when creating orders.

Finally the delivery journals are used to post each item into a delivery journal. For example you can create journals dated according to customer delivery dates (such as Monday's deliveries, or afternoon deliveries) or these journals could represent the day's work for delivery vehicles (such as truck1, truck2).

18.9.2 Using the journals

You'll now see how to use the journals to organize your stock management in practice. After installing the module `sale_journal` look at the list of partners. In the tab **Sales and Purchases** on any of them you'll now see the field **Invoicing Method**.

Figure 18.28: *Partner form in invoicing mode*

You can create a new **Invoicing Journal** on a partner on the fly. You can show if the invoices should be grouped or not after you have generated them in the journal. Create a second invoicing journal `End-of-Month Invoicing` which you can assign to another partner.

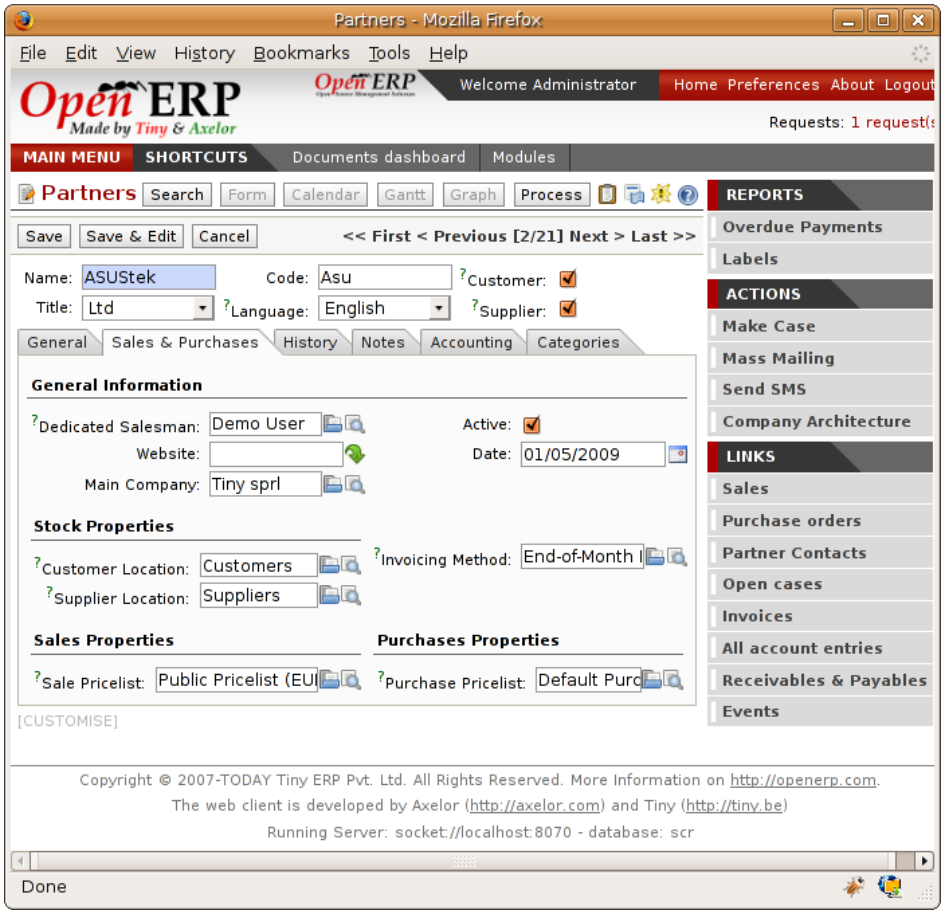


Figure 18.29: *Defining an invoicing journal*

Then enter the data for some orders for these two partners. After entering this order data, the field **Invoicing Mode** is completed automatically from the partner settings. Put these orders into the Invoicing Mode based on items in the second tab.

Look at the assembly notes about these orders in the field **Invoicing Mode** is automatically shown there. Then confirm the different orders in the list.

At the end of the day, the invoicing supervisor can put the list by journal. To do this, use the menu *Stock Management → Sorted List → List to invoice*. Choose the invoicing journal and all the lists of orders to invoice then open in list view. It's then possible to automatically carry out invoicing by clicking the action **Invoice** (the gears symbol in the application client).

Tip: *Confirming invoices*
By default, invoices are generated in the draft state which enables you to modify them before sending them to the customer. But you can confirm all the invoices in one go by selecting them all from the list and doing the action 'Confirm draft invoices'.

At the end of the month the invoicing management does the same work but in the journal 'month-end invoicing'.

You can also enter a journal to confirm / cancel all the orders in one go. Then you can do several quotations and assign them in a journal and confirm or cancel them en masse at once.

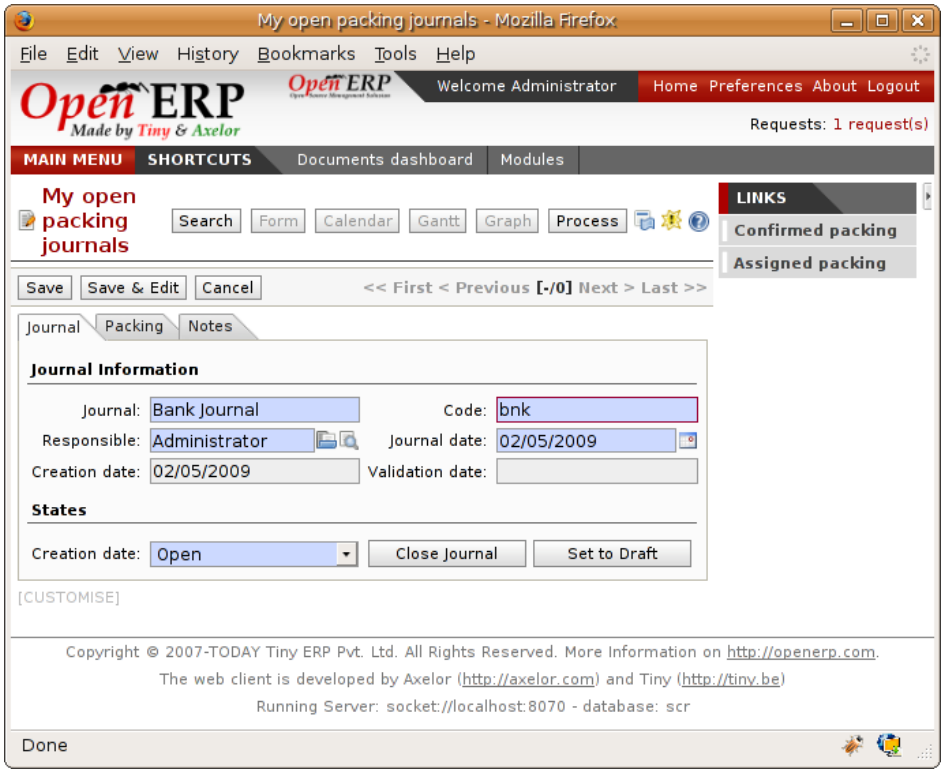


Figure 18.30: *View of an order journal*

18.10 Advanced elements of stock management

In this section you'll enter the details of management and control of stocks.

18.10.1 Requirements Calculation / Scheduling

Requirements calculation is the calculation engine that plans, prioritizes and starts the automated procurement as a function of rules defined in the products.

Note: *Requirements Calculation*
Requirements Calculation is often called Scheduling.
By default, it automatically starts once per day. You can also start it manually using the menu Manufacturing → Start All Schedulers. *It then uses the parameters defined in the products, the suppliers, and the company to determine the priorities between the different product orders, deliveries and purchases from suppliers.*

18.10.2 Just in Time

By default, scheduling starts automatically once a day. You should make this run happen overnight to ensure that the system doesn't slow down under a heavy load of scheduling when you're also trying to use it interactively yourselves.

To set the time it starts use the menu *Administration* → *Configuration* → *Scheduler* → *Scheduled Actions*. Select the rule called 'Run MRP Scheduler' and modify the date and time of the next execution. Some companies want to plan orders progressively as they are entered so they don't wait until procurement orders are planned the next day.

Install the module `mrp_jit` to handle this. Once it's installed, each requirement (that could result in a Production or Purchase Order) will be planned in real time as soon as it's been confirmed.

Then if you make a customer order with a product that's `Make To Order` the quotation request to a supplier will be generated. ..tip :: Delivery from the supplier or to the customer

> The `sale_supplier_direct_delivery` module enables you to deliver the product directly from the supplier to the customer. At the time of writing this module is in `addons-extra` . The logic that the product follows is configured individually for each product and affects only those products marked `Make to Order`.

This mode is not always sensible. Each order is processed immediately it's been confirmed. So if an order is to be delivered in three months the scheduler will reserve goods in stock for each order once it's been confirmed. It would have been more sensible to leave these products available for other orders.

If a Purchase Order's **Invoicing Control** is configured `From Order`, the scheduler will immediately create the corresponding supplier quotation request. It would have been preferable to delay for several weeks if you could have used the lead time to group the purchase with other future orders.

So the negative effects of working with the Just in Time module are:

- Poor priority management between orders,
- Additional stocked products.

18.10.3 Planning

You've seen that most Open ERP documents can be changed in a planning view. It's the same for deliveries and goods receipts. You can put them into a calendar view at any time to plan your deliveries or goods receipts.

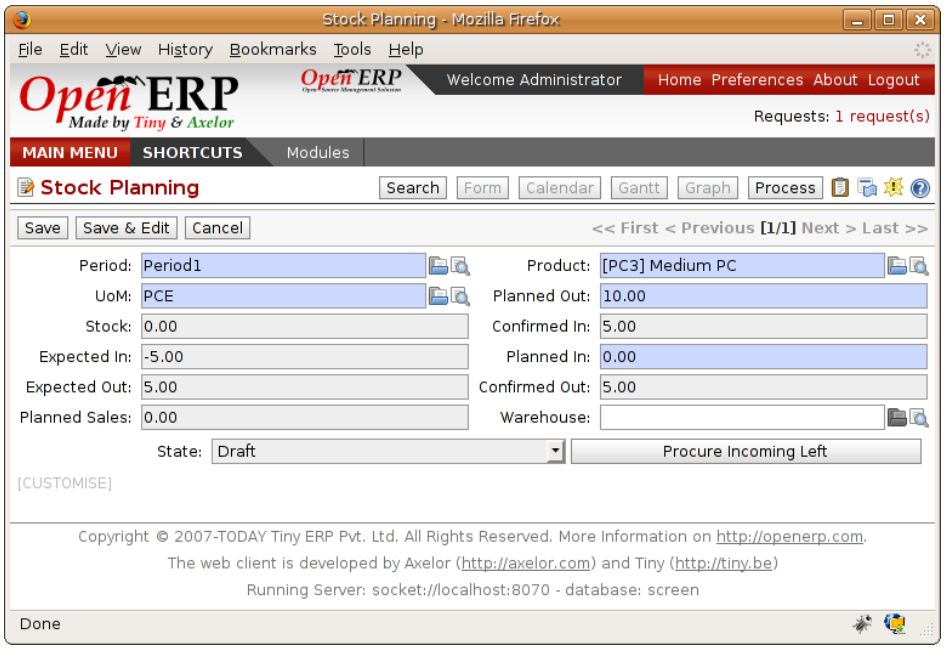


Figure 18.31: *Planning the deliveries of customer products*

Planned dates on a packing order are put on each stock move line. Then if you have a packing order containing several products you don't have to have all of the lines on the order delivered on the same day. The minimum and maximum dates on a packing order show the earliest and latest dates on the stock move lines for the packing.

If you move a packing order in the calendar view, the planned date on the stock move lines will automatically be moved as a result.

18.10.4 Management of partial deliveries

Partial deliveries, sometimes called Back Orders, are generated automatically by Open ERP. When you confirm a customer delivery or the receipt of products from suppliers, Open ERP asks you to confirm the quantity delivered or received.

If you leave the quantities alone, Open ERP confirms and then closes the order for delivery or receipt. If you modify a quantity, Open ERP will automatically generate a second delivery or goods receipt document for the remaining quantities. The first will be confirmed and the second will remain on the list of waiting deliveries (or receipts).

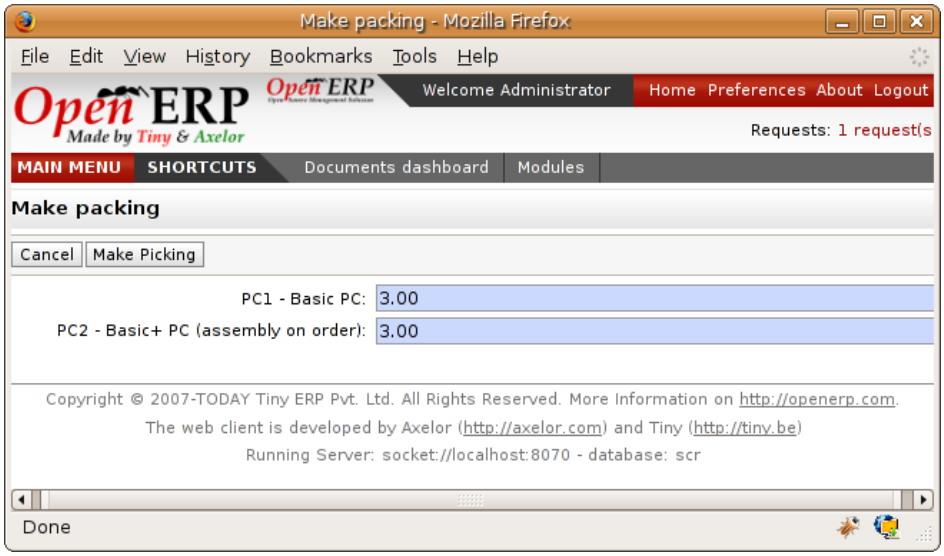


Figure 18.32: *Confirmation screen for delivered quantities*

When you open the list of current deliveries, you find the field **Partial delivery** which shows the reference number of the first delivery sent to the customer. That enables you to quickly find the deliveries for partial orders each day so that you can treat them as a priority.

18.10.5 Receiving supplier products

Open ERP supports three approaches to controlling data entry on products ordered from suppliers:

- Manual data entry,
- Using the goods receipt documents pre-generated by the system,
- Selecting from all the products waiting from the supplier, independently from goods receipt documents.

You can see how the configuration of the supplier order affects receipts in detail in *Purchasing Management*.

18.10.6 Manual data entry of goods receipt

To enter data about goods receipt manually you must use the menu *Stock Management → Goods Receipt → New items received*. Then enter the necessary data manually in the goods receipt form.

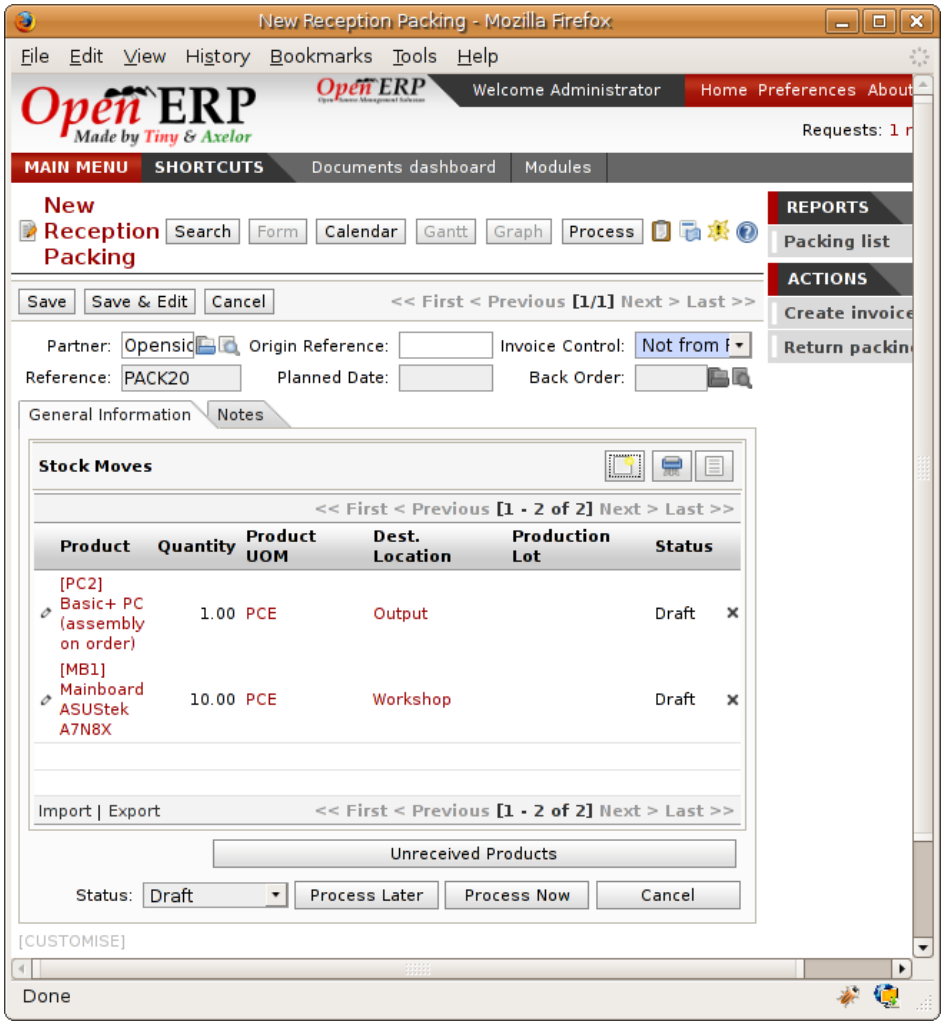


Figure 18.33: *Manual data entry for product receipt*

18.10.7 Confirming pre-generated goods receipt documents

If you use Supplier Orders in Open ERP, product receipts are automatically generated by the system when the purchase order is confirmed. You don't have to enter any date, just confirm that the quantities ordered match the quantities received.

In this case Open ERP generates a list of all products waiting to be received from the menu *Stock Management → Incoming Products → Packing to Process*.

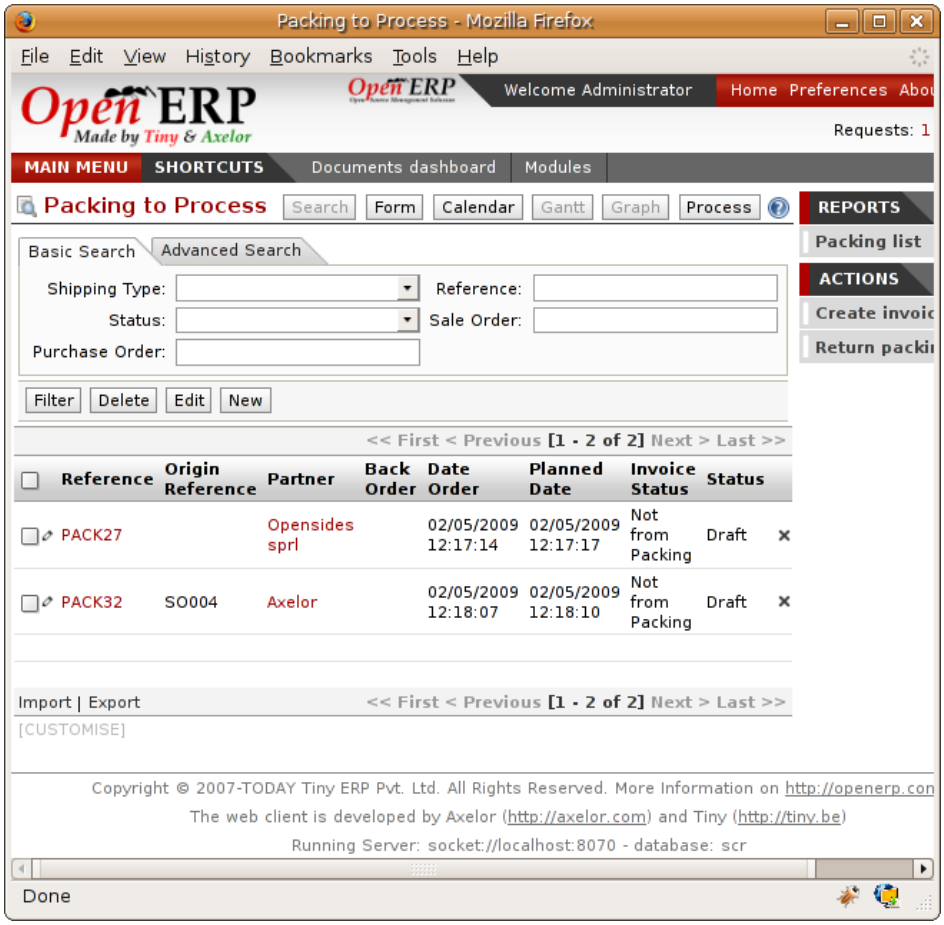


Figure 18.34: *List of items waiting for receipt*

Then you just look for the corresponding entry using the supplier name or order reference. Click it and confirm the quantities. If it shows you quantities that differ from the control form, Open ERP will automatically generate another receipt document that will be set open, waiting for the remaining deliveries. You can leave it open or cancel it if you know that products missed by your supplier will never be delivered.

18.10.8 Confirmation by selecting products waiting

The approach shown above is very useful if goods receipts correspond to the original orders. If your suppliers deliver items that don't necessarily coincide with the orders, however, it is easier to work by products received rather than by orders.

In this case you can manually create a new goods receipt using the menu *Stock Management → Incoming Products → New Reception Packing*. Instead of entering all the product lines manually you can click the button at the lower right **Products not received**. Open ERP then opens a list of all the goods waiting from that supplier and you can then automatically add some or all of them on your form. This method of data entry is very useful when you're entering goods received at one time from several orders.

18.10.9 Product routing

You should install the `stock_location` module if routing products to customers, from suppliers or in your warehouse is determined by the identity of the product itself.

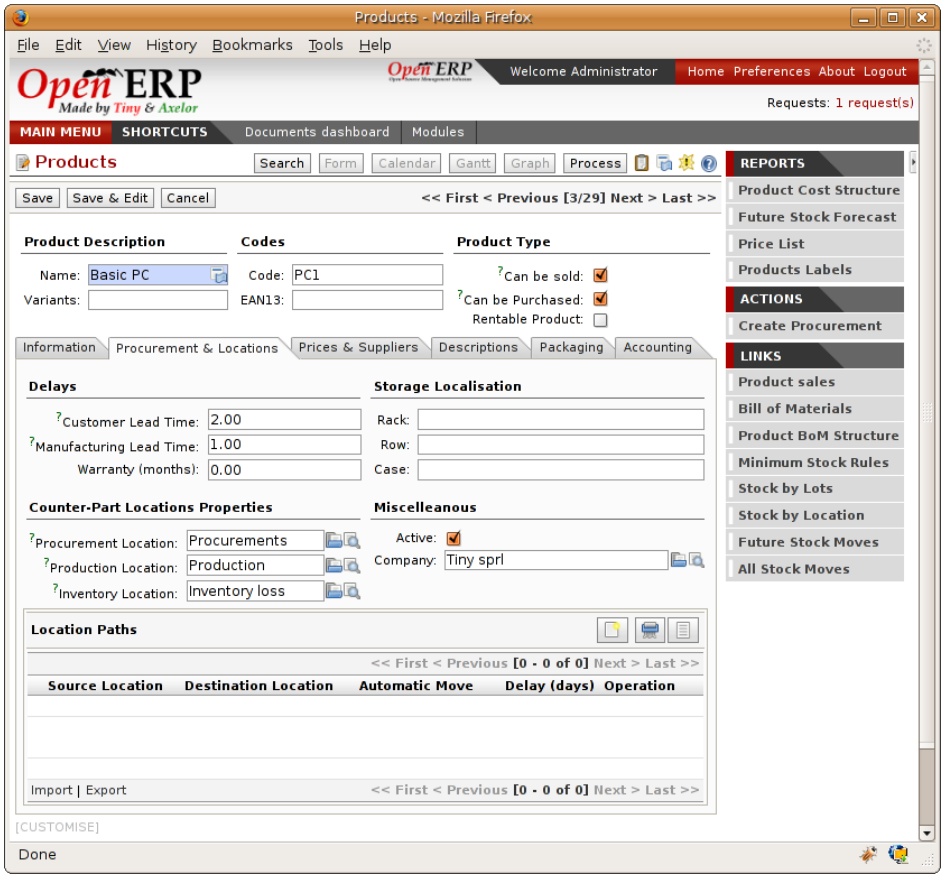


Figure 18.35: *Managing the paths from one location to another in a product form*

This will let you configure logistics rules individually for each product. For example, when a specific product arrives in stores it can automatically be sent to quality control. In this case it must be configured with rules on the product form. The fields that make up those rules are:

- **Source location** : the rule only applies if a product comes from this location,
- **Destination location** : the rule only applies if a product ends up in this location,
- **Type of move**: automatic, manual, automatic with no steps,
- **Lead time for move**,
- **Name of operations** : a free text field which will be included in the automatic stock move proposed by Open ERP.

You'll now see some examples of using these locations and logistics by product:

- A rentable product,
- A product bought in China, following its freight by ship from port to port,
- A product that you want to send to quality control before putting it in stocks.

Example 1: A rentable product

A rentable product is just a product delivered to a customer that is expected to be returned in a few days time. When it has been delivered to the customer, Open ERP will generate a new goods receipt note with a forecast date at the end

of the rental period. So you generate a list of goods pending receipt that you confirm when they are returned to your stores. To do this you should configure a product with the following rules:

Table 18.11: Example Product For Rental

Field	Value
Source location	Customer
Destination location	Stock
Type of Movement	Manual
Lead time	15 days
Operation	Product return

Then when the product is delivered to the customer, Open ERP automatically generates a goods receipt form in the draft state ready for returning it to Stock. This is due in 15 days time. With such a system your forecasts and stock graphs can always be correct in real time.

Example 2: Management of imports by sea

To manage products that follow a complex logistical import path by sea and then into customs, create as many 'Supplier' locations as there are steps, then create rules to move the product from one place to the other during the purchase.

Take a product that has been bought in China and delivered to you stores in Brussels, Belgium. Import by sea take around 7 weeks and must go through the following steps:

- Delivery from the supplier to the port of Shanghai: 2 days,
- Sea transport from Shanghai to the port of Anvers: 1 month,
- Customer at the port of Anvers: 2 weeks,
- Delivery by truck from the port of Anvers to your stores: 3 days.

You should track the movement of your goods and enter all the documents as each move is made so that you know where your goods are at any moment, and can estimate when they are likely to arrive in your stores. To do this, create all the locations for the intermediate steps:

- Shanghai Port,
- Anvers Port,
- Anvers Customs.

Finally, on the product form, create the following rule to show that when purchased, the goods don't arrive at your stores directly, but instead at the port of Shanghai. In this example the stores are configured to enter all the products in a location called 'Input'.

Table 18.12: Rule to move products automatically to Shanghai Port

Field	Value
Source location	Input
Destination location	Shanghai Port
Type of Movement	Automatic without steps
Lead time	2 days
Operation	Sending to Shanghai Port

Open ERP will then change the usual product receipt (which has them arriving in the Input location) to a delivery from this supplier to the external port. The move is automatically carried out because operations at this level are too labour-intensive to be done manually.

You then have to create a rule on the product form to move it from one location to another:

Table 18.13: Rule to move products manually from Shanghai Port to Anvers Port

Field	Value
Source location	Shanghai Port
Destination location	Anvers Port
Type of Movement	Manual
Lead time	30 days
Operation	Sending to Anvers Port by ship

Table 18.14: Rule to move products manually from Anvers Port to Anvers Customs

Field	Value
Source location	Anvers Port
Destination location	Anvers Customs
Type of Movement	Manual
Lead time	15 days
Operation	Customs at Anvers

Table 18.15: Rule to move products manually from Anvers Customs to Stock

Field	Value
Source location	Anvers Customs
Destination location	Stock
Type of Movement	Manual
Lead time	3 days
Operation	Truck transport into stock

Once the rules have been configured, Open ERP will automatically prepare all the documents needed for the internal stock movements of products from one location to another. These documents will be assigned one after another depending on the order defined in the rules definition.

When the company received notification of the arrival at a port or at customers, the corresponding move can be confirmed. You can then follow, using each location:

- where a given goods item can be found,
- quantities of goods awaiting customs,
- lead times for goods to get to stores,
- the value of stock in different locations.

Example 3: Quality Control

You can configure the system to put a given product in the Quality Control bay automatically when it arrives in your company. To do that you just configure a rule for the product to be placed in the Quality Control location rather than the Input location when the product is received from the supplier.

Table 18.16: Rule to move products manually from Input to Quality Control

Field	Value
Source location	Input
Destination location	Quality Control
Type of Movement	Manual
Lead time	0 days
Operation	Quality Control

Once this product has been received, Open ERP will then automatically manage the request for an internal movement to send it to the `Quality Control` location.

CHAPTER

NINETEEN

MANUFACTURING

The management of manufacturing described in this chapter covers planning, ordering, stocks and the manufacturing or assembly of products from raw materials and components. It also discusses consumption and production of products, as well as the necessary operations on machinery, tools or human resources.

The management of manufacturing in Open ERP is based on its stock management and, like it, is very flexible in both its operations and its financial control. It benefits particularly from the use of double-entry stock management for production orders. Manufacturing management is implemented by the `mrp` module. It is used for transforming all types of products:

- Assemblies of parts: composite products, soldered or welded products, assemblies, packs,
- Machined parts: machining, cutting, planing,
- Foundries: clamping, heating,
- Mixtures: mixing, chemical processes, distillation.

You'll work in two areas: on products in the first part of this chapter, and on operations in the second part. The management of products depends on the concept of classifications while the management of operations depends on routing and workcenters.

Note: *Bills of Materials*
Bills of Materials, or manufacturing specifications, go by different names depending on their application area, for example:

- *Food: Recipes,*
- *Chemicals: Equations,*
- *Building: Plans.*

For this chapter you should start with a fresh database that includes demo data, with `mrp` and its dependencies installed and no particular chart of accounts configured.

19.1 Management of production

Production Orders describe the operations that need to be carried out and the raw materials usage for each stage of production, You use specifications (bills of materials) to work out the raw material requirements and the manufacturing orders needed for the finished products.

Manufacturing has the following results:

- Stock reduction: consumption of raw materials,
- Stock increase: production of finished goods,
- Analytic costs: manufacturing operations,
- Added accounting value of stock: by the creation of value following the transformation of products.

19.2 Bills of Materials

19.2.1 Use of Bills of Materials

Bills of Materials are documents that describe the list of raw materials used to make a finished product. To illustrate the concept of specification you're going to work on a cabinet where the manufacturing plan is given by the figure *Plan of construction of a cabinet*.

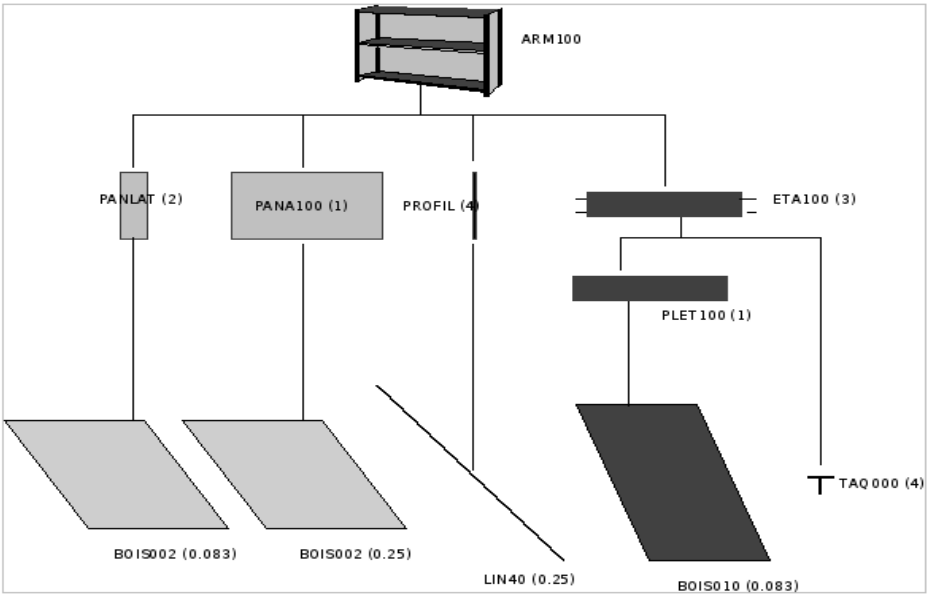


Figure 19.1: *Plan of construction of a cabinet*

The cabinet is assembled from raw materials and intermediate assemblies:

Table 19.1: Product Definitions before defining Bills of Materials

Product Code	Description
ARM100	Cabinet
PANLAT	Wooden Side Panel
PANA100	Rear Panel
PROFIL	Metal Strut
ETA100	Shelf
PLET100	Shelf Panel
BOIS002	Wood Panel
BOIS010	Wood Panel
TAQ000	Panel Pins
LIN040	Lintel

To describe how to assemble this cabinet, you define a bill of materials for each intermediate product and for the final cabinet assembly. These are given by the table below.

Table 19.2: Bill of Materials for 1 ARM100 Unit

Product Code	Quantity	Unit of Measure
PANLAT	2	Unit
PANA100	1	Unit
PROFIL	4	Unit
ETA100	3	Unit

Table 19.3: Bill of Materials for 1 ETA100 Unit

Product Code	Quantity	Unit of Measure
PLET100	1	Unit
TAQ000	4	Unit

Table 19.4: Bill of Materials for 1 PLET100 Unit

Product Code	Quantity	Unit of Measure
BOIS010	0.083	m2

Table 19.5: Bill of Materials for 1 PROFIL Unit

Product Code	Quantity	Unit of Measure
LIN40	0.25	m

Table 19.6: Bill of Materials for 1 PANA100 Unit

Product Code	Quantity	Unit of Measure
BOIS002	0.25	m2

Table 19.7: Bill of Materials for 1 PANLAT Unit

Product Code	Quantity	Unit of Measure
BOIS002	0.083	m2

The bills of materials are then used by the software to calculate the raw material needs based on the requirements of the finished products. Then if you want to manufacture 10 cabinets, the system can calculate what will be consumed:

Table 19.8: Total Quantities

Product Code	Quantity	Unit of Measure
BOIS002	2 * 0.083 + 0.25	m2
LIN040	1	m
BOIS002	0.083 * 3	m2
TAQ000	12	Unit

Tip: *Bill of Materials*
To see the bill of materials in tree view, use the menu Manufacturing → Configuration → Bill of Materials → Bill of Materials Structure.

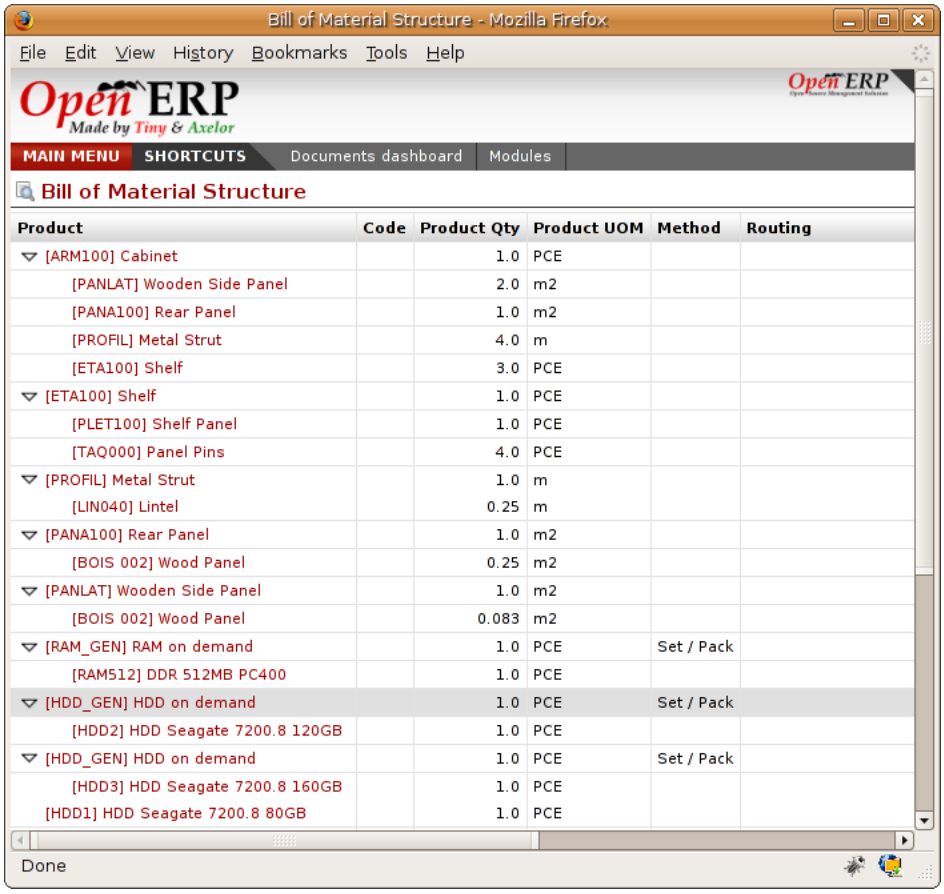


Figure 19.2: *Bill of Materials structure*

Use the menu *Manufacturing* → *Configuration* → *Bill of Materials* → *New Bill of Materials* to define a new bill of materials.

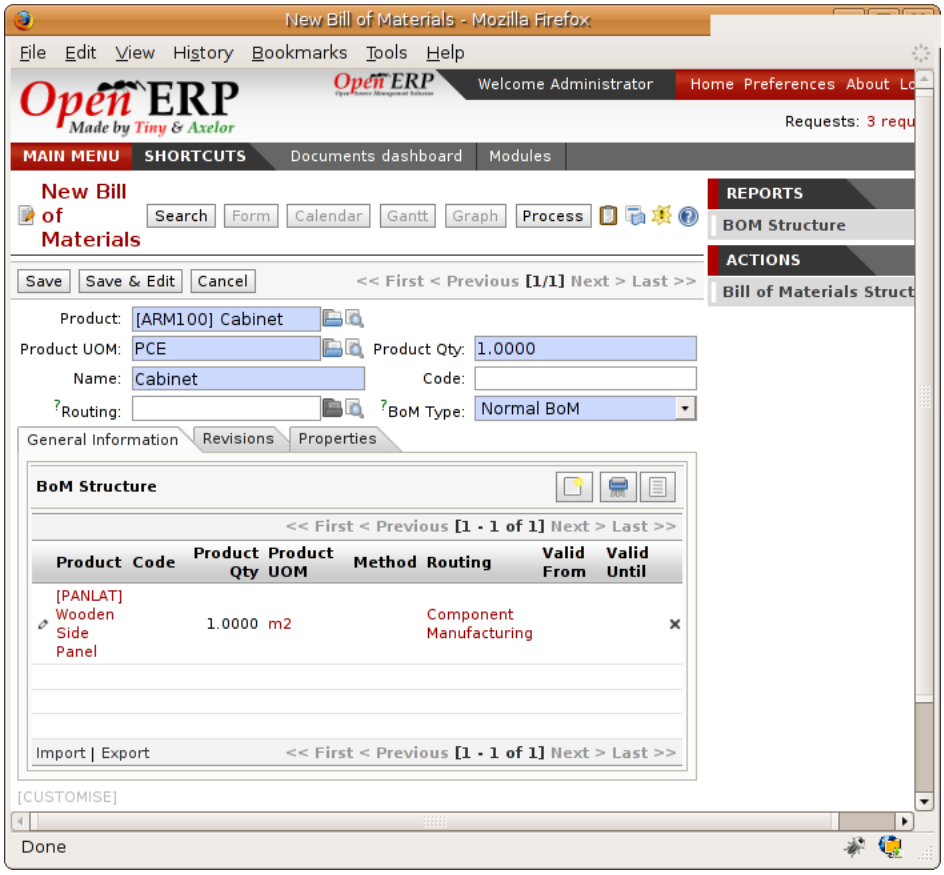


Figure 19.3: *Screen defining a Bill of Materials*

In the area below the bill of materials you should set the finished product, which will be manufactured or assembled. Once the product has been selected, Open ERP automatically completes the name of the bill of materials and the default Unit of Measure for this product.

The type of BoM (**BoM Type** : Phantom or Normal) and the **Routing** field will be described in more detail later in the chapter.

After this you can select the raw materials that are used in the manufacture of the finished product. The quantities are set out in a report based on the quantities of finished product and the quantities needed to produce them from the bill of materials. The second tab, **Revisions**, is used to set down all the changes made to the bill of materials. After each change you can specify a revision number and some notes on the modifications you carried out.

Note: *Simplified View*
The Revisions tab is only visible if the user works in the Extended View mode (which means that the user must belong to the group `Usability / Extended View`.

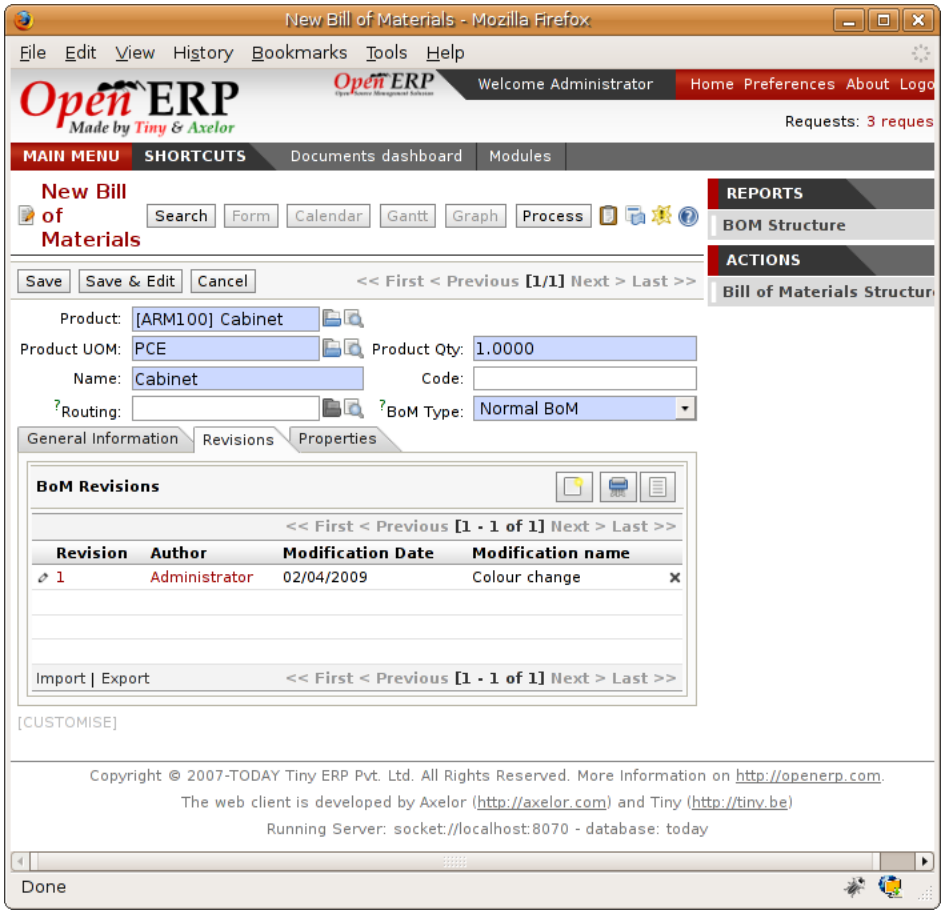


Figure 19.4: *Revisions of a Bill of Materials*

In the third tab, **Properties**, you can put a free text reference to a plan, a sequence number that is used to determine the priorities between bills of materials, dates between which a bill of materials is valid, and values for rounding and product efficiency.

Rounding is used to set the smallest **Unit of Measure** for expressing the quantities of the selected product. So if you set the rounding to 1.00 you'll not be able to manufacture half a piece. The **Efficiency** of the product lets you indicate the percentage you lose during manufacture. This loss can be set for the finished product or for each raw materials line. The impact of this efficiency figure is to reserve more raw materials for manufacture than you'd otherwise use just from the Bill of Materials calculations.

The final part of the third tab lets you set some properties for the product's manufacturing processes. These will be detailed further on in the chapter in the section on configurable products.

19.3 Multi-level Bills of Materials

In Open ERP each line of a bill of materials may itself be a bill of materials. So you can define BoMs with several levels. Instead of defining several BoMs for the cabinet in the figure *Plan of construction of a cabinet* you could define the single bill of materials below:

Table 19.9: Single Bill of Materials for 1 ARM100 Unit

Product Code	Quantity	Unit of Measure
ARM100	1	Unit
PANLAT	2	Unit
BOIS002	0.166	m2
PANA100	1	Unit
BOIS002	0.25	m2
PROFIL	4	Unit
LIN040	1	m
ETA100	3	Unit
PLET100	3	Unit
BOIS010	0.249	m2
TAQ000	12	Unit

Open ERP behaves differently depending on whether the bill of materials is defined in several small BoMs each on a single level or in one BoM tree-structured on several levels.

So if you select a BoM using intermediate products that automatically generates production orders based on calculated requirements, Open ERP will propose manufacturing an intermediate product. To manufacture a cabinet, you'd create 6 production orders:

Table 19.10: Production Order

Product Code	Quantity	Unit of Measure
PLET100	3	Unit
BOIS010	0.25	m2

Table 19.11: Production Order

Product Code	Quantity	Unit of Measure
ETA100	3	Unit
PLET100	3	Unit
TAQ000	12	Unit

Table 19.12: Production Order

Product Code	Quantity	Unit of Measure
PROFIL	4	Unit
LIN040	1	m

Table 19.13: Production Order

Product Code	Quantity	Unit of Measure
PANA100	1	Unit
BOIS002	0.25	m2

Table 19.14: Production Order

Product Code	Quantity	Unit of Measure
PANA100	2	Unit
BOIS002	0.17	m2

Table 19.15: Production Order

Product Code	Quantity	Unit of Measure
ARM100	1	Unit
PANLAT	2	Unit
PANA100	1	Unit
PROFIL	4	Unit
ETA100	3	Unit

In the case where a single bill of materials is defined in multiple levels, a single manufacturing order will be generated for each cabinet, including all of the sub-BoMs. You'd then get the following production order:

Table 19.16: Single manufacture from a tree-structured BoM

Product Code	Quantity	Unit of Measure
ARM100	1	Unit
BOIS002	0.17	m2
BOIS002	0.25	m2
LIN040	1	m
BOIS010	0.25	m2
TAQ000	12	Unit

19.3.1 Phantom Bills of Materials

If a finished product is defined using intermediate products that are themselves defined using other BoMs, Open ERP will then propose the manufacture of each intermediate product. This will give several production orders. If you only want a single production order you can define a single BoM with several levels.

Sometimes, however, it is useful to define the intermediate product separately and not as part of a multi-level assembly even if you don't want separate production orders for intermediate products.

In the example, the intermediate product ETA100 is used in the manufacture of several different cabinets. So you'd want to define a unique BoM for it even if you didn't want any instances of this product to be built, nor wanted to re-write these elements in a series of different multi-level BoMs.

If you only want a single production order for the complete cabinet, and not one for the BoM itself, you can define the BoM line corresponding to product ETA100 in the cabinet's BoM as type **Phantom**. Then it will automatically put ETA100's BoM contents into the cabinet's production order even though it's been defined as multi-level.

This way of representing the assembly is very useful because it allows you to define reusable elements of the assembly and keep them isolated.

If you define the BoM for the ARM100 cabinet in the way shown by the table below, you'll get two production orders when the order is confirmed, as shown in the tables below that.

Table 19.17: Definition and use of phantom BoMs

Product Code	Quantity	Unit of Measure	Type of BoM
ARM100	1	Unit	normal
PANLAT	2	Unit	normal
PANA100	1	Unit	phantom
PROFIL	4	Unit	phantom
ETA100	3	Unit	phantom

Table 19.18: Production Order from phantom BoMs

Product Code	Quantity	Unit of Measure
ARM100	1	Unit
PANLAT	2	Unit
BOIS002	0.25	m2
LIN040	1	m
BOIS010	0.25	m2
TAQ000	12	Unit

Table 19.19: Production Order from normal BoM

Product Code	Quantity	Unit of Measure
PANLAT	2	Unit
BOIS002	0.17	m2

19.3.2 Assembly Bills of Materials

Note: *Sales Bills of Materials*
In some software this is named a Sales Bill of Materials. In Open ERP the term assembly is used because the effect of the bill of materials is visible not only in sales but also elsewhere, for example in the intermediate manufactured products.

Assembly bills of materials enable you to define assemblies that will be sold directly. These could also be used in deliveries and stock management rather than just sold in isolation. For example if you deliver the cabinet in pieces for self-assembly, set the ARM100 BoM to type `Assembly` .

When a salesperson creates an order for an ARM100 product, Open ERP automatically changes the ARM100 from a set of components into an identifiable package for sending to a customer. Then it asks the storesperson to pack 2 PANLAT, 1 PANA100, 4 PROFIL, 3 ETA100. This is described as an ARM100 not just the individual delivered products.

Example: Large distributor

As an example of using these assemblies, take the case of a supermarket. In a supermarket, you can buy bottles of cola individually or in a pack of 6 bottles. The pack and the bottles are two different products and the barcodes used are also different.

But customers have the right to open a pack and extract some bottles to take them individually to the checkout. The supermarket can't track its stock in packs and bottles any more, but only individually in bottles.

So you can define a bill of materials for sale which defines a pack as an assembly of 6 bottles. Then when you've sold a pack, you can find a pack on the invoice or bill of sale but the associated stock operation will still be 6 bottles.

In the case of this assembly, this isn't a production order to transform the product. The transformation is done directly between the order and the set.

Note: *Assemblies and Purchases*
The use of assemblies for selling to customers has been described here, but this functionality works just as well for purchases from suppliers.
So in the example of a supermarket, you can buy cola in packs and the storesperson will see a number of bottles at goods in reception.

19.3.3 Configurable Bills of Materials

In Open ERP you can define several bills of materials for the same product. In fact you can have several manufacturing methods or several approved raw materials for a given product. You'll see in the following section that the manufacturing procedure (the routing) is attached to the Bill of Materials, so the choice of bill of materials implicitly includes the operations to make it.

Once several bills of materials have been defined for a particular product you need to have a system to enable Open ERP to select one of them for use. By default the bill of materials with the lowest sequence number is selected by the system.

To gain more control over the process during the sale or procurement, you can use **properties**. The menu *Production Management → Configuration → Properties* enables you to define properties, which can be defined arbitrarily to help you select a bill of materials when you have a choice of BoMs.

Note: *Properties*
Properties is a concept that enables the selection of a method for manufacturing a product. Properties define a common language between salespeople and technical people, letting the salespeople to have an influence on the manufacture of the products using non-technical language and the choices decided on by the technicians who define Bills of Materials.

For example you can define the properties and the following groups:

Table 19.20: Properties

Property Group	Property
Warranty	3 years
Warranty	1 year
Method of Manufacture	Serial
Method of Manufacture	Batch

Once the bills of materials have been defined you could associate the corresponding properties to them. Then when the salesperson goes to encode a product line he can attach the properties there. If the product must be manufactured, Open ERP will automatically choose the bill of materials that matches the defined properties in the order most closely.

Note the properties are only visible in the Bills of Materials and Sales Management if you're working in the Extended View mode. If you can't see it on your screen add the group `Useability / Extended View` to your user.

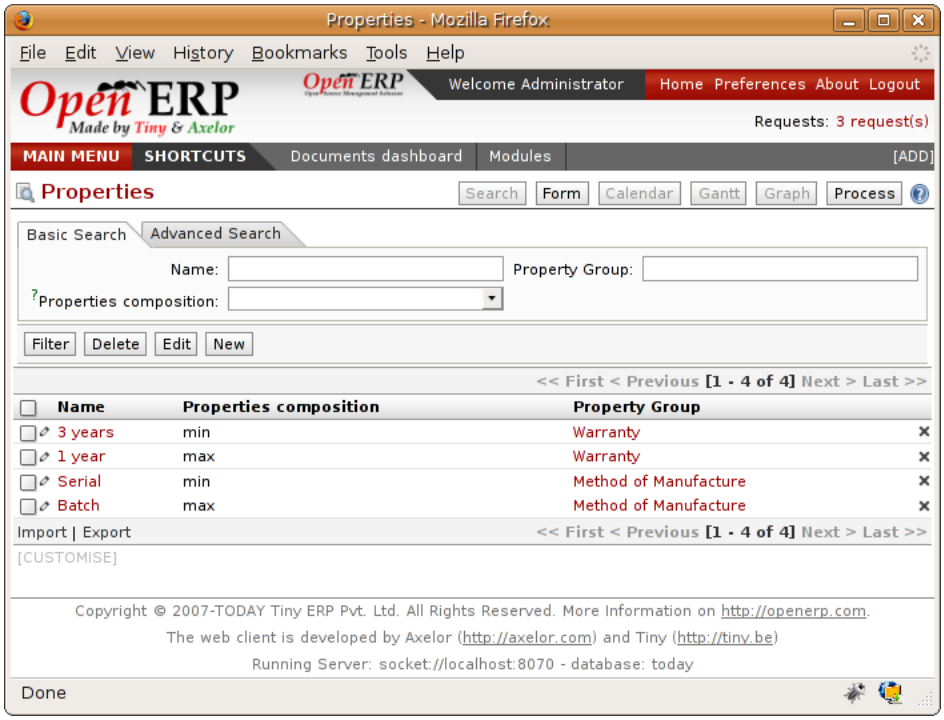


Figure 19.5: *Properties on a customer order line*

Example: Manufacturing in a batch or on a production line

As an example, take the manufacture of the cabinet presented above. You can imagine that the company has two methods of manufacturing this cabinet:

- Manually: staff assemble the cabinets one by one and cut the wood plank by plank. This approach is usually used to assembly prototypes. It gets you very rapid production, but at a high cost and only in small quantities.
- On a production line: staff use machines that are capable of cutting wood by bandsaw. This method is used for production runs of at least 50 items because the lead times using this method are quite lengthy. The delay to the start of production is much longer, yet the cost per unit is much lower in this volume.

You define two bills of materials for the same cabinet. To distinguish between them, you will define to properties in the same group: `manual assembly` and `production line assembly` . On the quotation, the salesperson can set the method of manufacture he wants on each order line, depending on the quantities and the lead time requested by the customer.

Note: *bills of materials and substitute products*
In some software, you use the term `substitute` for this principle of configurable properties in a bill of materials.

By putting a bill of materials on its own line, you can also implement substitute products. You set the bill of materials to type `Assembly` to make the substitution transparent and to prevent Open ERP from proposing an intermediate production order.

19.4 Manufacturing

Once the bills of materials have been defined, Open ERP becomes capable of automatically deciding on the manufacturing route depending on the needs of the company.

Production orders can be proposed automatically by the system depending on several criteria described in the preceding chapter:

- Using the `Make to Order` rules,
- Using the `Order Point` rules,
- Using the Production plan.

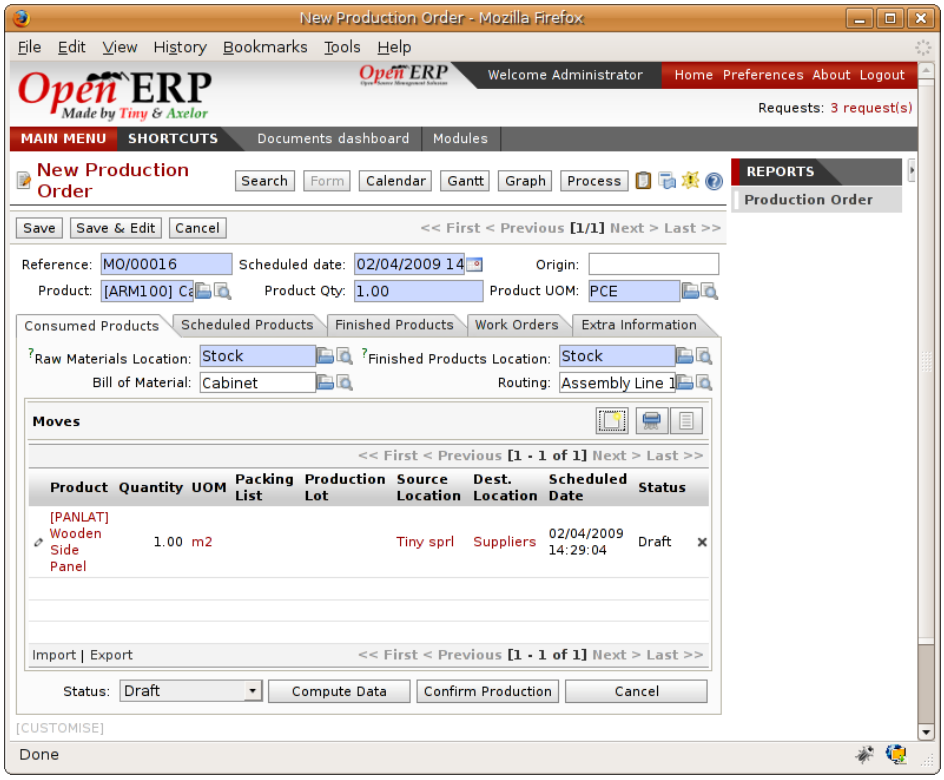


Figure 19.6: *Automatically proposing production orders*

Clearly it's also possible to start production manually. To do this you can use the menu *Manufacturing → Production Orders → New Production Order*. If you haven't installed the Just-In-Time planning module `mrp_jit`, you should start using Open ERP to schedule the Production Orders automatically using the various system rules. To do this use the menu *Manufacturing → Compute All Schedulers*.

19.5 Workflow for complete production

To understand the usefulness and the functioning of the system you should test a complete workflow on the new database installed with the demonstration data. In the order you can see:

- The creation of a customer order,
- The manufacturing workflow for an intermediate product,
- The manufacture of an ordered product,
- The delivery of products to a customer,
- Invoicing at the end of the month,

- Traceability for after-sales service.

Tip: *Demonstration data*
To follow the workflow shown below exactly, you should keep the same quantities as in the example and start from a new database. Then you won't run into exceptions that would result from a lack of stock.

This more advanced case of handling problems in procurement, will be sorted out later in the chapter.

19.5.1 The customer order

Begin by encoding a customer order. To do this, use the menu *Sales Management → Sales Orders -> New Quotation*. Enter the following information:

- **Customer** : Agrolait,
- **Shipping Policy** : Invoice from picklist (second tab),
- **Order Line** :
  - **Product** : PC2 – Basic PC (assemble on demand),
  - **Quantity (UoM)** : 1,
  - **Product UoM** : PCE,
  - **Procure method** : Make To Order.

Once the quotation has been entered you can confirm it immediately by clicking the button **Confirm Order** at the bottom to the right. Keep note of the order reference because this follows all through the process. Usually, in a new database, this will be `SO007` . At this stage you can look at the process linked to your order using the **Process** button above and to the right of the form.

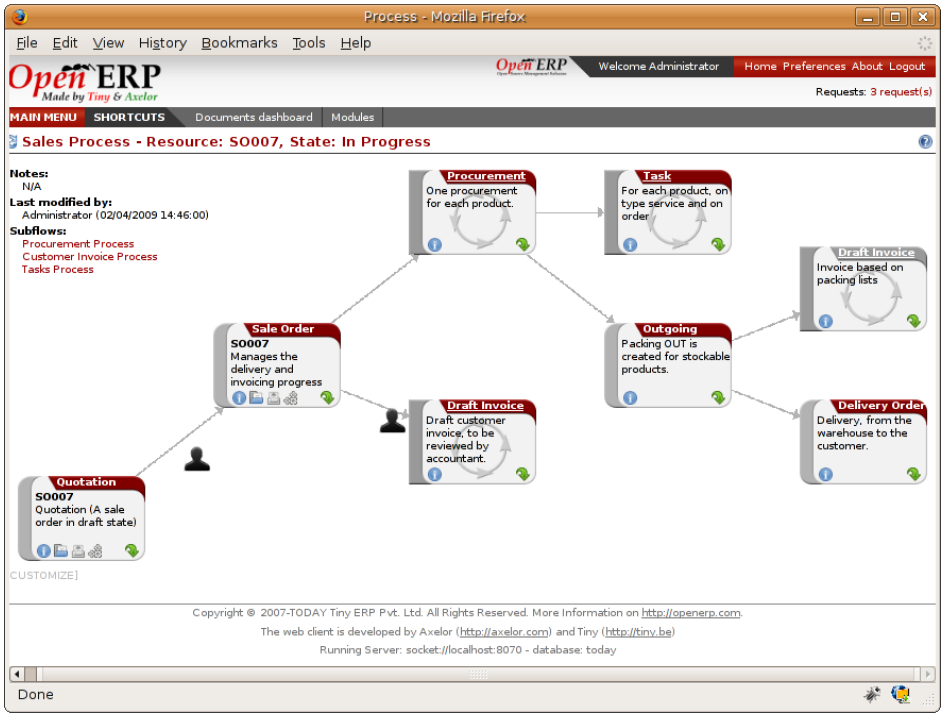


Figure 19.7: *Process for handling Sales Order SO007*

Start the requirements calculation using the menu *Manufacturing → Compute All Schedulers*.

19.5.2 Producing an Intermediate Product

To understand the implications of requirements calculation, you must know the configuration of the sold product. To do this, go to the form for product PC2 and click on the link **Bill of Materials** to the right. You get the scheme shown in *Composition of product PC2 in the demonstration data* which is the composition of the selected product.

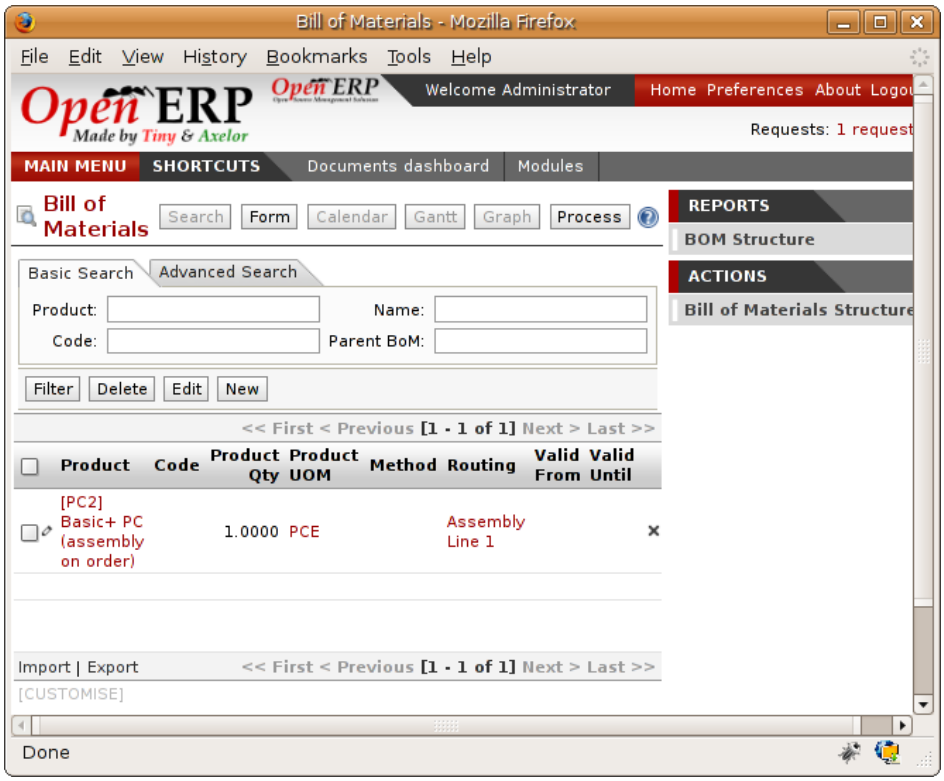


Figure 19.8: *Composition of product PC2 in the demonstration data*

Manufacturing the PC2 computer must be done in two steps:

1: Manufacture of the intermediate product: CPU_GEN

2: Manufacture of the finished product using that intermediate product: PC2

The manufacturing supervisor can then consult the product orders using the menu *Manufacturing → Production Orders → Production Orders To Start*. You then get a list of orders to start and the estimated start date to meet the ordered customer delivery date.

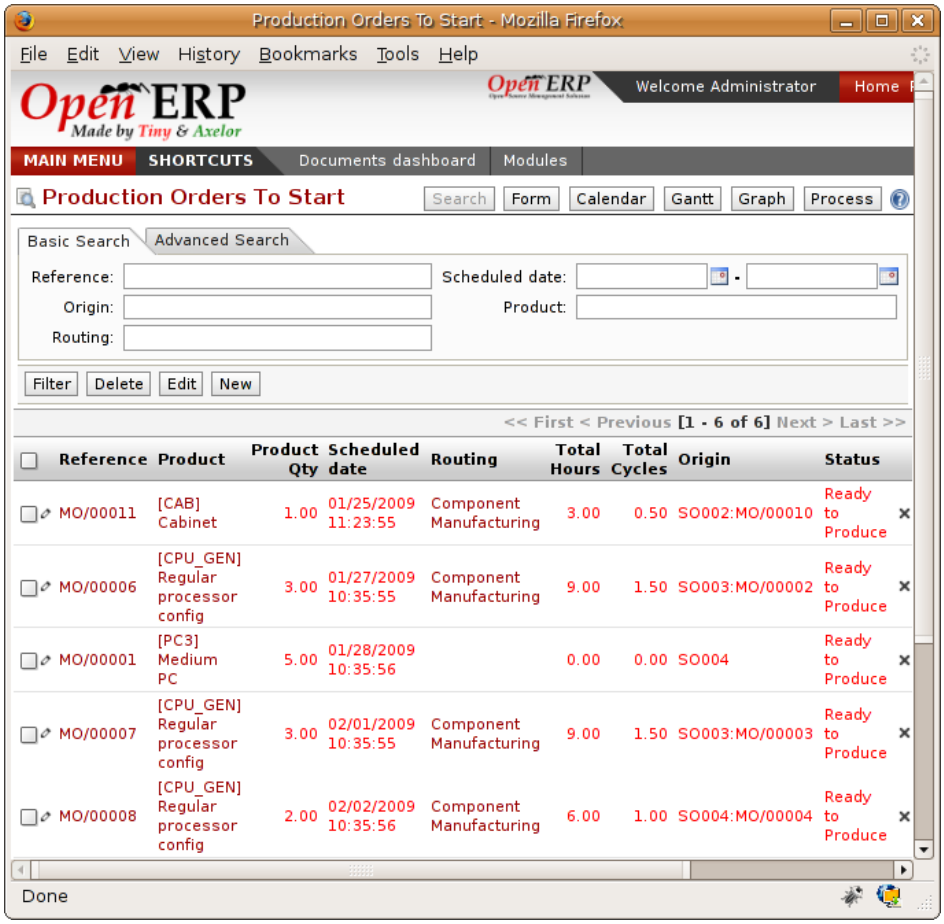


Figure 19.9: *List of production orders*

You'll see the production order for CPU_GEN but not that for PC2 because that one depends on an intermediate product. Return to the production order for CPU_GEN and click below it. If there are several of them, select the one corresponding to your order using the reference that contains your order number (in this example `SO007`).

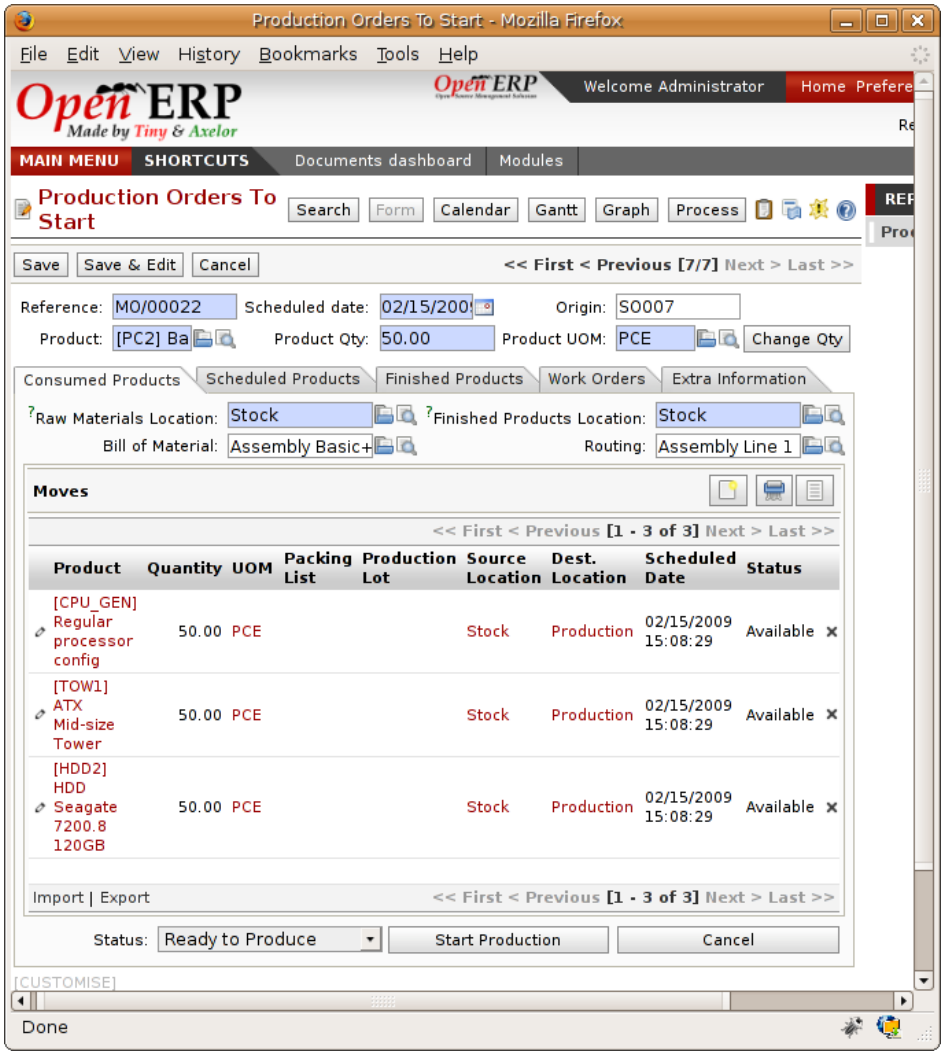


Figure 19.10: *The detail of a production order*

The system shows you that you must manufacture product CPU_GEN using the components: MB1, CPU1, FAN, RAM. You can then confirm the production twice:

Start of production: consumption of raw materials,

End of production: manufacture of finished product.

At this stage, you should click to edit the line for the product MB1 to enter a lot number for it. The lot number is usually shown the parent chart, so you should just copy that over. To do that put the cursor in the field **Production Lot** and press `<F1>` to create a new lot. Set a lot reference, for example: `MB1345678` . The system may then show you a warning because this lot is not in stock, but you can ignore this message.

The production order must be in the closed state as shown in the figure *Production order after the different stages*.

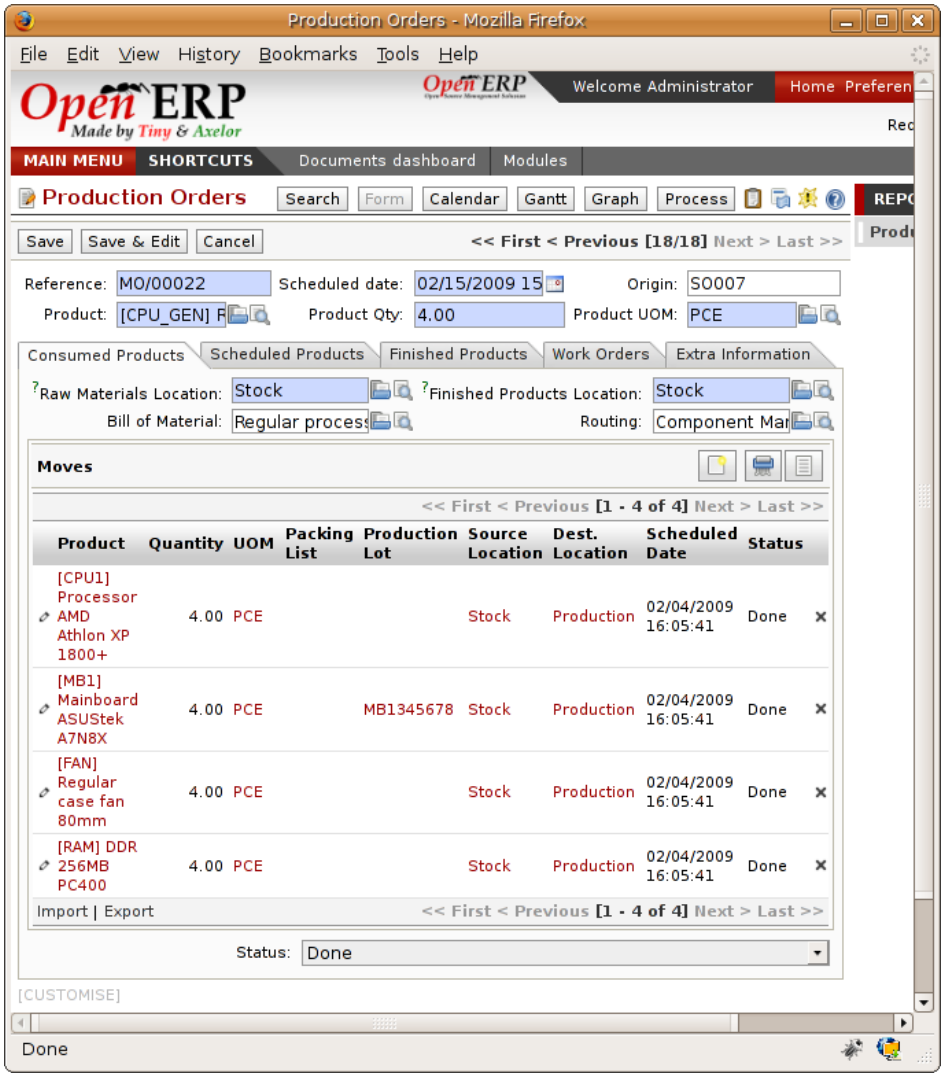


Figure 19.11: *Production order after the different stages*

19.5.3 Manufacture of finished product

Having manufactured the intermediate product CPU_GEN, Open ERP then automatically proposes the manufacture of the computer PC2 using the order created earlier. So return to the menu for production orders to start *Manufacturing → Production Orders → Production Orders to start*.

You'll find computer PC2 which has been sold to the customer, as shown in the figure *List of production orders*.

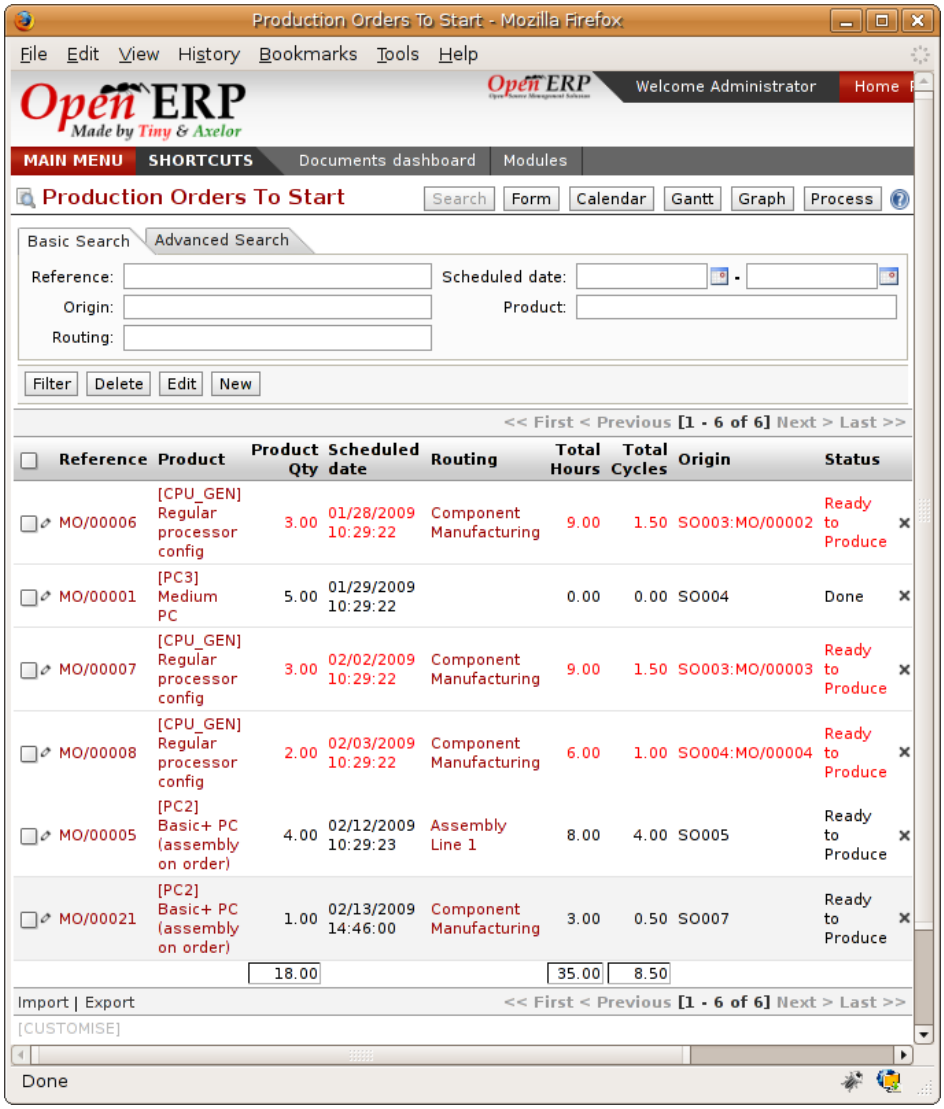


Figure 19.12: *List of production orders*

Just as for product CPU_GEN, confirm the production order between two dates: start of production and end of production. The product sold to the customer has now been manufactured and the raw materials have been consumed and taken out of stock.

Tip: *Automatic Actions*
As well as managing the use of materials and the production of stocks, manufacturing can have the following automatic effects which are detailed further on in the chapter:

- *adding value to stock,*
- *generating operations for assembly staff,*
- *automatically creating analytical accounting entries.*

19.5.4 Delivery of product to the customer

When the products have been manufactured, the storesperson automatically finds the order in his list of items to do. To see the items waiting for delivery, use the menu *Stock Management → Outgoing Products → Available Packing*. You'll find lists of packing to be done, there, as shown in the figure *List of packing operations to be done*.

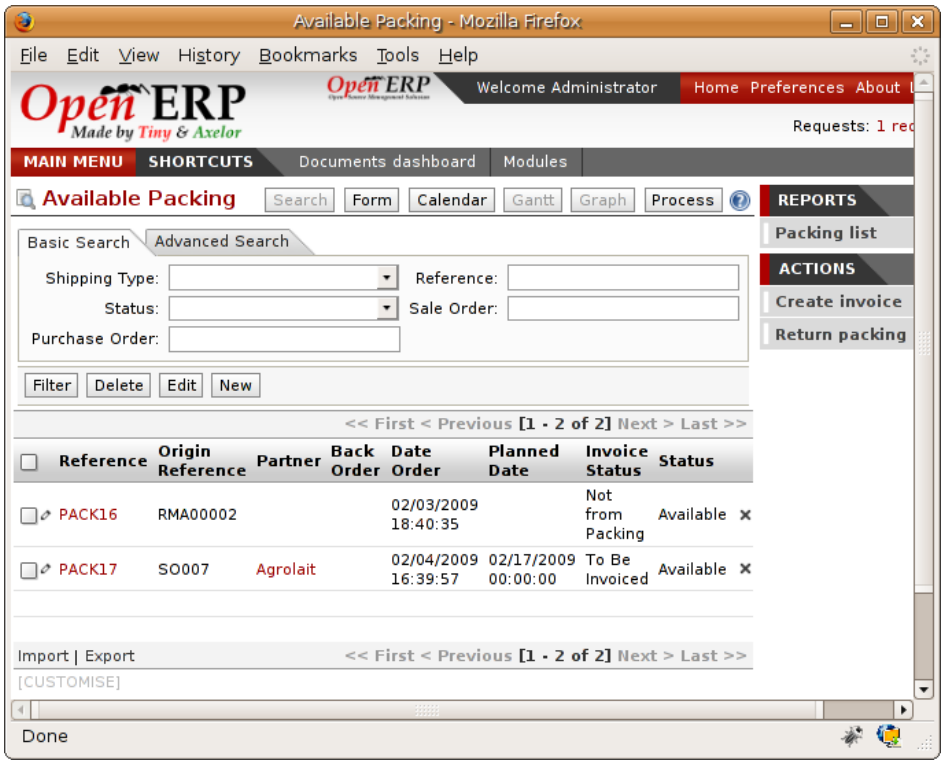


Figure 19.13: *List of packing operations to be done*

The packing orders are presented in priority order of despatch so the storesperson must begin with the orders at the top of the list. Confirm that your packing list has been created by looking for the customer name (`Agrolait`) or by its reference (`SO007`). Click on it and then click the button **Approve**.

Tip: *Packing and Delivery*
Depending on whether you work in the simplified or extended mode you may need a further step to make a delivery to your customer, so you'd have to carry out the two steps:

- *picking list,*
- *delivery order.*

19.5.5 Invoicing at delivery

Periodically the administrator or an accountant can send invoices based on the deliveries that have been carried out. To do that, you can use the menu *Stock Management → Outgoing Products → Packing to Invoice → Packing by Invoice Method*. You then get a list of all the deliveries that have been made but haven't yet been invoiced.

So select some or all of the deliveries. Click on the action **Create Invoice**. Open ERP asks if you want to group the deliveries from the same partner into a single invoice or if you'd prefer to invoice for each delivery individually.

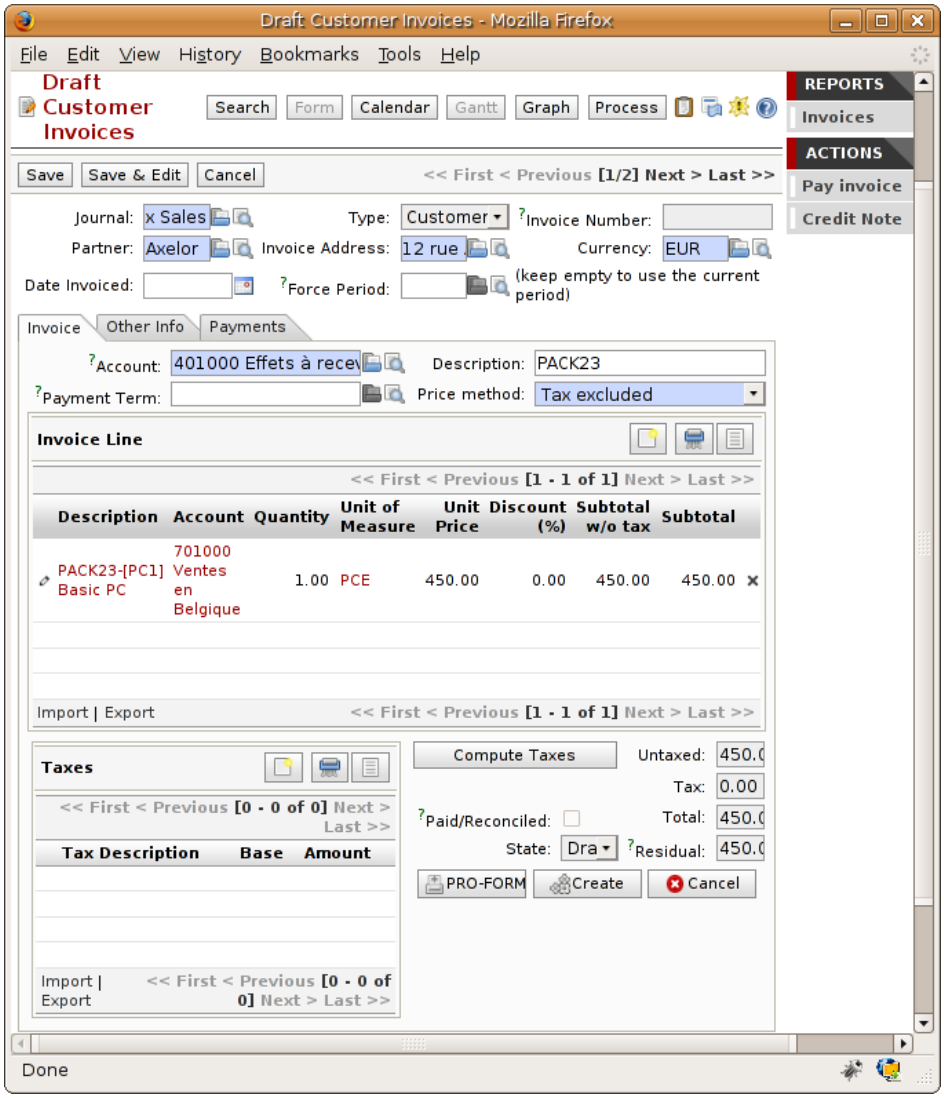


Figure 19.14: *Invoicing of deliveries*

Invoices are generated automatically in the `Draft` state by Open ERP. You can modify invoices before approving them finally.

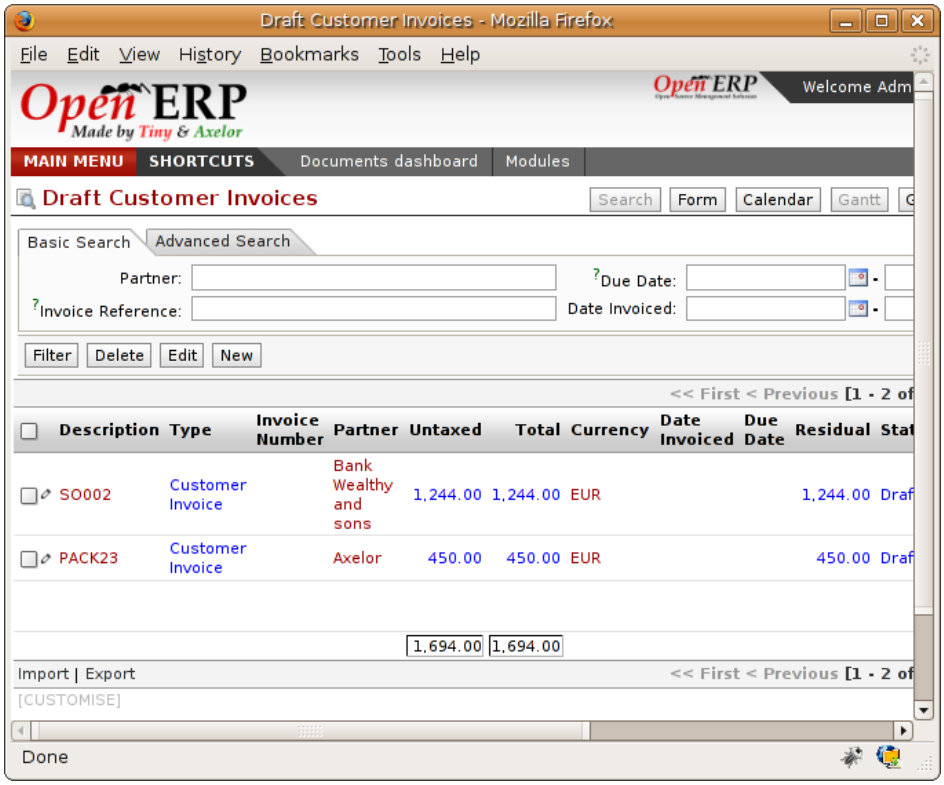


Figure 19.15: *List of invoices generated by the system based on deliveries*

Once you have reviewed the different invoices that were generated, you can confirm them one by one or all at once by using the available actions. Then print the invoices using the multiple print option and send them to your customers by post.

19.5.6 Traceability

Now suppose that the customer phones you to tell you about a production fault in a delivered product. You can consult the traceability through the whole manufacturing chain using the serial number indicated on the product MB1. To look through the detailed history, use the menu *Stock Management → Traceability → Production Lots*.

Find the product corresponding to the product or lot number. Once it's been found you can use traceability as described in the section *Management of lots and traceability* in the *Logistics and Stock Management* chapter.

19.6 Production order in detail

To open a Production Order, use the menu *Manufacturing → Production Orders → New Production Order*. You get a blank form for entering a new production order as shown in the figure *New production order*.

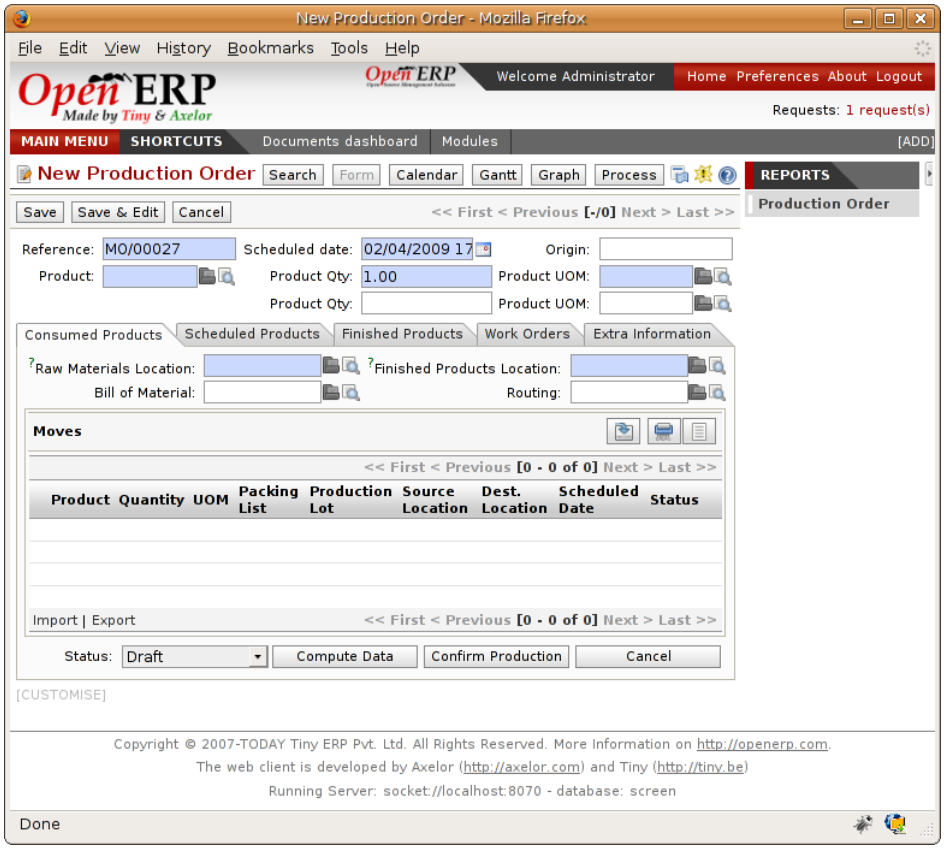


Figure 19.16: *New production order*

The production order follows the process given by the figure *Process for handling a production order*.

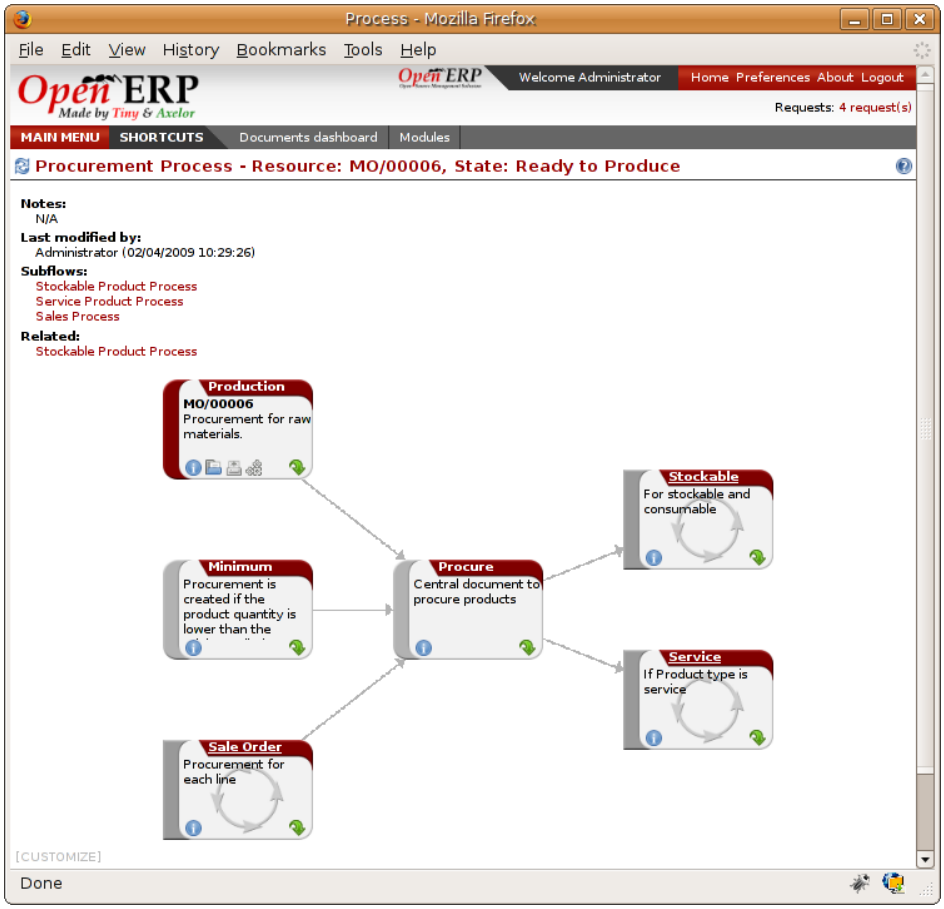


Figure 19.17: *Process for handling a production order*

The date fields, priority and reference, are automatically completed when the form is first opened. Enter the product that you want to produce, and the quantity required. The **Product UOM** by default is completed automatically by Open ERP when the product is first created.

You then have to set two locations:

The location from which the required raw materials should be found, and

The location for depositing the finished products.

For simplicity, put the `Stock` location in both places. The field **Bill of Materials** will automatically be completed by Open ERP when you click the button **Compute Data**. You can then overwrite it with another BoM to specify something else to use for this specific manufacture.

The tabs **Planned Products** and **Work Orders** are also completed automatically when you click **Compute Data**. You'll find the raw materials there that are required for the production and the operations needed by the assembly staff.

If you want to start production, click the button **Confirm Production**, and Open ERP then automatically completes the **Moves** fields in the **Consumed Products** and **Finished Products** fields. The information in the **Consumed Products** tab can be changed if:

- you want to enter a serial number for raw materials,
- you want to change the quantities consumed (lost during production).

For traceability you can set lot numbers on the raw materials used, or on the finished products. To do this click on one

of the lines of the first or the third tab. Note the **Production lot** and **Tracking lot** numbers.

Once the order is confirmed, you should force the reservation of materials using the **Force Reservation** button. This means that you don't have to wait for the scheduler to assign and reserve the raw materials from your stock for this production run. This shortcuts the procurement process.

If you don't want to change the priorities, just leave the production order in this state and the scheduler will create a plan based on the priority and your planned date. To start the production of products, click **Start Production**. The raw materials are then consumed automatically from stock, which means that the draft (`Waiting`) movements become `Done` .

Once the production is complete, click **Production Finished**. The finished products are then moved into stock.

19.7 Scheduling

The requirements scheduler is the calculation engine which plans and prioritises production and purchasing automatically from the rules defined on these products. It's started once per day. You can also start it manually using the menu *Manufacturing → Compute All Schedulers*. This uses all the relevant parameters defined in the products, the suppliers and the company to determine the priorities between the different production orders, deliveries and supplier purchases.

You can set the starting time by modifying the corresponding action in the menu *Administration → Configuration → Scheduler → Scheduled Actions*. Modify the `Run MRP Scheduler` configuration document.

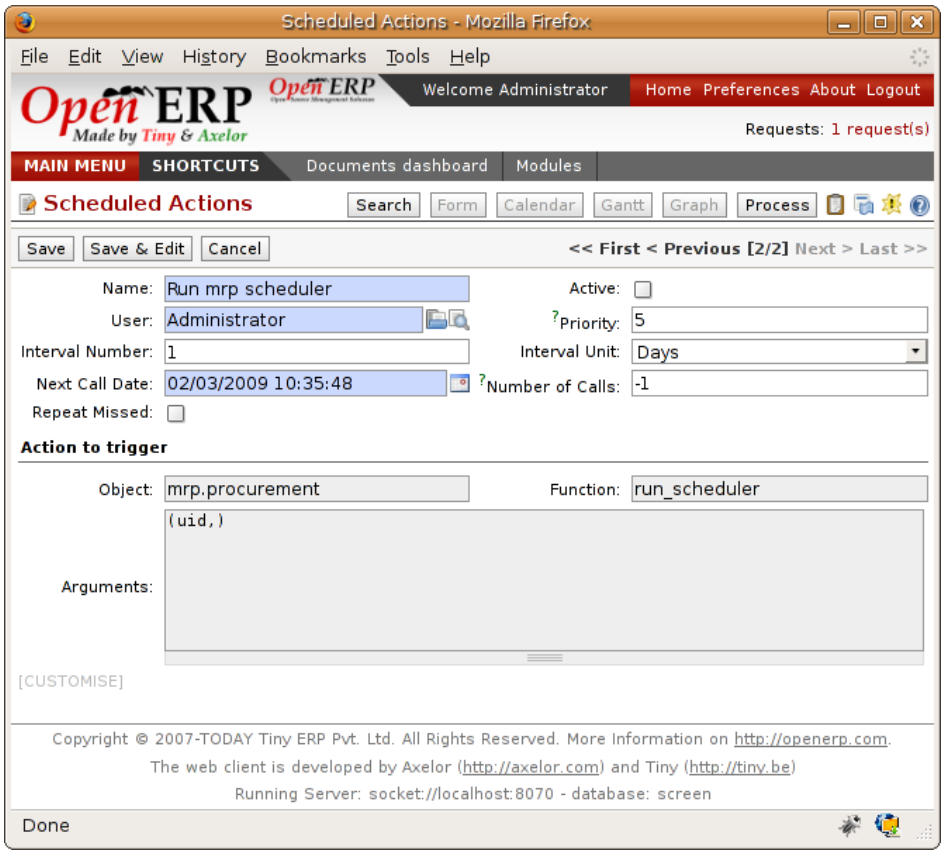


Figure 19.18: *Configuring the start time for calculating requirements*

Tip: *Calculating requirements / scheduling*
Scheduling only validates procurement confirmed but not started. These procurement reservations will themselves start production, tasks or purchases depending on the configuration of the requested product.

You take account of the priority of operations in starting reservations and procurement. The urgent requests, or those with a date in the past, or those with a date earlier than the others will be started first so that if there are not enough products in stock to satisfy all the requests, the most urgent will be produced first.

19.8 Calculation of lead times

All procurement operations (that is, the requirement for both production orders and purchase orders) are automatically calculated by the scheduler. But more than just creating each order, Open ERP plans the timing of each step. A planned date calculated by the system can be found on each order document.

To organize the whole chain of manufacturing and procurement, Open ERP bases everything on the delivery date promised to the customer. This is given by the date of the confirmation in the order and the lead times shown in each product line of the order. This lead time is itself proposed automatically in the field **Customer Lead Time** shown in the product form. This is the difference between the time on an order and that of the delivery.

To see a calculation of the lead times, take the example of the cabinet above. Suppose that the cabinet is assembled in two steps, using the two following bills of materials.

Table 19.21: Bill of Materials for 1 ARM100 Unit

Product Code	Quantity	Unit of Measure
PANLAT	2	Unit
BOIS002	0.25	m2
LIN040	1	m
BOIS010	0.25	m2
TAQ000	12	Unit

Table 19.22: Bill of Materials for 2 PANLAT Units

Product Code	Quantity	Unit of Measure
BOIS002	0.17	m2

The PANLAT is made from an order using the workflow shown. The BOIS02 is purchased on order and the other products are all found in stock. An order for the product ARM100 will then generate two production orders (ARM100 and PANLAT) then produce two purchase orders for the product BOIS02. Product BOIS02 is used in the production of both ARM100 and PANLAT. Set the lead times on the product forms to the following:

Table 19.23: Lead Times

Product Code	Customer Lead Time	Production Lead Time	Supplier Lead Time
ARM100	30 days	5 days	
PANLAT		10 days	
BOIS02			5 days

A customer order placed on the 1st January will set up the following operations and lead times:

- Delivery ARM100: 31 January (=1st January + 30 days),
- Manufacture ARM100: 26 January (=31 January – 5 days),
- Manufacture PANLAT: 16 January (=26 January – 10 days),
- Purchase BOIS02 (for ARM100): 21 January (=26 January – 5 days),
- Purchase BOIS02 (for PANLAT): 11 January (=16 January – 5 days).

In this example, Open ERP will propose placing two orders with the supplier of product BOIS002. Each of these orders can be for a different planned date. Before confirming these orders the purchasing manager could group these orders into single order.

19.8.1 Security days

The scheduler will plan all operations as a function of the time configured on the products. But it is also possible to configure these factors in the company. These factors are then global to the company, whatever the product concerned. In the description of the company, on the **Configuration** tab, you find the following parameters:

- Security days: number of days to deduct from a system order to cope with any problems of procurement,
- Purchase lead time: additional days to include for all purchase orders with this supplier,
- Production lead time: number of additional days needed for manufacturing.
- Period for calculating requirements: all the requests which are for procuring for a later date to the number of days which aren't calculated in the scheduler.

Note: *Purchasing lead time*
The security delay for purchases is the average time between the order generated by Open ERP and the real purchase time from the supplier by your purchasing department. This delay takes account of the order process in your company, including order negotiation time.

Take for example the following configuration:

- Security days: 2,
- Purchase Lead time: 3,
- Production Lead Time: 1.

The example above will then be given the following lead times:

- Delivery ARM100: 29 January (=1st January + 30 days – 2 days),
- Manufacture ARM100: 23 January (=29 January – 5 days – 1 day),
- Manufacture PANLAT: 12 January (=26 January – 10 days – 1 day),
- Purchase BOIS02 (for ARM100): 15 January (=26 January – 5 days – 3 days),
- Purchase BOIS02 (for PANLAT): 4 January (=12 January – 5 days – 3 days).

19.9 Operations

In the first part of this chapter, manufacturing management was handled in terms of products and materials. This section focuses on manufacturing operations. To manufacture or assemble products, as well as using raw materials and finished product you must also handle operations such as assembly, drilling wood, and cutting timber.

The different operations will have different impacts on the costs of manufacture and planning depending on the available workload.

19.9.1 Definition of concepts

To manage operations you should understand the following concepts

- Workcenters,
- Routing,
- Operations.

19.9.2 Workcenters

Workcenters represent units of product, capable of doing material transformation operations. You can distinguish three types of workcenter: machines, tools and human resources.

Note: *Workcenter*
Workcenters are units of manufacture consisting of one or several people and/or machines that can be considered as a unit for the purposes of forecasting capacity and planning.

Use the menu *Manufacturing* → *Configuration* → *Workcenters* to define a new workcenter. You get a form as shown in the figure *Definition of a workcenter*.

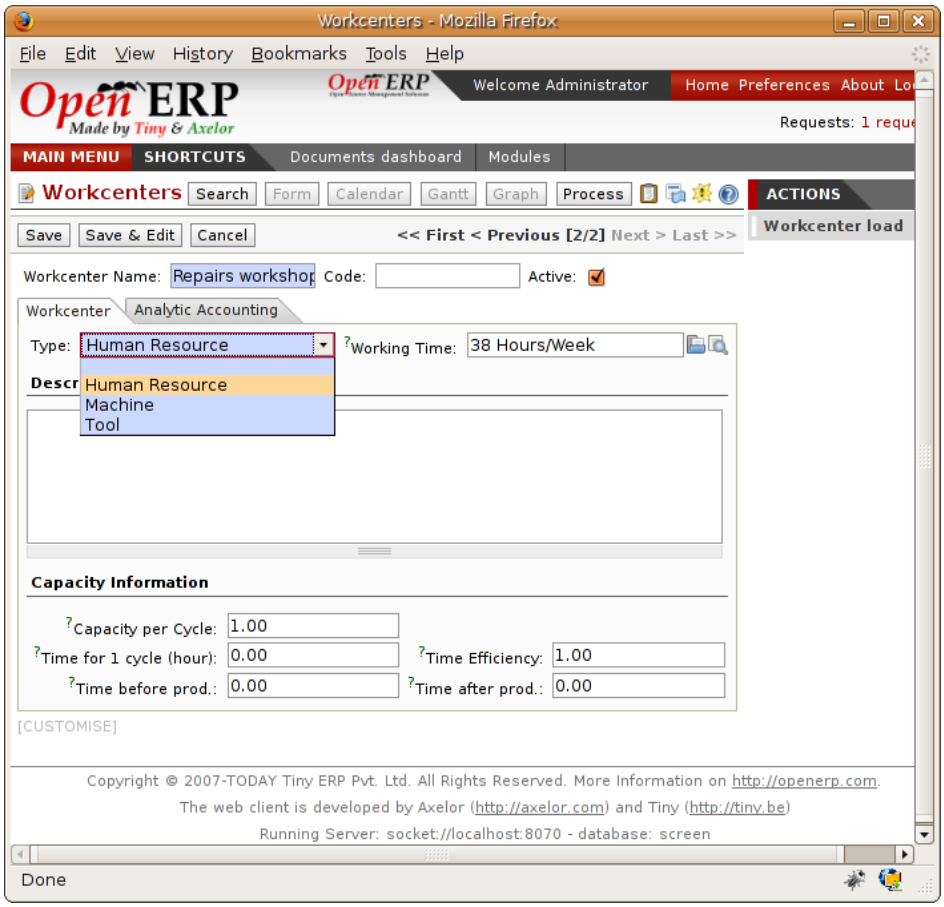


Figure 19.19: *Definition of a workcenter*

A workcenter must have a name and a code. You then assign a type: machine, human resource, tool, and a

description of operating hours or functionality. The figure *Working hours for a workcenter* represents the hours from Monday to Friday, from 09:00 to 17:00 with a break of an hour from 12:00.

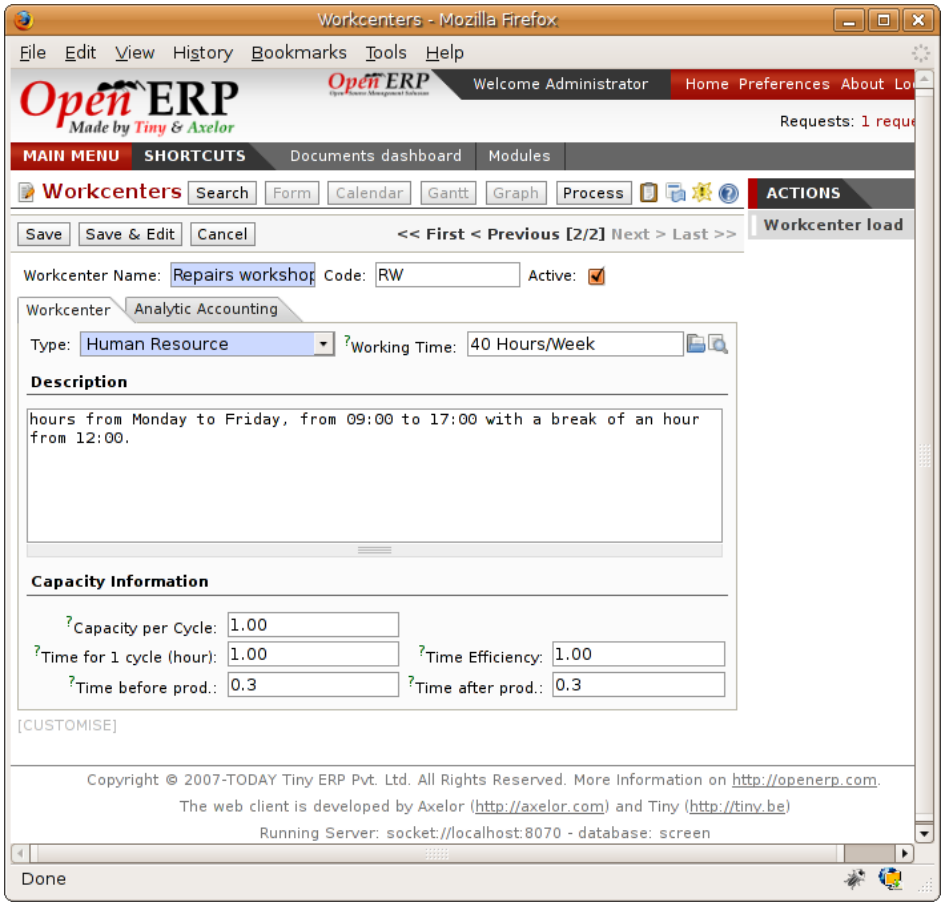


Figure 19.20: *Working hours for a workcenter*

You should show a description of the workcenter and its operations.

Once the database is encoded you should enter data about the production capacity of the workcenter. Depending on whether you have a machine or a person, a workcenter will be defined in cycles or hours. If it represents a set of machines and people you can use both cycles and hours at the same time.

Note: *A Cycle*
A cycle corresponds to the time required to carry out an assembly operation. The user is free to determine which is the reference operation for a given workcenter. It must be represented by the cost and elapsed time of manufacture. For example, for a printing workcenter, a cycle will be the printing of 1 page or of 1000 pages depending on the printer.

To define the capacity properly it is necessary know, for each workcenter, what will be the reference operation which determines the cycle. You can then define the data relative to the capacity.

Capacity per cycle (CA): determine the number of operations that can be done in parallel during a cycle. Generally the number defines the number of identical machines or people defined by the workcenter.

Time for a cycle (TC): give the duration in hour for that or the operations defined by a cycle.

Time before production (TS): give the wait in hours to initialise production operations. Generally this represents the machine setup time.

Time after production (TN): give the delay in hours after the end of a production operation. Generally this represents

the cleaning time necessary after an operation.

Effective time (ET): is a factor that is applied to the three times above to determine the real production time. This factor enables you to readjust the different times progressively and as a measure of machine utilization. You can't readjust the other times because generally they're taken from the machine's data sheet.

The total time for carrying out X operations is then given by the following formula: ((C / CA) * TC + TS + TN_ * ET. In this formula the result of the division is rounded upwards. Then if the capacity per cycle is 6 it takes 3 cycles to realize 15 operations.

Tip: *Multi-level routing*
It is possible to define routing on several levels to support multi-level bills of materials. You can select the routing on each level of a bill of materials. The levels are then linked to hierarchies of bills of materials.

The second tab of the production order lets you define the links to analytical account to report the costs of the workcenter operations. If you leave the different fields empty Open ERP won't have any effect on the analytic accounts.

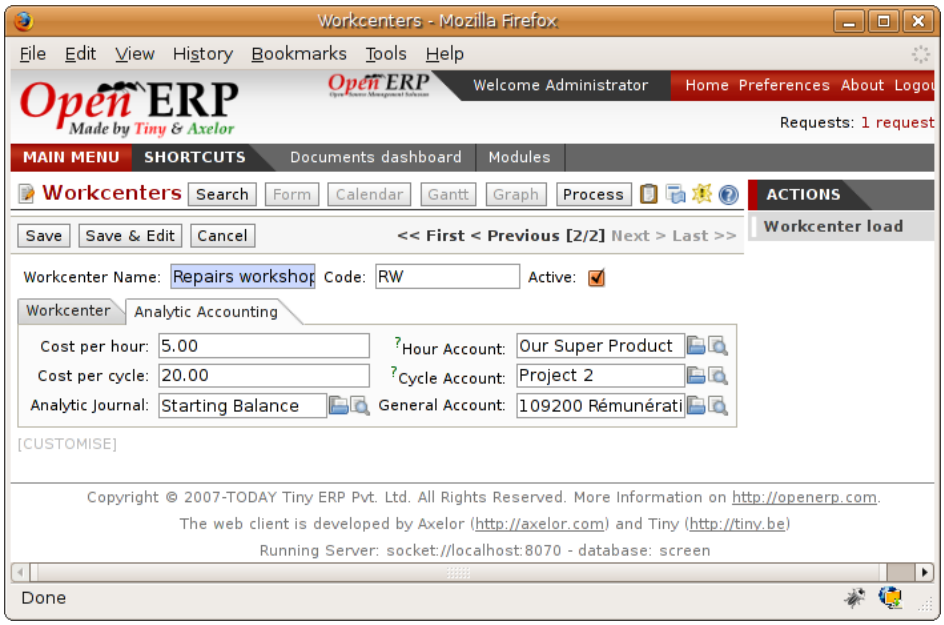


Figure 19.21: *Data about analytic accounts for a workcenter*

19.9.3 Routing

Routings define the assembly operations to be done in workcenters for manufacturing a certain product. They are usually attached to bills of materials which will define the assembly of products required for manufacture or for finished products.

A routing can be defined directly in a bill of materials or through the menu *Manufacturing → Configuration → Routings*. A routing has a name, a code and a description. Later in this chapter you'll see that a routing can also be associated with a stock location. That enable you to indicate where assembly takes place.

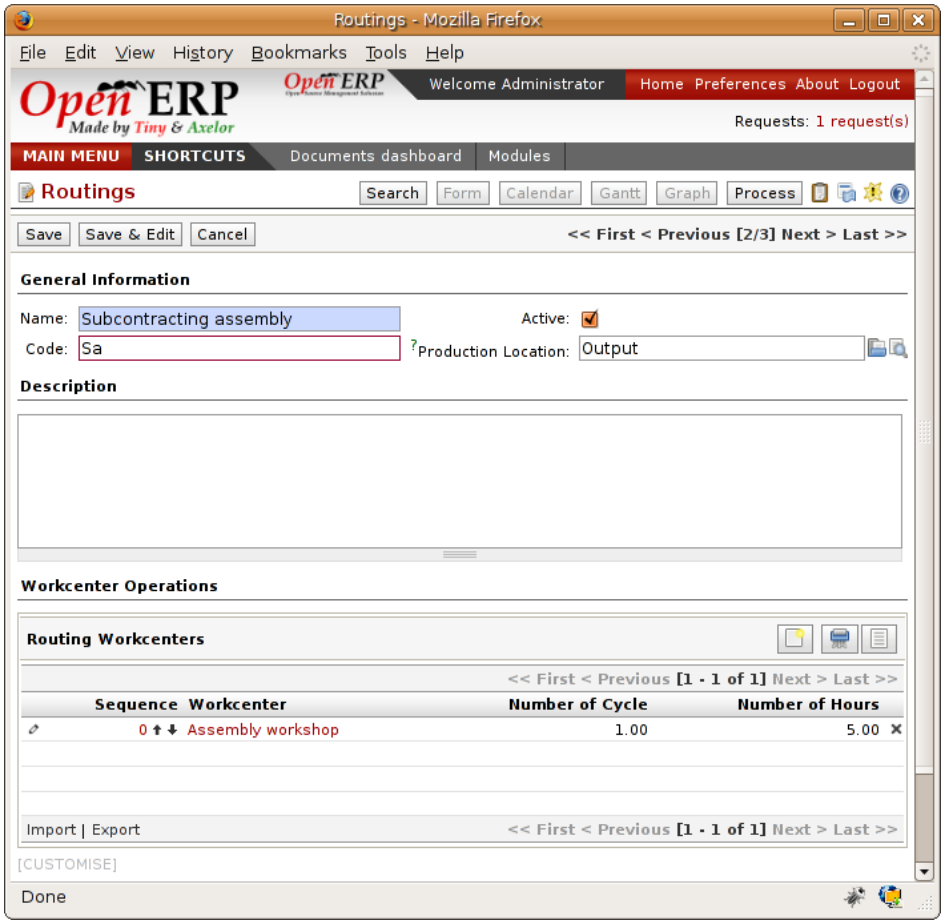


Figure 19.22: *Definition of a routing with three operations*

Note: *Subcontracting assembly*
You'll see further on in this chapter that it is possible to link a routing and a stock location for the customer or the supplier. You do this after you've subcontracted the assembly of a product to a supplier, for example.

In the routing you must show the list of operations that must be done. Each operation must be done at a workcenter and possess a number of hours and/or cycles be done.

19.9.4 Impact on the production order

The routings are then attached to the bills of materials which are then also used to generate product order. On a production order you'll find assembly operations for manufacture on the **Operations** tab.

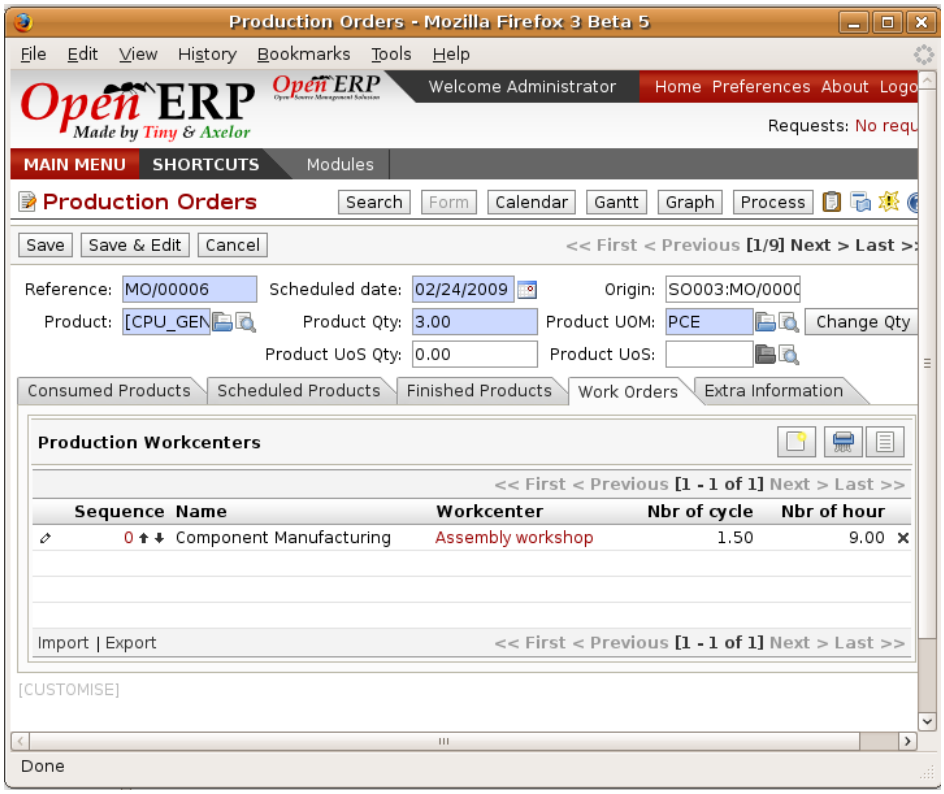


Figure 19.23: *Operations on a production order*

The times and the cycles shown in the production order are, in the same way as the materials, theoretical data. The user can change the values to reflect reality for manufacture.

So if you use routings, Open ERP automatically calculates the operations required for the production order. If the workcenters are linked to analytic accounts, at the end of production, Open Erp will generate the analytic accounts representing the costs of manufacture. This will allow you to work out profitability per workcenter or manufacturing unit through analytic accounting.

But the routings also enable you to manage your production capacity. You will be able to leave the demand charts for the days / weeks / months ahead to validate that you don't forecast more than you are capable of producing.

To see a demand chart, list the workcenters using the menu *Manufacturing → Configuration → Workcenters*. Then select one or several workcenters and click on the action **Workcenter load**. Open ERP then asks you if you work in cycles or in hours and your interval is calculated (by day, week or month).

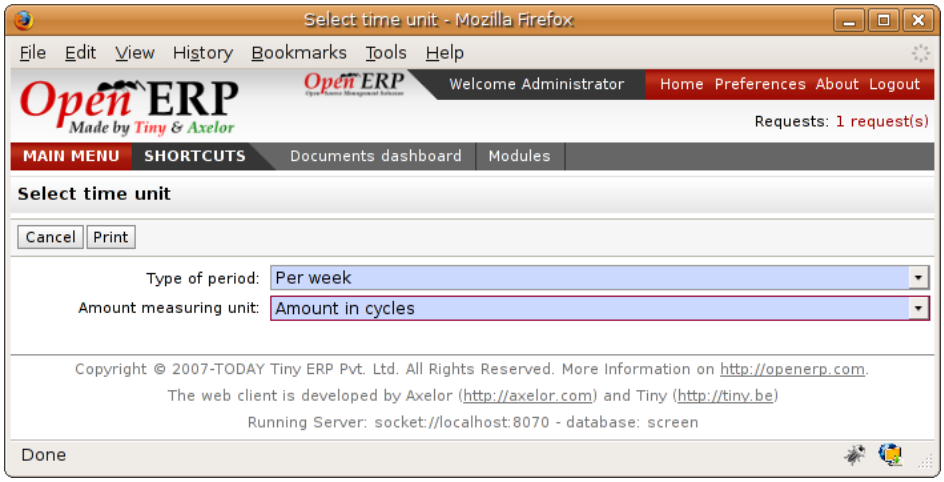


Figure 19.24: *Charge by workcenter*

Tip: *Theoretical times*
Once the routings have been clearly defined, you determine the effective working time per assembly worker. This is the time actually taken by the assembly worker for each operation. That enables you to compare the real working time in your company and work out the productivity per person.

19.9.5 Work operations

A production order defines the use of the products defined in the Bills of Materials, and the operations defined in the routing. You've seen how to handle manufacturing production as a top-level process, but some companies prefer to have finer-grained control of operations where instead of specifying just the production process itself, they enter data on each constituent production operation.

19.9.6 Management of operations

Note: *Operations*
Operations are often called work orders.

To work using work orders you must install the optional module `mrp_operations`. Once the module is installed you'll find a new menu called *Manufacturing* → *Operations* → *Operations* to be carried out. The assembly workers must then encode each step operation by operation and, for each step, the real working time for it.

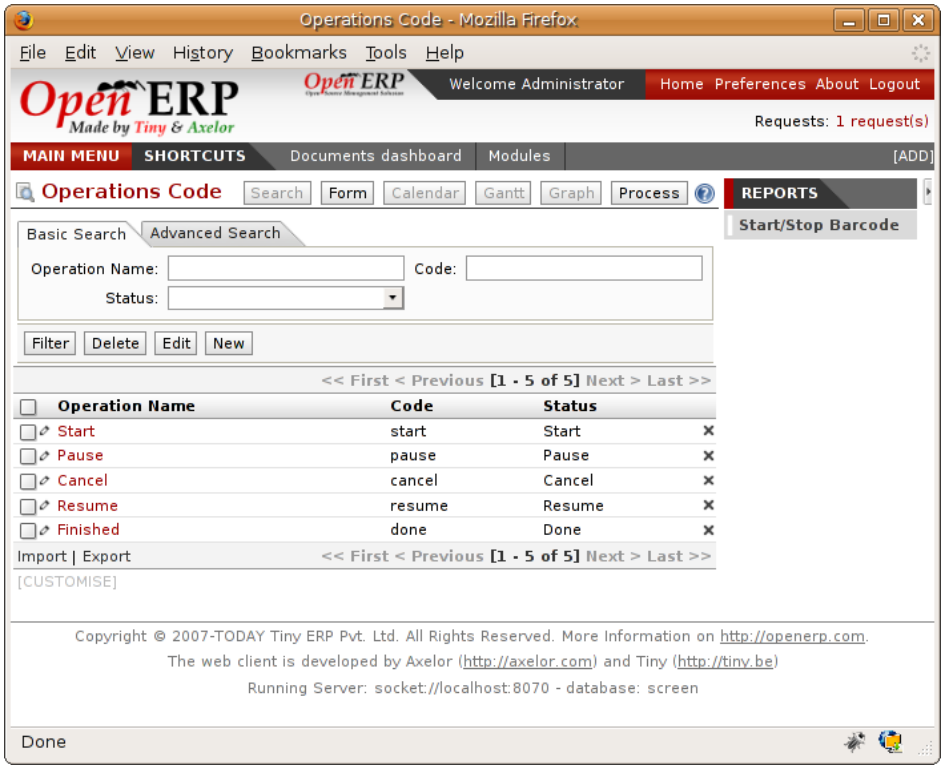


Figure 19.25: *List of operations to be carried out.*

Operations must then be carried out one by one. On each operation the operator can click on **Start operation** and then **Close Operation**. The time is then worked out automatically on the operation between the two changes of status. The operator can also put the operation on hold and start again later.

The following process is attached to each operation.

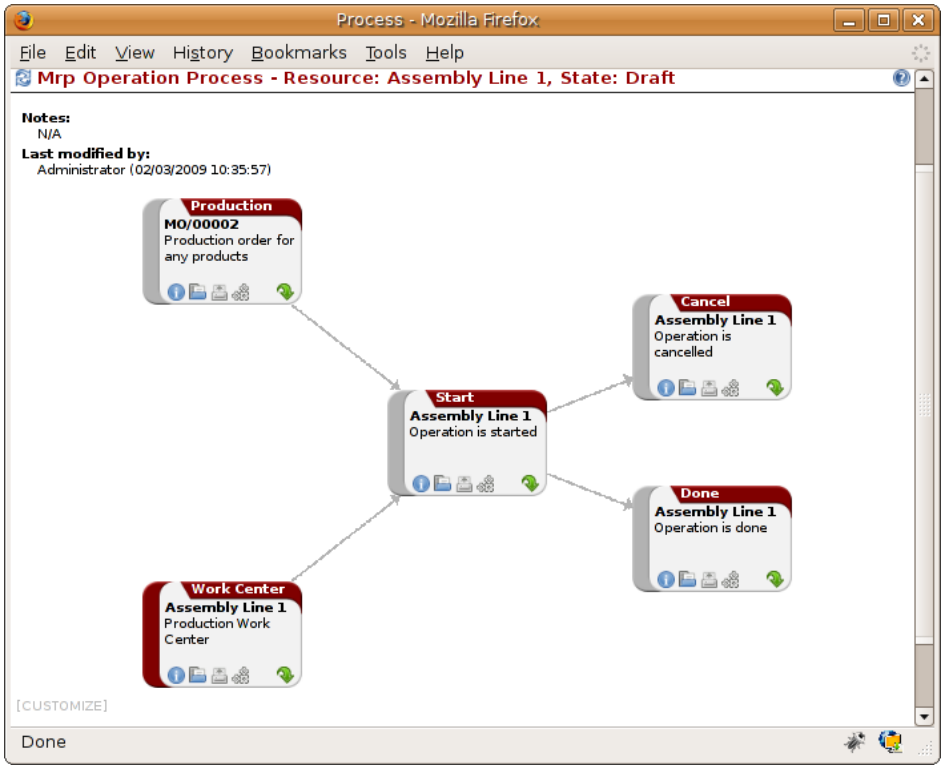


Figure 19.26: *Process for handling an operation*

Thanks to this use by operation, the real working time is recorded on the production order.

The production order is automatically put into the state 'Running' once the first operation has been started. That consumes some raw materials. Similarly the production order is closed automatically once the last operation is completed. The finished products are then made.

19.10 Events and barcodes

If the company wants to work with barcodes in manufacturing you can work on each operation using events. Here are some examples of events for an operations:

- Starting an operation,
- Pausing an operation,
- Restarting an operation,
- Closing an operation,
- Cancelling an operation.

You place barcodes on the production orders on the machines or operators and a form of barcodes representing the events. To print barcodes select the events using the menu *Manufacturing → Configuration → Codes from start to finish*. Then click for printing the barcodes for the selected events. You can do the same for printing barcodes for the workcenters using the menu *Manufacturing → Configuration → Workcenters*.

Using the system these operations don't need data to be entered on the keyboard. To use these barcodes, open the menu *Manufacturing → Barcode events*. You must then scan, in order:

1. The barcode of the production order,
2. The workcenter used,
3. The event code.

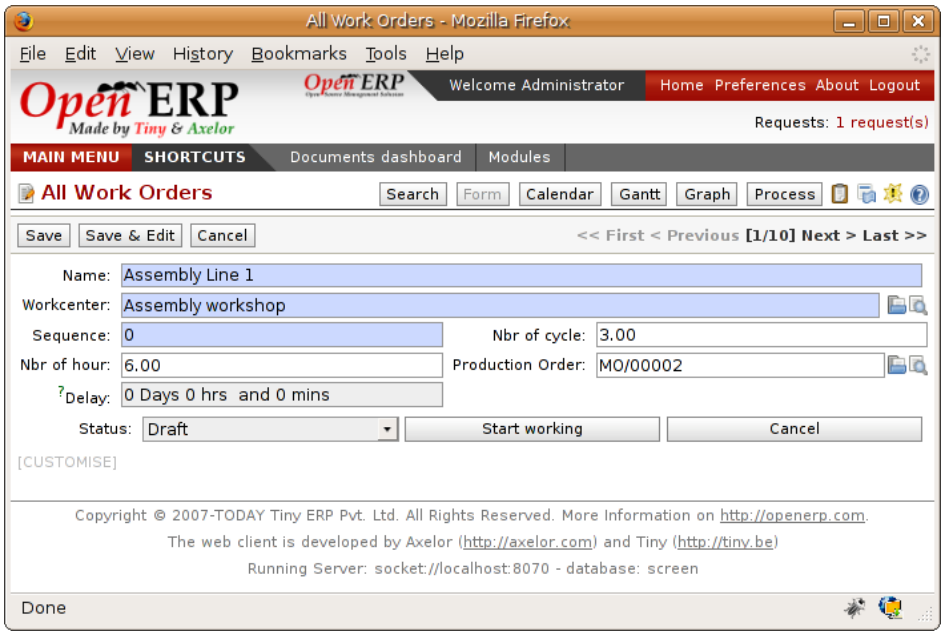


Figure 19.27: *Capturing events for work orders*

Open ERP then applies the events to the relevant operation.

19.10.1 Subcontracting manufacture

In Open ERP it is possible to subcontract production operations (for example painting and item assembly) at a supplier's. To do this you must indicate on the relevant routing document a supplier location for stock management.

You must then configure a location dedicated to this supplier with the following data:

- **Type of location** : Supplier,
- **Address of Location** : Select an address of the subcontractor partner,
- **Type of linkage** : Fixed,
- **Location of linkage** : your Stock,
- **Lead time for linkage** : number of days before receipt of the finished product.

Then once the manufacture has been planned for the product in question, Open ERP will generate the following steps:

Delivery of raw materials to the stores for the supplier,

Production order for the products at the suppliers and receipt of the finished products in the stores.

Once the production order has been confirmed, Open ERP automatically generates a delivery order to send to the raw materials supplier. The storesperson can access this delivery order using the menu *Stock Management → Incoming Products*. The raw materials will then be placed in stock at the supplier's stores.

Once the delivery of raw materials has been confirmed, Open ERP activates the production order. The supplier uses the raw materials sent to produce the finished goods which will automatically be put in your own stores. The confirmation of this manufacture is made when you receive the products from your supplier. It's then that you indicate the quantities consumed by your supplier

Tip: *Subcontract without routing*
If you don't use routing you can always subcontract work orders by creating an empty routing in the subcontract bill of materials.

Production orders are found in the menu *Manufacture → Production Orders → Production Orders to start*. A production order is always carried out in two stages:

1. Consumption of raw materials.
2. Production of finished products.

Depending on the company's needs, you can specify that the first step is confirmed at the acknowledgment of manufacturing supplier and the second at the receipt of finished goods in the warehouse.

19.11 Treatment of exceptions

The set of stock requirements is generated by procurement orders. Then for each customer order line or raw materials in a manufacturing order, you will find a procurement form. To review all the procurement orders use the menu *Manufacturing → Procurement orders*.

In normal system use, you don't need to worry about procurement orders because they're automatically generated by Open ERP and the user will usually work on the results of a procurement: a production order, a task or a supplier order.

But if there are configuration problems, the system can remain blocked by a procurement without generating a corresponding document. For example, suppose that you configure a product **Procure Method** as `Make to Order` but you haven't defined the bill of materials. In that case procurement of the product will stay blocked in an exception state `No Bill of Materials defined for this product`. You must then create a bill of materials to unblock the problem.

Possible problems include:

- No bill of materials defined for production: in this case you've got to create one or indicate that the product can be purchased instead.
- No supplier available for a purchase: it's then necessary to define a supplier in the second tab of the product form.
- No address defined on the supplier partner: you must complete an address for the supplier by default for the product in consideration.
- No quantity available in stock: you must create a rule for automatically procuring (for example a minimum stock rule) and put it in the order, or manually procure it.

Some problems are just those of timing and can be automatically corrected by the system. That's why Open ERP has the two following menus:

- *Manufacturing → Automatic Procurement → Procurement Exceptions → Exceptions to correct*,
- *Manufacturing → Automatic Procurement → Procurement Exceptions → Temporary exceptions*.

If a product must be 'in stock' but is not available in your stores, Open ERP will make the exception in 'temporary' or 'to be corrected'. The exception is temporary if the system can procure it automatically, for example if a procurement rule is defined for minimum stock.

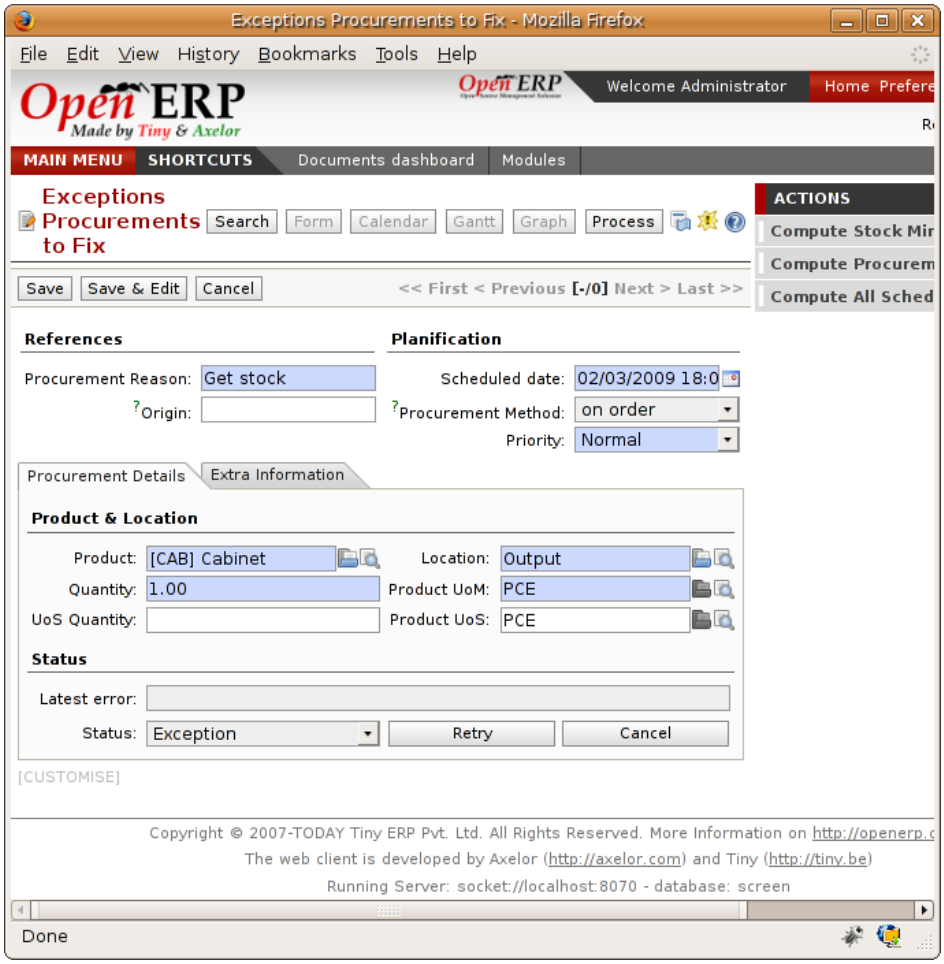


Figure 19.28: *Example of a procurement in exception*

If no procurement rule is defined the exception must be corrected manually by the user. Once the exception is corrected you can restart by clicking on **Retry**. If you don't do that then Open ERP will automatically recalculate on the next automated requirements calculation.

19.12 Manual procurement

To procure internally, you can create a procurement order manually. Use the menu *Manufacturing → Procurement Orders → New Procurement* to do this.

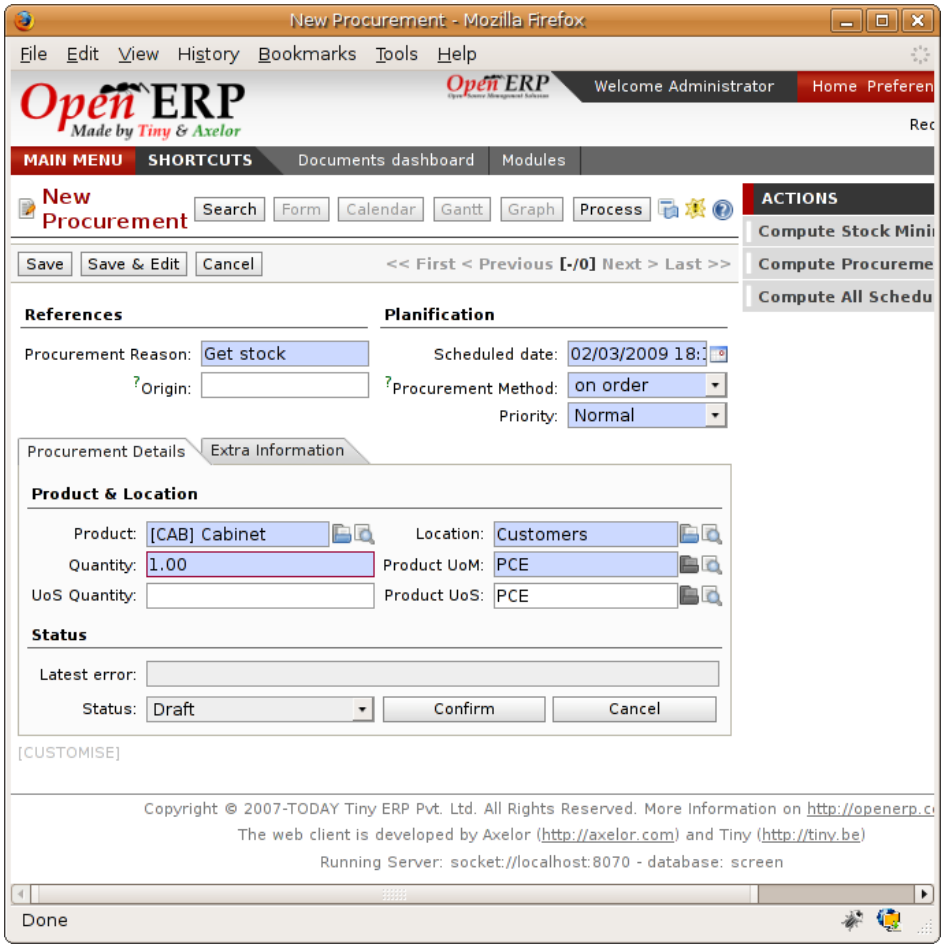


Figure 19.29: *Encoding for a new procurement order*

The procurement order will then be responsible for calculating a proposal for automatic procurement for the product concerned. This procurement wll start a task, a purchase order form the supplier or a production depending on the product configuration.

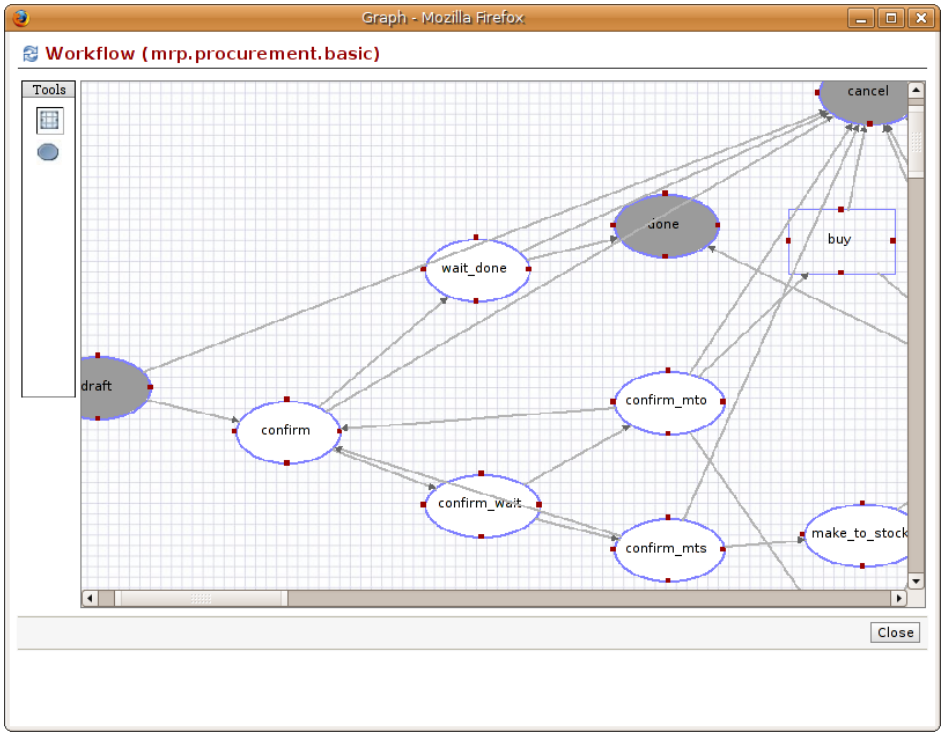


Figure 19.30: *Workflow for handling a procurement, a function of the product configuration*

It is better to encode a procurement order rather than direct purchasing or production, That method has the following advantages:

The form is simpler because Open ERP calculates the different values from other values and defined rules: purchase date calculated from order date, default supplier, raw materials needs, selection of the most suitable bill of materials, etc

The calculation of requirements prioritises the procurements. If you encode a purchase directly you short-circuit the planning of different procurements.

Tip: *Shortcuts*
*On the product form you have an **ACTIONS** shortcut button **Create Procurements** that lets you quickly create a new procurement order.*

19.13 Management of waste products and secondary products

For the management of waste you must install the module `mrp_subproduct`. The normal behaviour of manufacture in Open ERP enables you to manufacture several units of the same finished product from raw materials (A + B > C). With waste management, the result of a manufacture can be to have both finished products and secondary products (A + B > C + D).

Note: *Waste material*
In Open ERP waste material corresponds to secondary products that are a by-product of the main manufacturing process. For example, cutting planks of timber will produce other planks but these bits of timber are too small (or the offcuts may have value for the company if they can be used elsewhere).

If the module `mrp_subproduct` has been installed you get a new field in the Bill of Material that lets you set secondary products resulting from the manufacture of the finished product.

Figure 19.31: *Definition of waste products in a bill of materials*

When Open ERP generates a production order based on a bill of materials that uses secondary product you pick up the list of all products in the the third tab of the production order 'Finished Products'.

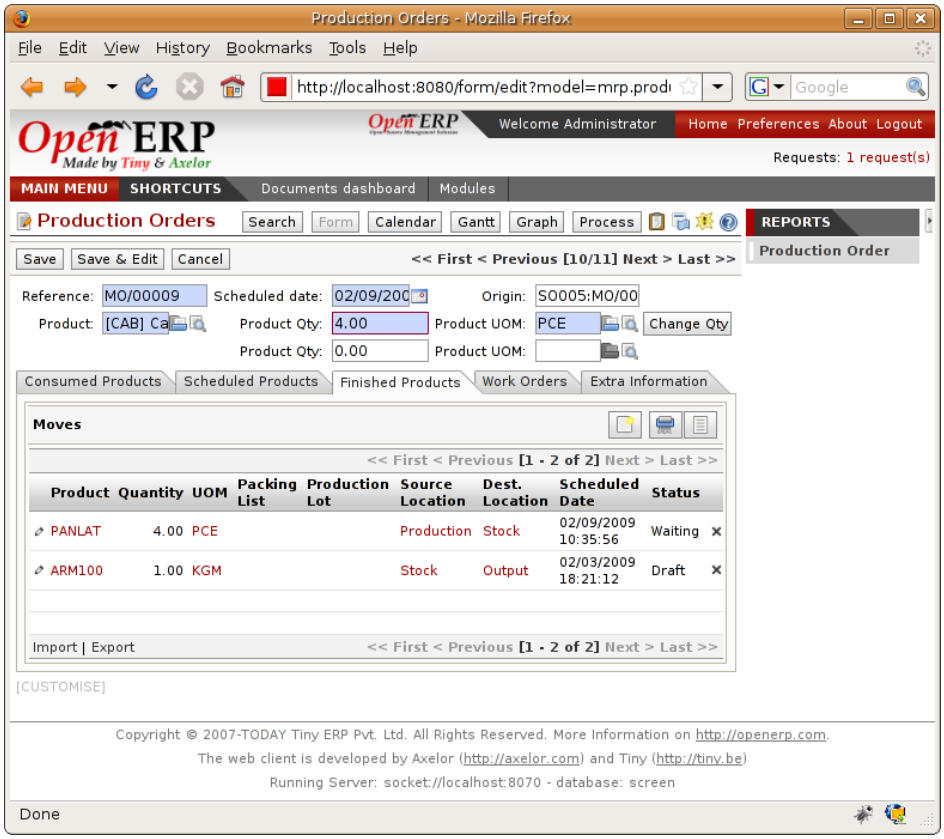


Figure 19.32: *A production order producing several finished products*

Secondary products enable you to generate several types of products from the same raw materials and manufacturing methods – only these aren't used in the calculation of requirements. Then if you need the secondary products Open ERP won't ask you to manufacture another product to use the waste products and secondary products of this manufacture. In this case you should enter another production order for the secondary product.

Note: *Services in Manufacturing*
Unlike most software for production management, Open ERP manages services as well as stockable products. So it's possible to put products of type ***Service*** *in a bill of materials. These don't appear in the production order but their requirements will be taken into account.*
If they're defined as ***Make to Order*** *Open ERP will generate a task for the manufacture or a subcontract order for the operations. The behaviour will depend on the supply method configured on the product form* ***Buy*** *or* ***Produce****.*

19.14 Management of repairs

The management of repairs is carried out using the module `mrp_repair`. Once it's installed this module adds new *Manufacturing* → *Repairs* menus under the Manufacturing menu for creating repair jobs and reviewing repairs in progress.

In Open ERP a repair will have the following effects:

- Use of materials: items for replacement,
- Production of products: items replaced from reserved stock,
- Quality control: tracking the reasons for repair,

- Accounting entries: following stock moves,
- Receipt and delivery of product from and to the end user,
- Adding operations that can be seen in the product's traceability,
- Invoicing items used and/or free for repairs.

19.14.1 Entering data for a new repair

Use the menu *Manufacturing → Repairs → New Repair* to enter a new repair into the system. You'll see a blank form for the repair data, as shown in the figure *Entering data for a new repair* below.

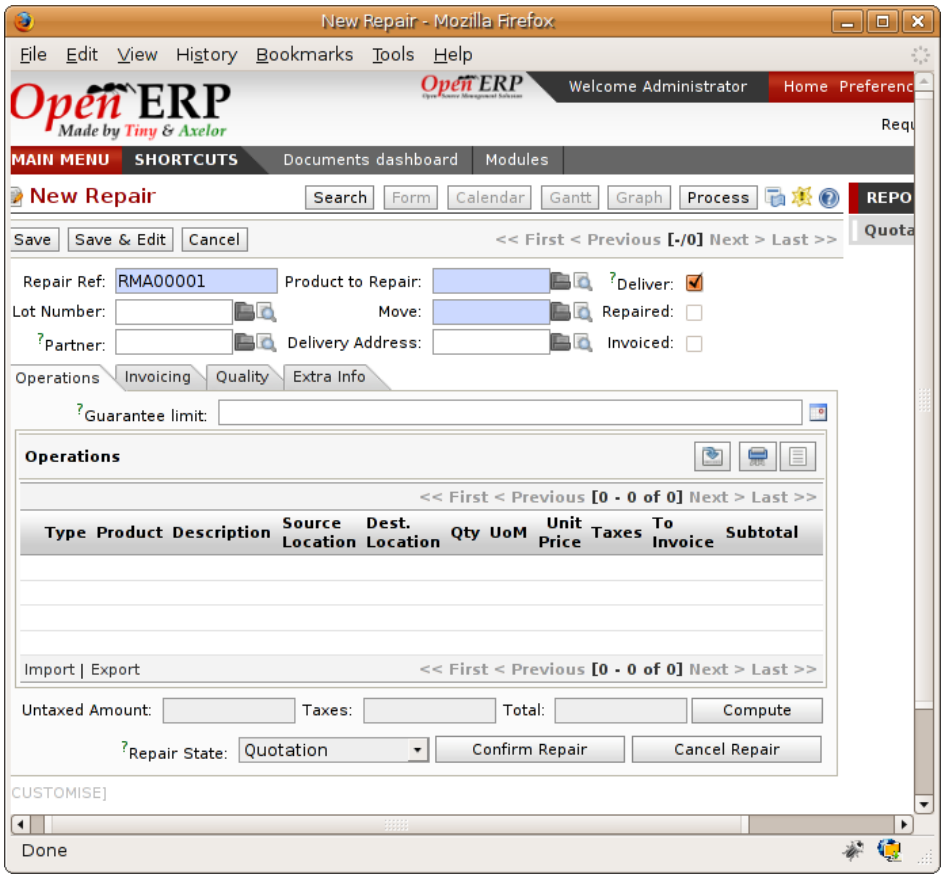


Figure 19.33: *Entering data for a new repair*

Start by identifying the product that will be repaired using the product lot number. Open ERP then automatically completes fields from the selected lot – the partner fields, address, delivery location, and stock move.

If a warranty period has been defined in the product description, in months, Open ERP then completes the field **Warranty limit** with the correct warranty date.

You must then specify the components that you'll be adding, replacing or removing in the operations part. On each line you must specify the following:

Add or remove a component of the finished product:

- Product Component,
- Quantity,

- Unit of Measure
- Price of Component,
- Possible lot number,
- Location where the component was found,
- To invoice or not.

Once the component has been selected, Open ERP automatically completes most of the fields:

- **Quantity** : 1,
- **Unit of Measure** : unit for managing stock defined in the product form,
- **Component Price** : calculated from the customer list price,
- **Source location** : given by the stock management,
- **To invoice or not** : depends on the actual date and the quarantee period.

This information is automatically proposed by the system but you can modify it all yourself.

You can also encode additional charges in the second tab of the repair - applicable list price, address and type of invoice, as well as additional line items that need to be added to the repair bill.

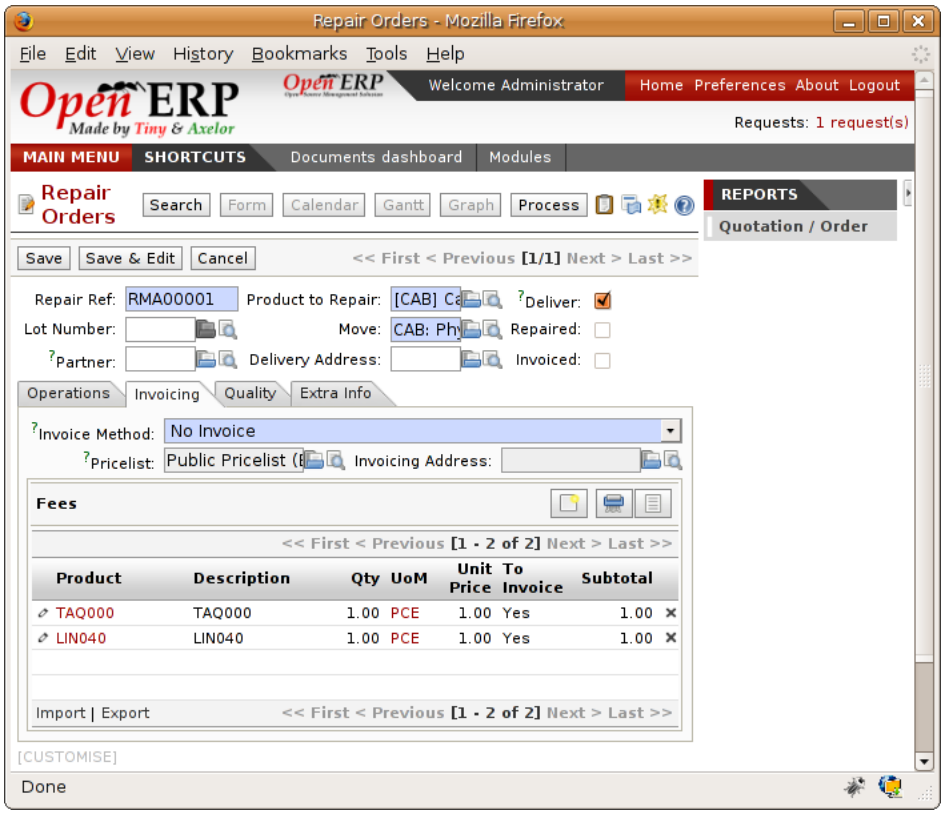


Figure 19.34: *Repair form, second tab*

The third tab, Quality, is for encoding information about the quality: internal notes, notes for the quotation, corrective actions and preventative actions for example.

19.14.2 Repair workflow

A defined process handles a repair order – both the repair itself and invoicing the client. The figure *Process for handling a repair* shows this repair process.

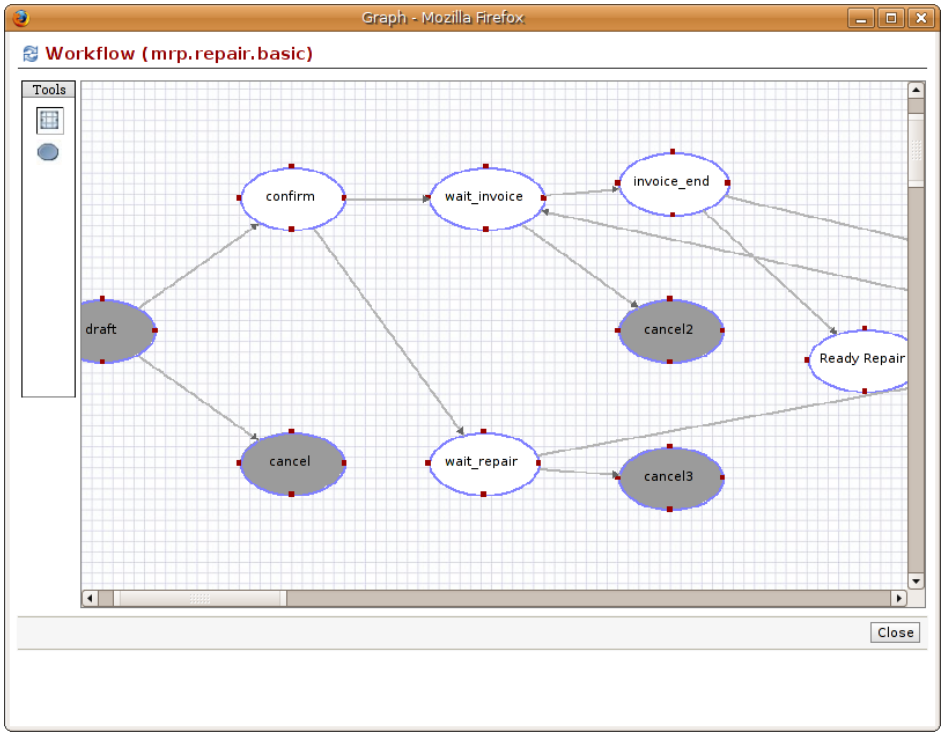


Figure 19.35: *Process for handling a repair*

Once a repair has been entered onto the system, it is in the 'draft' state. In this state it has no impact on the rest of the system. You can print a quotation from it using the action 'Print Quotation'. The repair quotation can then be sent to the customer.

Once the customer approves the repair, use the menu *Manufacturing → Repairs → Repairs in quotation* to find the draft repair. Click to confirm the draft repair and put it into the running state. You can specify the invoicing mode in the second tab:

- no invoicing,
- invoicing before repair,
- invoicing after repair.

You can confirm the repair operation or create an invoice for the customer depending on this state.

19.14.3 Invoicing the repair

When the repair is to be invoiced, an invoice is generated in the draft state by the system. This invoice contains the raw materials used (replaced components) and any other costs such as the time used for the repair. These other costs are entered on the second tab of the repair form.

If the product to be repaired is still under guarantee, Open ERP automatically suggests that the components themselves are not invoiced, but will still use any other defined costs. You can override any of these default values when you're entering the data.

The link to the generated invoice is shown on the second tab of the repair document.

19.14.4 Stock movements and repair

When the repair has been carried out, Open ERP automatically carries out stock movements for components that have been removed, added or replaced on the finished product.

The move operations are carried out using the locations shown on the first tab of the repair document. If a destination location has been specified, Open ERP automatically handles the final customer delivery order when the repair has been completed. This also lets you manage the delivery of the repaired products.

For example, take the case of the cabinet that was produced at the start of this chapter. If you have to replace the shelf PANLAT, you must enter data for the repair as shown in figure *Repair of a shelf in a cabinet*.

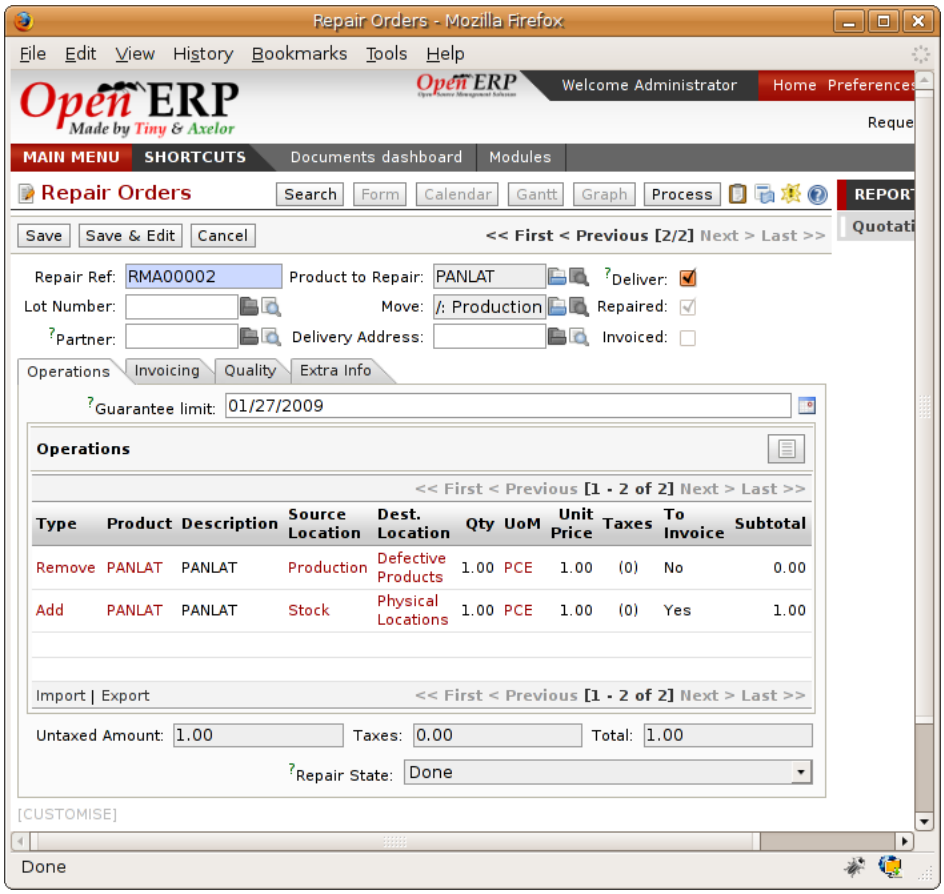


Figure 19.36: *Repair of a shelf in a cabinet*

In this example, you'd carry out the following operations:

- Removal of a PANLAT shelf in the cabinet and put the faulty shelf in the location *Defective Products*,
- Placement of a new PANLAT shelf that has been taken from stock.

When the repair is ready to be confirmed, Open ERP will generate the following stock moves:

- Put faulty PANLAT into suitable stock location *Default Production* > *Defective Products*,
- Consume PANLAT: *Stock* > *Default production*.

If you analyze the traceability of this lot number you'll see all the repair operations in the upstream and downstream traceability lists of the products concerned.

Part VII

Sales and Purchasing

These two chapters are about selling and purchasing products and services.

CHAPTER

TWENTY

MANAGEMENT OF SALES

This chapter describes Open ERP's sales management, following the complete sales order process from quotation to customer order, including the management of deliveries and of invoicing. It doesn't look at customer relations and pre-sales, which are handled by the CRM (Customer Relationship Management) modules described in an earlier part of the book.

It also describes the management of carriers, margin control and reporting, and price management and the handling of various types of sales discount campaign.

For this chapter you should start with a fresh database that includes demonstration data, with `sale` and its dependencies installed and no particular chart of accounts configured.

20.1 Sales Quotations

In Open ERP a quotation and an order are handled by the same underlying object, but in different states. You can consider an order to be a quotation that has evolved because it has been confirmed by the customer. Or, conversely, that a quotation is an order that hasn't yet been validated or cancelled. All of the orders and quotations in the system can be reached using the menu *Sales Management → Orders*.

20.1.1 Entering Quotation details

To enter details of a new quotations you can use the menu *Sales Management → Orders → New Quotation*. Open ERP then opens a new window so that you can enter data into new blank quotation form.

Figure 20.1: *Data entry for a new quotation*

Some information is automatically completed by the system:

- an internal reference for the quotation or order,
- the sale point that the order will be delivered from,
- the order date.

You can modify any of that information before validating the quotation. The customer reference is shown in the header of the order. This optional field if for the customer's own reference number – if the customer doesn't supply one then just leave it empty.

You then enter all the data about the order in the **Sale Order** tab. Start by entering the customer name, selecting the correct customer from the list of customers in the system. You can create a new customer on the fly at this stage if necessary – press `<F1>` in the empty **Customer** field to do that.

Once the customer name has been selected, different fields of the order become completed automatically, based on the configuration of the partner form for that customer:

- **Order Address** : person handling the order at the customer. By default, Open ERP proposes the Contact Address at the selected partner.
- **Delivery Address** : address used on the delivery order. By default, Open ERP proposes the Delivery address from the partner form. If nothing is defined in that slot, it uses the default address instead.

- **Invoice Address** : address used to send the invoice to the customer. By default, Open ERP proposes the address labelled **Invoice** from the partner form. If nothing is defined there, it uses the default address instead.
- **Price List** : will determine both the currency of the quotation and the price that will be used for each product.
- **Payment Conditions** : shows the payment method that the customer will follow, for example `50% on order, 50% on delivery.`
- **Delivery Method** : for example `Post - Express Mail.`

You can modify any of these fields on the order as you go.

You can also set an analytic account for your order. This account will be used during invoicing to generate accounting entries corresponding to the invoice automatically. This is extremely useful for assigning revenues to the project or case specified by this order.

Tip: *Analytic Accounts*
If you're managing by task, the analytic account to be selected is the one that corresponds to the project for the order. The sale carried out by the order can be allocated to the project so that profitability calculations can be made.

Once the information has been entered, you can enter data for the order lines. To do that, create a new order line as shown in the figure *Entering a new customer order line*:

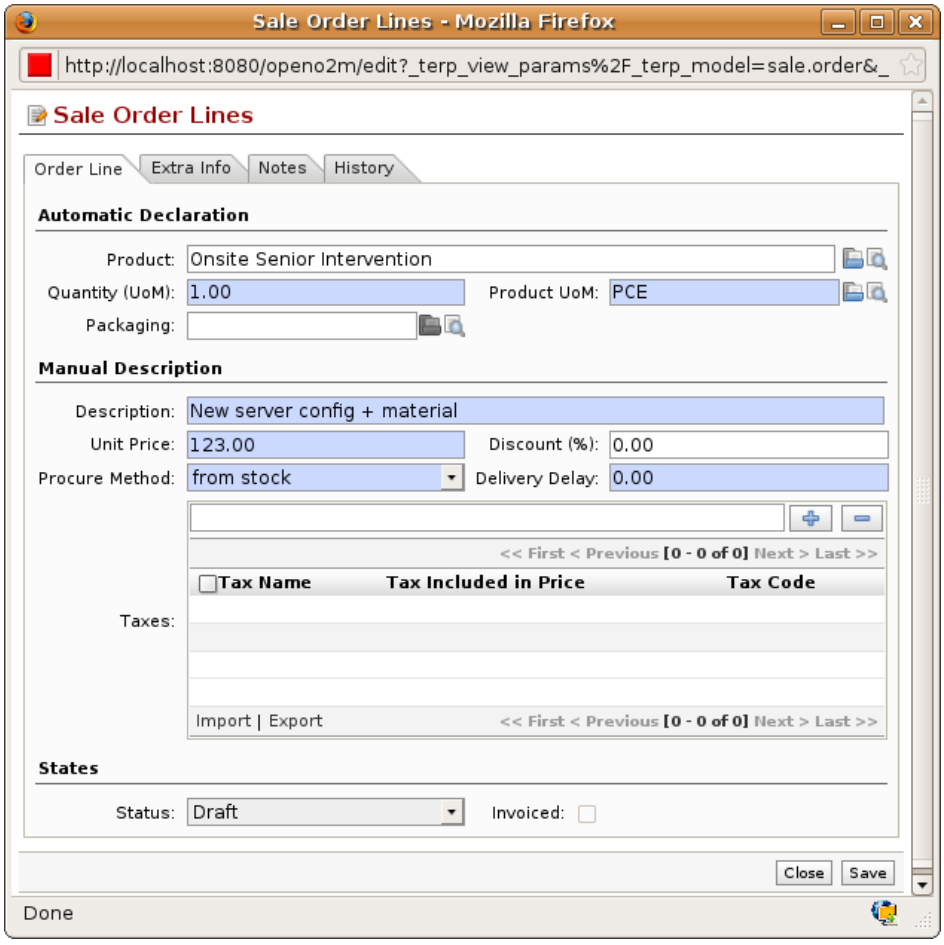


Figure 20.2: *Entering a new customer order line*

First of all select the product that is to be sold to the customer. Open ERP shows some useful information in the list of products to help you during your sale:

- **Real stock** : physically present in your warehouses. This value depends on the sale point selected in the order header. Different sale points can be linked to different warehouses, giving different stock levels, or can use the same warehouse.
- **Virtual stock** : shows a salesperson the quantity that can be sold, taking into account both stock reserved for other orders and amounts that could arrive in the short term.
- **Customer Price** : (May not be shown, depending on the installed modules). depends on the conditions attached to the customer, calculated on the list price. This is the price that's proposed by default in the customer quotation, unless it's been modified by the salesperson.
- **List Price** : the base sale price for the given product. It provides a base for the salesperson to be able to judge whether to offer a discount to the customer, and how much any discount should be.
- **Cost Price** : shows the cost price of the product. If the salesperson sells at less than this amount, then the company loses money.

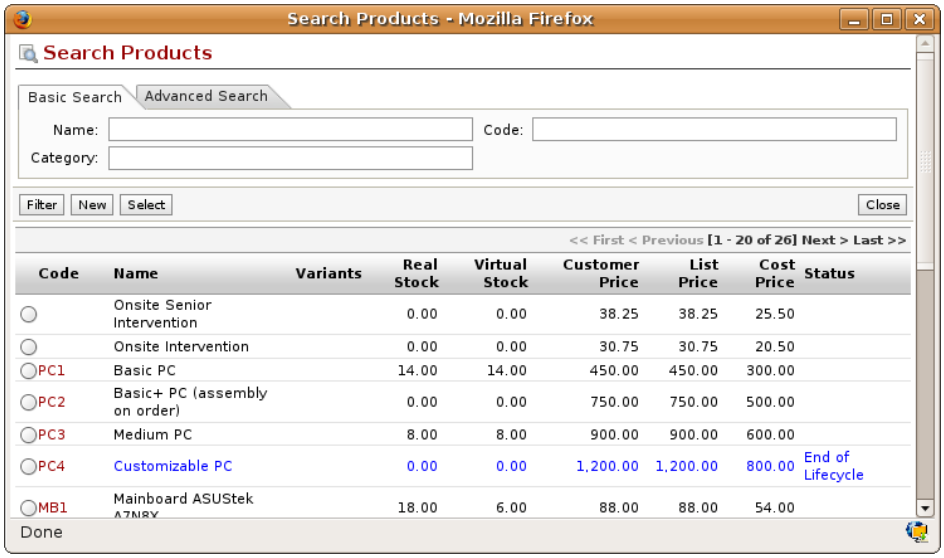


Figure 20.3: *Selecting a product in a Sales Order*

When the product that's to be sold to the customer has been selected, Open ERP automatically completes all the other required fields: price, unit of measure, description, discount, lead times, applicable taxes, default packaging and the product description. All of this information comes from the product form.

Tip: *Visible Discount*
If a discounted price is taken from a price list then by default that figure is shown as the sale price to the customer. He'll see a discount of 0% along with unit price that is different from the list price. If you install the module `product_visible_discount` *from addons-extra you can configure whether you want to make the discount explicitly visible on an order form as a percentage difference from the list price, or just show a reduced unit price as it does by default.*

In the form, the selected product is presented in the language of the user so that he can see what he's selling. The description of the product sold can also be expressed in the customer's language. The translation to the customer's language is used on the quotation or order when it's printed.

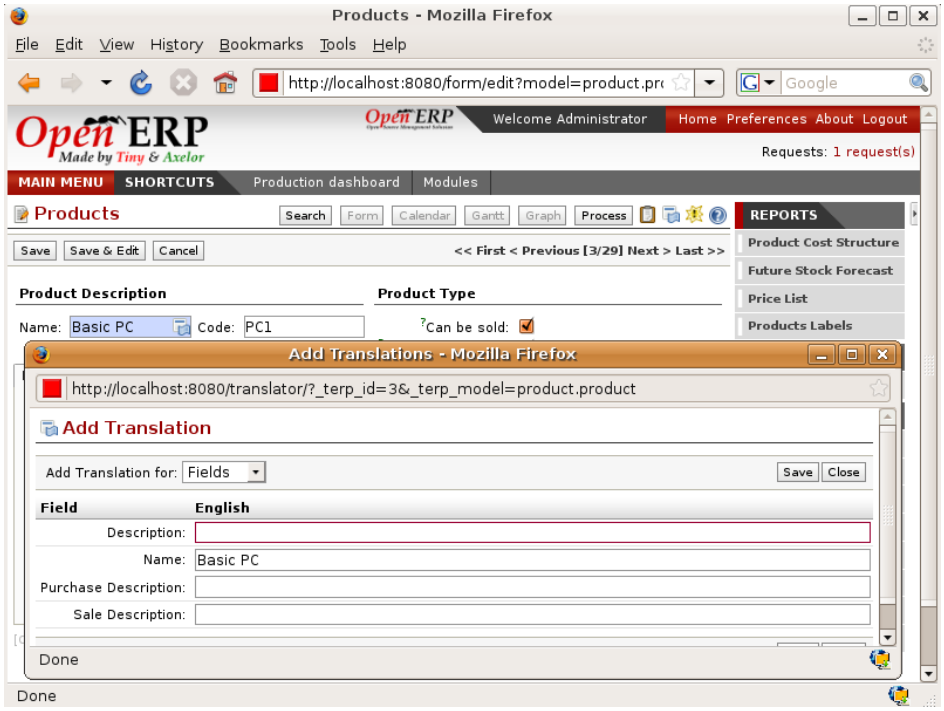


Figure 20.4: *Sale of a product in a partner language that differs from the user language*

Note: *One-off Sales*
If a product's only sold to a customer once, you don't have to enter data into a complete new product form just for that sale. You can manually complete all the information in the order without putting it into a product: description, price, quantity, lead time, taxes. In this case Open ERP won't generate a delivery note because the product isn't held in stock.

When all of the products are entered, you can print the quotation and send it to the customer. To do this, click on the report **Quotation / Order** in the **REPORTS** links to the right. Open ERP opens the quotation in PDF to enable to you to see it before printing.

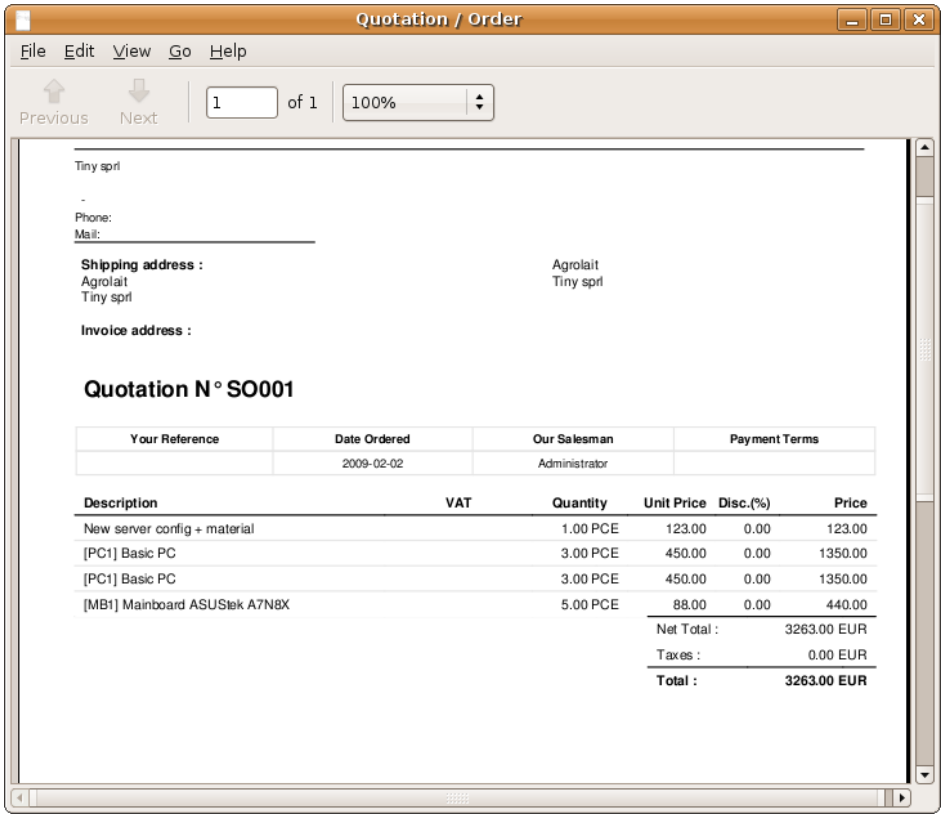


Figure 20.5: *Printing a customer quotation*

You can then confirm the quotation to move it on to an order if the order is confirmed by the customer, or just cancel the window without confirming the order to leave it in quotation state. To find all of the current quotations, you can use the menu *Sales Management → Orders → My Orders → My Quotations*.

To follow the process for your order, you can click on the process view from the order form. Open ERP shows you an interactive process view of that order. For more information about its use, look at *Process*.

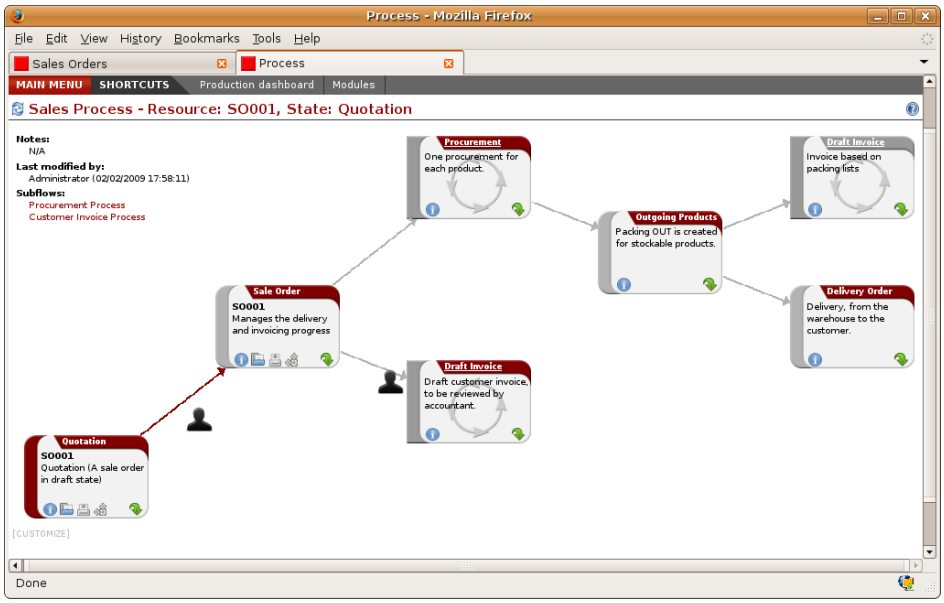


Figure 20.6: *Process view from following a customer order*

20.2 Management of Packaging

Products can be managed in several different packaged forms. For example if you sell batteries you can define the following packages for a given battery product:

- by Piece: a battery
- Blister pack: a pack of 4 batteries
- Pack of 100 blisters: 400 batteries
- Palette, containing 40 packs for a total of 16,000 batteries.

Open ERP's packaging management enables you to sell the same product in several different forms. The salesperson could sell, separately, one battery or a palette of batteries. In the order, you can select the default packaging type as a function of the quantities ordered.

For example, if the customer wants to buy 30,000 batteries, the salesperson can select the package `palette` . Open ERP will then propose the sale of 32,000 batteries, which corresponds to two palettes. Or the salesperson can select 75 packs.

The available packages are defined in the product form, in the **Packaging** tab. The first item on the list is the one that will be used by default.

Once a package has been defined on the order, Open ERP will throw up an alert if the ordered quantities don't correspond to the proposed packages. The quantity must be a multiple of the field **Quantity by Package** defined on the packaging form.

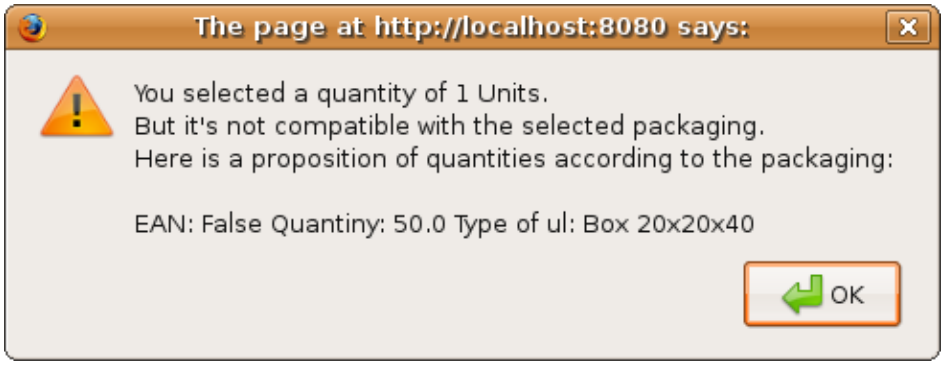


Figure 20.7: *Alert on the quantities sold compared with the packaging*

Don't confuse the management of packaging with the management of multiple units of measure. The Units of Measure are used to manage the stock differently in its different units. With packages, the stock is always managed by individual item but information about the package to use is supplied to the storesperson along with that item.

Even if the effects are the same, the printed documents will be different. The two following operations have the same effect on stock movement levels but will be printed differently on the sales order and the packing order:

- 32,000 batteries, delivered on two palettes,
- 2 palettes of batteries, with no information about packaging.

If the customer wants to order a palette and 10 packs, the salesperson can put two order lines on the sales order using the same product but different units of measure.

20.2.1 Example Packing and different products

It's sometimes more useful to define different products than to define several possible packages for the same product. A case of beer in a supermarket is a good example. A case holds 24 bottles, plus the empty case itself. The customer can buy bottles by the piece or a case of 24 bottles at one go.

You could define two packages for the product `Bottle of beer` : `PCE` and `case` . But this representation doesn't let you manage the stock and price of empty cases. So you might instead prefer a Bill of Materials for the sale, defining and using three different products:

- the empty case for the beer,
- the bottle of beer,
- the case of 24 bottles of beer.

You also define the bill of materials below which determines the make-up of the case of 24 beers:

- Case of 24 bottles of beer: 1 unit,
- Bottle of beer: 24 units,
- Empty case of beer: 1 unit.

Each of these three products has a different price. The products `Bottle of beer` and `Empty case of beer` have a stock level that needs to be managed. The `Case of 24 bottles of beer` has no stock because, if you sell the product, Open ERP automatically moves the stock in two lines, one for the empty case and the other for the 24 individual bottles of beer. For more information on bills of material for sale, see chapter *Manufacturing*.

20.3 Management of Alerts

To manage alerts on products or partners, you can install the `warning` module. Once that is installed, you will be able to configure a series of alerts on the partners or products by setting parameters in the new **Warnings** tab on each of the forms.

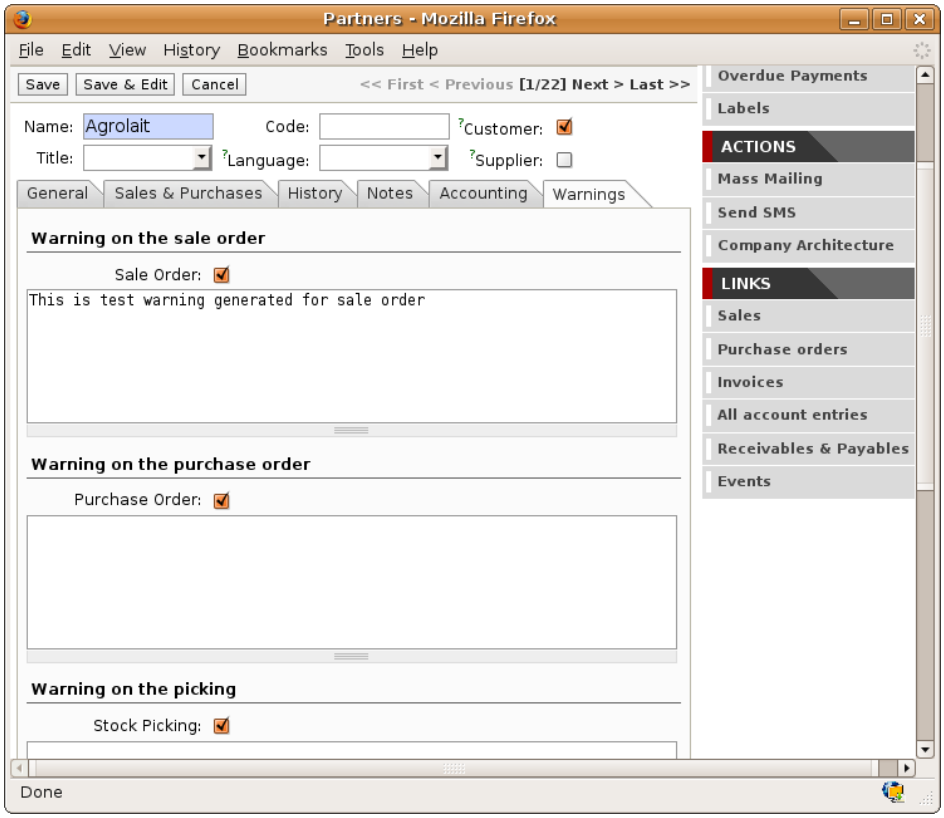


Figure 20.8: *Management of alerts on partners*

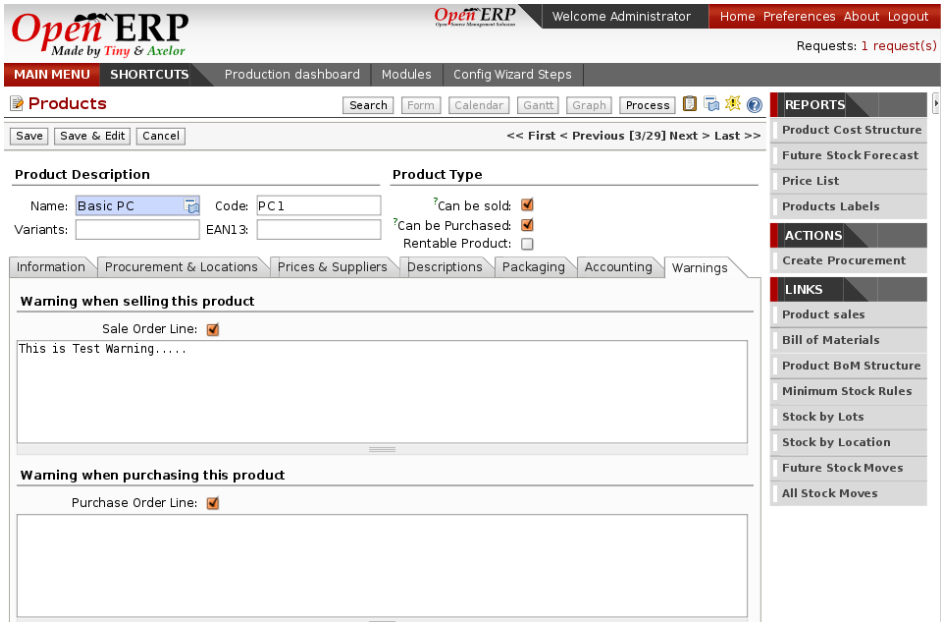


Figure 20.9: *Management of alerts on products*

You can activate alerts for a series of events. For each alert you should enter a message that will be attached to the person setting off the event. The different available events on the partner form are:

- Entering a customer order for the partner,

- Entering a supplier order for the partner,
- Sending a delivery to the partner (or receiving an item),
- Invoicing a partner.

The alerts that can be configured on a product form are:

- The sale of that product,
- The purchase of that product.

For example, if you enter an alert for the invoicing of a customer, for an accountant entering an invoice for that customer, the alert message will be attached as shown in the figure *Alert from invoicing a customer*:

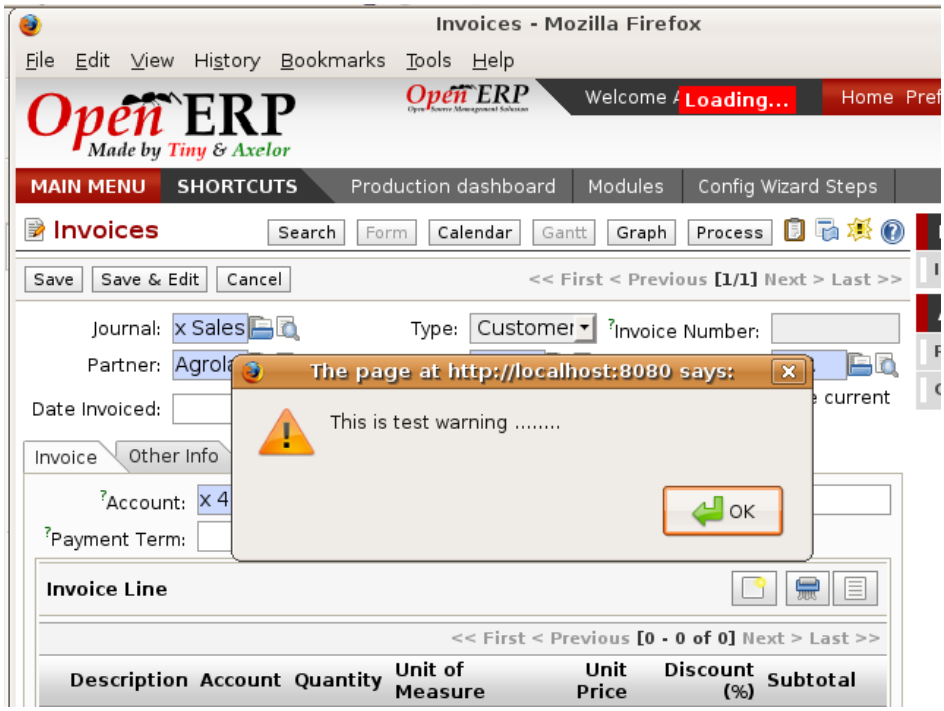


Figure 20.10: *Alert from invoicing a customer*

20.4 Control of deliveries and invoicing

20.4.1 Configuration of orders

Depending on the configuration of the order, several different possible consequences can follow. Three fields determine the future behaviour of an order:

- **Packing Policy** : `Partial Delivery` or `Complete Delivery`,
- **Shipping Policy** : `Shipping & Manual Invoice`, `Payment Before Delivery`, `Invoice on Order After Delivery`, and `Invoice from the Packing`,
- **Invoice on** : `Ordered Quantities` or `Delivered Quantities`.

Tip: *Simplified view*
If you work in the `Simplified View` *mode, only the* ***Shipping Policy*** *field is visible in the second tab on the order. To get to the* `Extended View` *mode, assign the group* ***Usability – Extended View*** *to the current user.*

20.4.2 Packing mode

The packing mode determines the way that the storesperson will do the packing. If the order is put into **Partial Delivery** mode, the packing order will appear in the list of things for the storesperson to do as soon as any of the products on the order is available. To get the list of items to be done you can use the menu *Stock Management → Outgoing Products → Available Packing*.

The storesperson will then be able to make a partial delivery of the quantities actually available and do a second packing operation later when the remaining products are available in stock.

If the packing mode is **Complete Delivery**, the packing list won't appear in the list of packings to do until all of the products are available in stock. This way there will only be a single delivery for any given order.

If the storesperson wants, the delivery mode can be modified on each packing list even after the order has been confirmed.

In the case of invoicing on the basis of packing, the cost of delivering the products will be calculated on the basis of multiple deliveries. This risks incurring a higher cost because of each delivery. If invoicing is on the basis of the orders, the customer will only be invoiced once for the whole delivery, even if the delivery of several items has already been made.

20.5 Management of Carriers

To manage deliveries in Open ERP, install the `delivery` module. (If you have installed the `profile_manufacturing` profile this is installed by default during configuration of the database.) This module enables you to manage:

- the different carriers with whom you work,
- the different possible modes of transport,
- cost calculation and invoicing of each delivery,
- the modes of transport and their tariffs.

Once the `delivery` module has been installed, the first thing to do is to configure the different modes of delivery accepted by your company. To do that use the menu *Stock Management → Configuration → Delivery → Delivery Method*.

For each delivery mode, you should define the following elements:

- Name of the delivery mode,
- The partner associated with the transport (which can be yourselves),
- The associated product.

For example you can create the following modes:

Table 20.1: Example Delivery Modes

Delivery Mode	Partner	Associated Product
Express Track	Mail Office	Express Track Delivery
Priority Courier	Mail Office	Courier Express Delivery
EFG Standard	EFG Inc	Delivery EFG
EFG Express	EFG Inc	Delivery EFG Express

Information about the invoicing of transport (such as accounts, applicable taxes) are entered in the product linked to the delivery mode. Ideally the product should be configured as **Product Type** `Service` and **Procure Method** `Make to Stock`.

You can use the same product for several delivery modes. This simplifies the configuration but you won't be able to separate out your sales figures by delivery mode.

20.5.1 Tariff grids

Unlike ordinary products, delivery prices aren't given by pricelists but by delivery grids, designed specifically for this purpose. For each delivery mode, you enter one or several tariff grids. Each grid is used for a given region/destination.

For example, for the postal tariffs for Priority Courier, you generally define the three tariff grids for Mail Office:

- Courier National,
- Courier Europe,
- Courier Outside Europe.

To define a new delivery grid, use the menu *Stock Management → Configuration → Deliveries → Delivery Pricelist*. You then give a name to your delivery grid and define the region for which the tariffs in the grid will be applicable. To do this, use the second tab **Destination**. There you can set:

- A list of countries (for UK or Europe, for example),
- A list of states,
- A range of post codes (for Paris you might have 75000 – 75900).

You must then set the rules for calculating the price of transport in the first tab **Grid definition**. A rule must first of all have a name. Then set the condition for which this rule is applicable, for example `Weight < 0.5kg`.

Note: *Weights*
Weights are expressed in kilograms. You can define a number with a decimal point or comma, so that to set 500g you'd put 0.5 in the weight rule.

Then set the sale price and the cost price. The price can be expressed in different ways:

- a fixed price,
- a variable price, as a function of weight, or volume, or weight x volume or price.

For example, mailing within France using 2008 tariffs would be defined as shown in the table.

Table 20.2: Example Tariff Rules

Rule Title	Condition	Price	Type of Price
S	Weight < 3 kg	6.9	Fixed
M	Weight < 5 kg	7.82	Fixed
L	Weight < 6 kg	8.53	Fixed
XL	Weight < 7 kg	9.87	Fixed

You can also define rules that depend on the total amount on the order. For example to offer fixed price delivery if the order is more than 150 USD, add the following rule:

Table 20.3: Additional Tariff Rule

Rule Title	Condition	Price	Type of Price
Franked > 150 USD	Price > 150 USD	10	Fixed

20.5.2 Using delivery modes

Once the delivery modes and their tariffs have been defined you can use them in a Sales Order. There are two methods for doing that in Open ERP.

- Delivery based on order quantities,
- Delivery based on deliverd quantities.

20.5.3 Delivery based on order quantities

To add the delivery charges on the quotation, use the action **Delivery Costs** available to the right of the form. A dialog box opens, asking you to select a delivery mode from one of the preconfigured available ones.

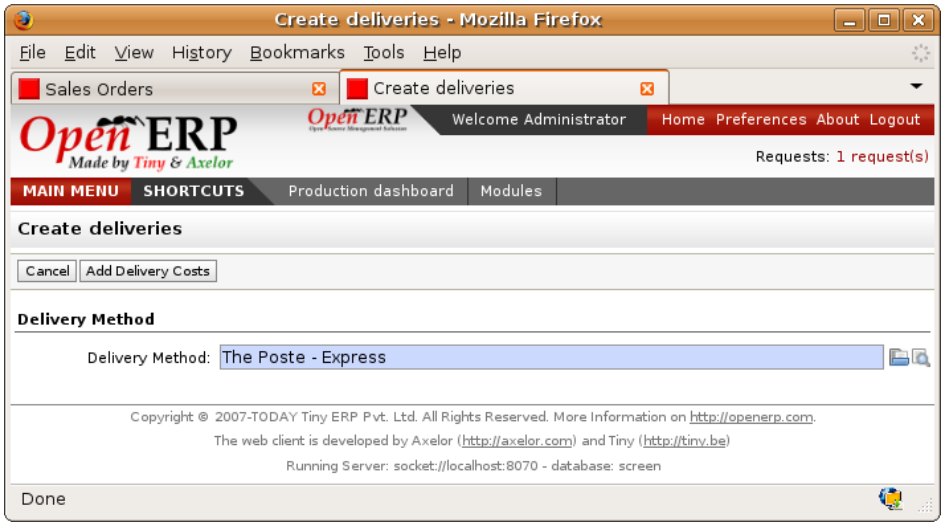


Figure 20.11: *Adding a delivery charge to an order*

Once the delivery mode has been selected, Open ERP automatically adds a line on the draft order with the amount calculated by the delivery function. This technique enables you to calculate the delivery charge based on the order and then, separately, how the products will really be delivered to the customer.

If you want to calculate the exact delivery charges depending on the actual deliveries you must use invoicing based on deliveries.

20.5.4 Delivery based on the packed items

To invoice the delivery on the basis of items packed you set the delivery mode in the **Delivery method** field on the second tab of the order, **Other data**. Don't add delivery lines to the Sales Order but to the Invoices after they have been generated for the delivered items.

For this to work properly, your order must be set to the state **Invoice from the Packing**. You can then confirm the order and validate the delivery.

When the manager has generated the invoices corresponding to the deliveries carried out, Open ERP automatically adds a line on each invoice corresponding to the delivery charge, calculated on the basis of the items actually sent.

20.6 Margin Control

It's important to keep good control of margins in every company. Even if you have a good level of sales it won't guarantee company profitability if margins aren't high enough. Open ERP provides a number of systems for monitoring margins. The main ones are:

- Margins on a sales order,
- Margins by product,
- Margins by project,
- Using price lists.

20.6.1 Margins on sales orders

If you want to check your margins on sales orders you can install the `sale_margin` module from `addons-extra`. This will add margins calculated on each order line and on the order total.

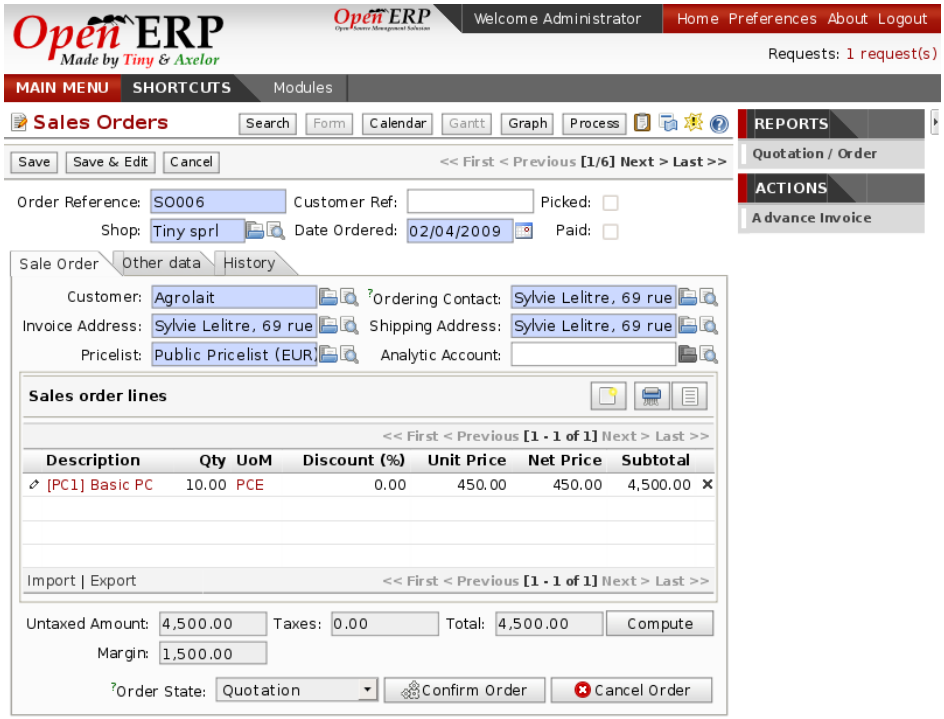


Figure 20.12: *An order with the module sale_margin*

The margin on each line is defined as the quantity sold multiplied by the sale price for the customer less the cost price of the products. By default, products are managed using standard price in Open ERP (cost price fixed manually and reviewed once per year). You can change that to `Average Weighted Price`, meaning that the product cost fluctuates with purchases from suppliers. After product receipt you can add fixed costs, such as delivery costs, in the cost of each product. Open ERP supports a third method of updating the cost price of products using the module `product_extended`, also in `addons-extra` at the time of writing. This adds a button to the product form which lets you automatically recalculate the cost price for the selected products. The cost price is calculated from the raw materials and the operations carried out (if the products have been manufactured internally so that you have set their costs).

20.6.2 Margins by product

To track margins by product, install the module `product_margin`. Once the module is installed you can see the margins by product by using the menu *Products → Reporting → Margins by Product*.

When you've clicked on the menu, Open ERP asks for an analysis period and the state of invoices. If no period is given, Open ERP will calculate margins on all of the operations without restriction. By default, however, Open ERP proposes a period of the last 12 months for analysis.

You can also filter the analysis on certain types of invoice:

- All invoices, including draft invoices not yet validated,
- All open and/or paid invoices,
- Paid invoices only.

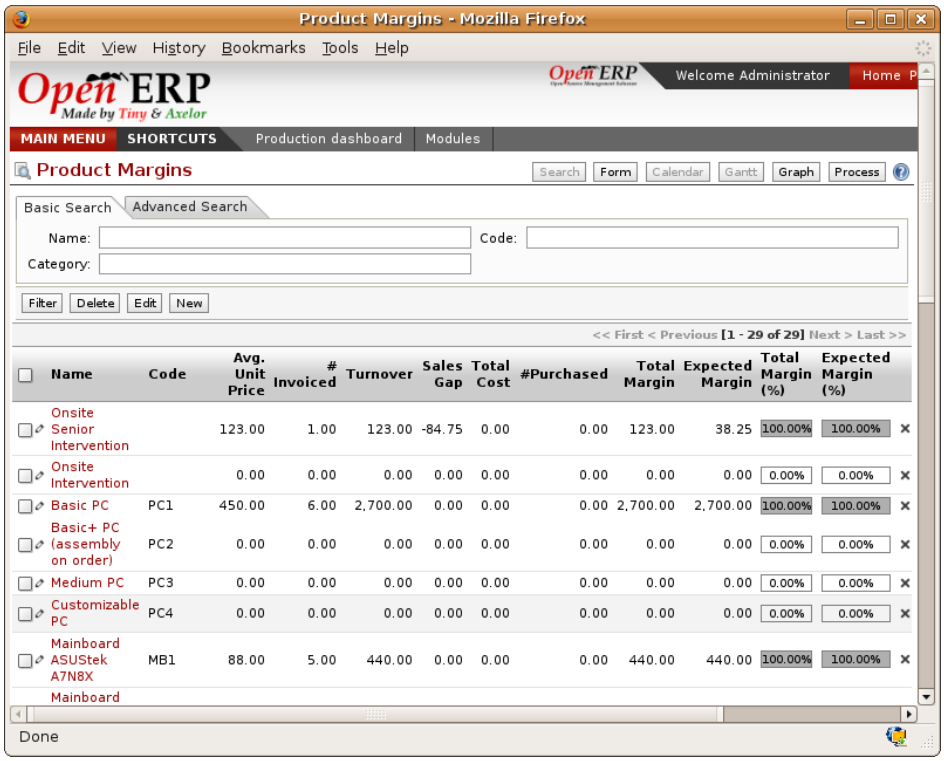


Figure 20.13: *Screen showing product margins*

You then get a margin analysis table. The following fields are given by product for sales:

- **Avg. Unit Price** : the average unit sale price,
- **Catalog Price** : the list price based on this product,
- **# Invoiced** : the number of sold products that have been invoiced,
- **Sales Gap** : the difference between the revenue calculated from list price and volume, and the actual sales,
- **Turnover** : the actual sales revenue for the product selected,
- **Expected Sales** : the number of products sold multiplied by the list price.

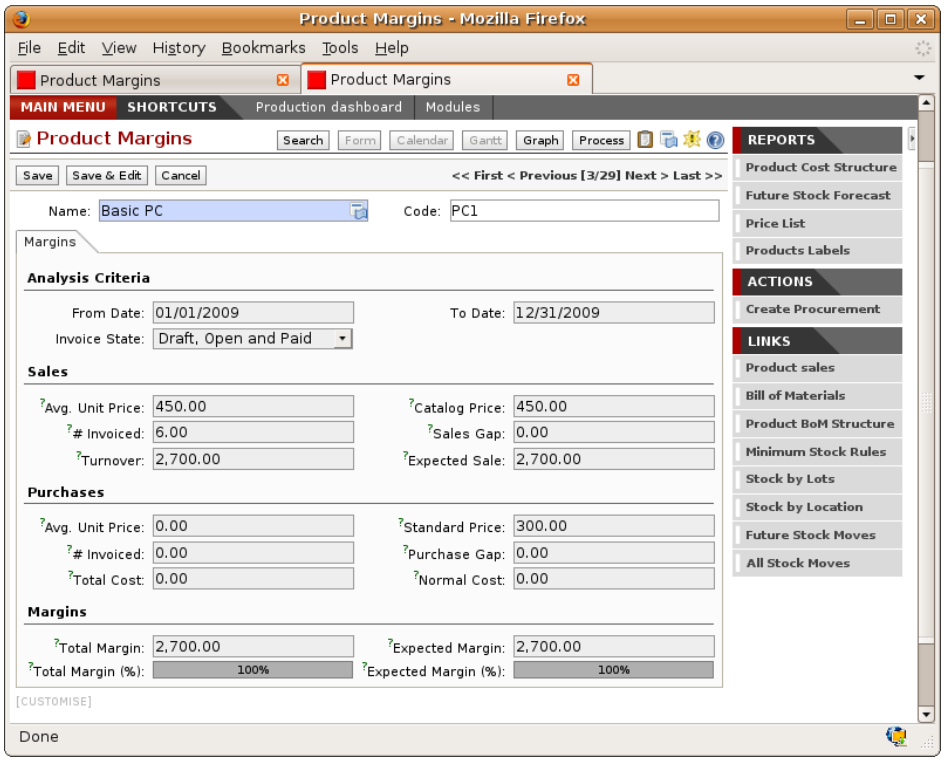


Figure 20.14: *Detail of margins for a given product*

The following fields are given by product for purchases:

- **Avg. Unit price** : the average unit purchase price,
- **Standard price** : the standard cost price of the product for the company,
- **# Invoiced** : the number of purchased products,
- **Purchase gap** : the difference between the total actual cost and the standard cost multiplied by the number of units purchased,
- **Total cost** : the total cost of purchases for the product under consideration,
- **Normal cost** : the number of products sold multiplied by the standard cost price.

The following fields are given by product for margins:

- **Total Margin**,

- **Expected Margin**,
- **Total Margin in percent**,
- **Expected Margin in percent**.

20.6.3 Margins by Project

To manage margins by project you must install the analytical accounts with management by task. Use of these accounts is described in *Analytic Accounts*. Install the module `account_analytic_analysis` and all of its dependencies. This module adds a tab on the analytic account form to handle the different margins in an analytic account representing a project or a case, and several new reports on those accounts.

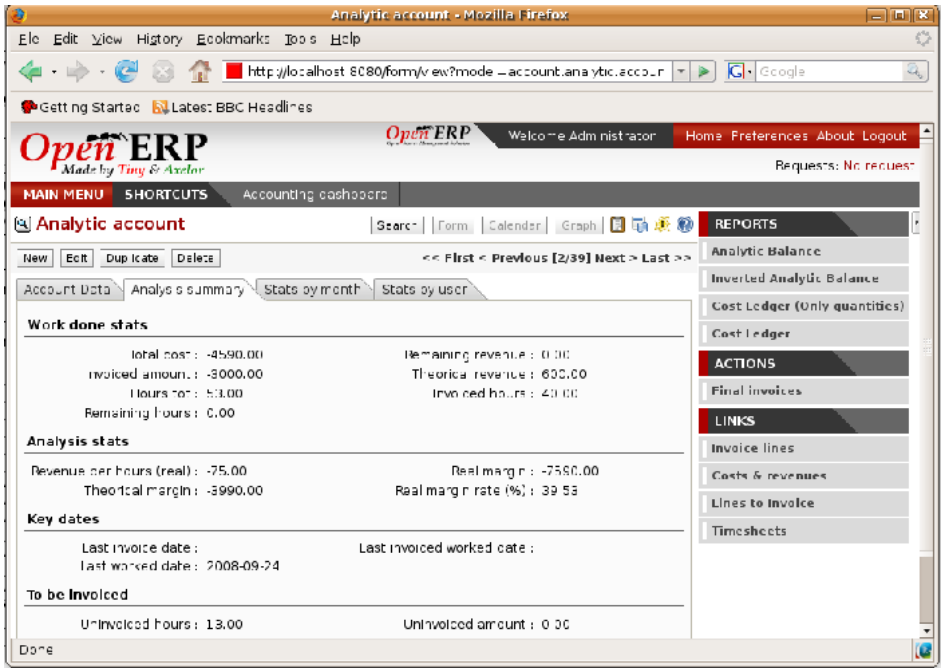


Figure 20.15: *Detail of margins for a case*

Start by opening a project's analytic account through the *Project Management* → *Financial Project Management* → *Analytic Accounts* → *All Analytic Accounts* and selecting one of them. In the new analytic account **Analysis summary** tab you'll find the following information:

- The total costs for the analytic account,
- The total amount of invoiced sales,
- The number of hours worked,
- The number of hours remaining to be worked,
- The remaining income,
- The theoretical income (hours worked multipled by their sale price),
- The number of hours invoiced,
- The real income per hour,
- The real margin,

- The theoretical margin taking into account everything yet to be invoiced,
- The real margin rate in percent,
- The last invoicing date,
- The last worked hours,
- The number of hours remaining to be invoiced,
- The amount remaining to be invoiced.

For detailed information on the analytic account you can use any of the several reports available in the toolbar to the right.

20.7 Price management policies

Some companies are notorious for their complicated pricelists. Many forms of price variation are used, such as end-of-year refunds, discounts, changes of terms and conditions with time, various prepayments, cascaded rebates, seasonal promotions, and progressive price reductions.

Note: *Rebate, Refund, Reduction*
In some accounting jurisdictions you have to differentiate between the three following terms:

- *Rebate: reimbursement to the client, usually at the end of the year, that depends on the quantity of goods purchased over a period.*
- *Refund: reduction on the order line or invoice line if a certain quantity of goods is purchased at one time or is sold in a framework of a promotional activity.*
- *Reduction: A one-off reduction resulting from a quality defect or a variation in a product's conformance to a specification.*

Intelligent price management is difficult, because it requires you to integrate several conditions from clients and suppliers to create estimates quickly or to invoice automatically. But if you have an efficient price management mechanism you can often keep margins raised and respond quickly to changes in market conditions. A good price management system gives you scope for varying any and all of the relevant factors when you're negotiating a contract.

To help you work most effectively, Open ERP's pricelist principles are extremely powerful yet are based on simple and generic rules. You can develop both sales pricelists and purchase pricelists for products capable of accommodating conditions such as the date period, the quantity requested and the type of product.

Tip: *Don't confuse the different price specifications*
Don't confuse the sale price with the base price of the product. In Open ERP's basic configuration the sale price is the list price set on the product form but a customer can be given a different sale price depending on the conditions.

It's the same for purchase price and standard cost. Purchase price is your suppliers' selling price, which changes in response to different criteria such as quantities, dates, and supplier. This is automatically set by the accounting system. You'll find that the two prices have been set by default to the same for all products with the demonstration data, which can be a source of confusion. You're free to set the standard cost to something different.

Each pricelist is calculated from defined policies, so you'll have as many sales pricelists as active sales policies in the company. For example a company that sells products through three sales channels could create the following price lists:

1. Main distribution:

- pricelist for Walbury,
- pricelist for TesMart,

2. Postal Sales.
3. Walk-in customers.

A single pricelist can exist in several versions, only one of which is permitted to be active at a given time. These versions let you set different prices at different points in time. So the pricelist for walk-in customers could have five different versions, for example: `Autumn`, `Summer`, `Summer Sales`, `Winter`, `Spring`. Direct customers will see prices that change with the seasons.

Each pricelist is expressed in a single currency. If your company sells products in several currencies you'll have to create as many pricelists as you have currencies.

The prices on a pricelist can depend on another list, which means that you don't have to repeat the definition of all conditions for each product. So a pricelist in USD can be based on a pricelist in EUR. If the currency conversion rates between EUR and USD change, or the EUR prices change, the USD rates can be **automatically** adjusted.

20.7.1 Creating pricelists

To define a pricelist use the menu *Products → Pricelists → Pricelists* .

For each list you should define:

- a **Name** for the list,
- a **Type** of list: `Sale` for customers or `Purchase` for suppliers,
- the **Currency** in which the prices are expressed.

Tip: *Customer Price*
*If you install the module `edi` (in `addons-extra` at the time of writing) a third type of list appears – the **Customer Price** - which defines the price displayed for the end user. This doesn't have to be the same as your selling price to an intermediary or distributor.*

Pricelist versions

Once the list is defined you must provide it with at least one version. To do that use the menu *Products → Pricelists → Pricelist Versions*. The version contains all of the rules that enable you to calculate a price for a product and a given quantity.

So set the **Name** of this associated version. If the list only has a single version you can use the same name for the pricelist and the version. In the **Pricelist** field select the pricelist you created.

Then set the **Start date** and **End date** of this version. The fields are both optional: if you don't set any dates the version will be permanently active. Only one version may be active at any one point, so bear this in mind when creating them. Use the **Active** field in the versions to activate or disable a pricelist version.

Note: *Automatically updating the sale pricelist*
You can make any sale pricelist depend on one of the other pricelists. So you could make your sale pricelist depend on your supplier's purchase pricelist, to which you add a margin. The prices are automatically calculated as a function of the purchase price and need no further manual adjustment.

Rules for calculating price

A pricelist version is made up of a set of rules that apply to the product base prices.

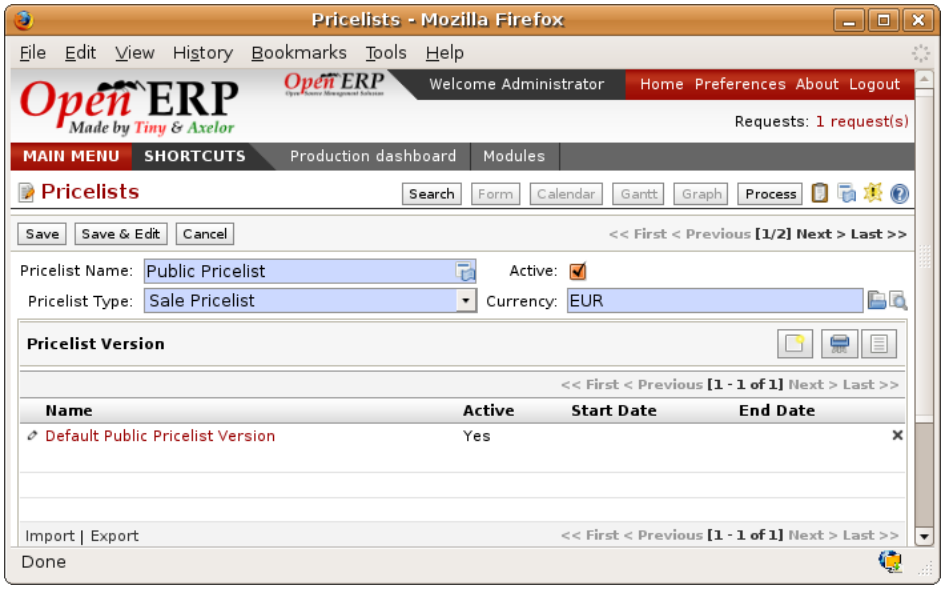


Figure 20.16: *Detail of a rule in a pricelist version*

You define the conditions for a rule in the first part of the definition screen labeled **Rules Test Match**. The rule applies to the **Product** or **Product Template** and/or the named **Product Category**. If a rule is applied to a category then it is automatically applied to all of its subcategories too (using the tree structure for product categories).

If you set a minimum quantity in **Min. Quantity** the rule will only apply to a quantity the same as or larger than that set. This lets you set reduced rates in steps that depend on the quantities ordered.

Several rules can be applied to an order. Open ERP evaluates these rules in sequence to select which to apply to the specified price calculation. If several rules are valid only the first in sequence is used for the calculation. The **Sequence** field determines the order, starting with the lowest number and working up.

Once a rule has been selected, the system has to determine how to calculate the price from the rule. This operation is based on the criteria set out in the lower part of the form, labeled **Price Computation**.

The first field you have to complete is labeled **Based on**. Set the mode for partner price calculation, choosing between:

- the **List Price** set in the product file,
- the **Standard Cost** set in the product file,
- an **Other Pricelist** given in the field **If Other Pricelist**,
- the price that varies as a function of a supplier defined in the **Partner section of the product form**.

Several other criteria can be considered and added to the list, as you'll see in the following section.

Next, various operations can be applied to the base price to calculate the sales or purchase price for the partner at the specified quantities. To calculate it you apply the formula shown on the form: `Price = Base Price x (1 - Field1) + Field2`.

The first field, **Field1**, defines a discount. Set it to 0.20 for a discount of 20% from the base price. If your price is based on standard cost, you can set -0.15 to get a 15% price uplift compared with the standard costs.

Field2 sets a fixed supplement to the price, expressed in the currency of the pricelist. This amount is just added (or subtracted, if negative) to the amount calculated with the **Field1** discount.

Then you can specify a rounding method. The rounding calculation is carried out to the nearest number. For example if you set 0.05 in this example, a price of 45.66 will be rounded to 45.65, and 14,567 rounded to 100 will give a price of 14,600.

Note: *Swiss special situation*
In Switzerland, the smallest monetary unit is 5 cents. There aren't any 1 or 2 cent coins. So you set Open ERP's rounding to 0.05 to round everything in a Swiss franc pricelist.

The supplement from **Field2** is applied before the rounding calculation, which enables some interesting effects. For example if you want all your prices to end in 9.99, set your rounding to 10 and your supplement to -0.01 in **Field2**.

Minimum and Maximum margins enable you to guarantee a given margin over the base price. A margin of 10 USD enables you to stop the discount from returning less than that margin. If you put 0 into this field, no effect is taken into account.

Once the pricelist is defined you can assign it to a partner. To do this, find a Partner and select its **Properties** tab. You can then change the **Purchase Pricelist** and the **Sale Pricelist** that's loaded by default for the partner.

20.7.2 Case of using pricelists

Take the case of an IT systems trading company, for which the following product categories have been configured:

All products

1. Accessories
    - Printers
    - Scanners
    - Keyboards and Mice
2. Computers
    - Portables
    - Large-screen portables
    - Computers
    - Office Computers
    - Professional Computers

In addition, the products presented in the table below are defined in the currency of the installed chart of accounts.

TABLE

Table 20.4: Examples of products with their different prices

Product	List Price	Standard Price	Default supplier price	
Acclo Portable	1,200	887	893	
Toshibishi Portable	1,340	920	920	
Berrel Keyboard	100	50	50	
Office Computer	1,400	1,000	1,000	

Default pricelists

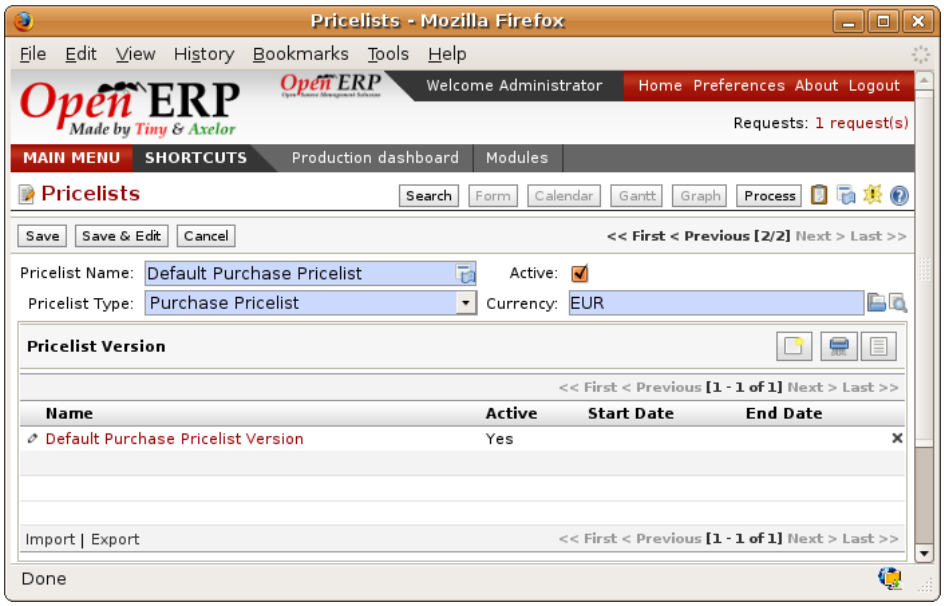


Figure 20.17: *Default pricelist after installing Open ERP*

When you install the software two pricelists are created by default: one for sales and one for purchases. These each contain only one pricelist version and only one line in that version.

The price for sales defined in the Default Public Pricelist is set by default to the Public Price of the product in the product file, which is the Sale Price in the Product file.

The price for purchases defined in the Default Purchase Pricelist is set by default in the same way to the Standard Cost of the product in the product file.

Example of a trading company

Take the case of a trading company, where the sale price for resellers can be defined like this:

- For portable computers, the sale price is calculated from the list price of the supplier Acclo, with a supplement of 23% on the cost of purchase.
- For all other products the sale price is given by the standard cost in the product file, on which 31% is added. The price must end in `.99`.
- The sale price of Berrel keyboards is fixed at 60 for a minimum quantity of 5 keyboards purchased. Otherwise it uses the rule above.
- Assume that the Acclo pricelist is defined in Open ERP. The pricelist for resellers and the pricelist version then contains three lines:

  1. `Acclo` line:
     - **Product Category** : `Portables`,
     - **Based on** : `Other pricelist`,
     - **Pricelist if other** : `Acclo pricelist`,
     - **Field1** : `-0.23`,
     - **Priority** : `1`.

2. `Berrel Keyboard` line:
   - **Product Template** : `Berrel Keyboard` ,
   - **Min. Quantity** : `5` ,
   - **Field1** : `1.0` ,
   - **Field2** : `60` ,
   - **Priority** : `2` .
3. `Other products` line:
   - **Based on:** `Standard Price` ,
   - **Field1** : `-0.31` ,
   - **Field2** : `-0.01` ,
   - **Rounding** : `1.0` .
   - **Priority** : `3`.

It's important that the priority of the second rule is set below the priority of the third in this example. If it were the other way round the third rule would always be applied because a quantity of 5 is always greater than a quantity of 1 for all products.

Also note that to fix a price of 60 for the 5 Berrel Keyboards, the formula `Price = Base Price x (1 - 1.0) + 60` has been used.

Establishing customer contract conditions

The trading company can now set specific conditions to a customer, such as the company TinAtwo, who might have signed a valid contract with the following conditions:

- For Toshibishi portables, TinAtwo benefits from a discount of 5% of resale price.
- For all other products, the resale conditions are unchanged.

The list price for TinAtwo, called `TinAtwo contract` , contains two rules:

1. `Toshibishi portable` :
   - **Product** : `Toshibishi Portable` ,
   - **Based on** : `Other pricelist` ,
   - **Pricelist if other** : `Reseller pricelist` ,
   - **Field1** : `0.05` ,
   - **Priority** : `1` .
2. `Other Products`:
   - **Product** :
   - **Based on** : `Other pricelist` ,
   - **Pricelist if other** : `Reseller pricelist` ,
   - **Priority** : `2` .

Once this list has been entered you should look for the partner form for TinAtwo again. Click the **Properties** tab to set the **Sale List Price** field to *TinAtwo Contract*. If the contract is only valid for one year, don't forget to set the **Start Date** and **End Date** fields in the **Price List Version**.

Then when salespeople prepare an estimate for TinAtwo the prices proposed will automatically be calculated from the contract conditions.

20.7.3 Different bases for price calculation

Open ERP's flexibility enables you to make prices that depend not only on prices on the product form, but in addition to the two predefined ones – Cost Price and Public Price.

To do this use the menu *Products → Definitions → Price Types*. Create a new entry for the new price type. Enter the field name, the field on the product form that this type of price corresponds to and the currency that will be expressed in this field. The operation works just as well on new fields added to the product form to meet specific developments.

Once this operation has been carried out you can make pricelists depend on this new price type.

Then, adding the weight and/or volume field, the price of a product by piece can vary by its weight and/or volume. This is different from defining a price by weight – in that case the default unit of measure is weight and not piece.

20.7.4 Pricelists and managing currencies

If your trading company wants to start a product catalog in a new currency you can handle this several ways:

- Enter the prices in a new independent pricelist and maintain the lists in the two currencies separately,
- Create a field in the product form for this new currency and make the new pricelist depend on this field: prices are then maintained separately but in the product file,
- Create a new pricelist for the second currency and make it depend on another pricelist or on the product price: the conversion between the currencies will then be done automatically at the prevailing currency conversion rate.

20.8 Rebates at the end of a campaign

If you want to provide discounts on an order, use the pricelist system in Open ERP. But it's better to work with end-of-campaign rebates or year-end rebates. In this case the customer pays a certain price for the whole of the campaign or the year and a rebate is returned to him at the end of the campaign that depends on the sales he's made throughout the year.

20.8.1 Example: Using returns for the end of a campaign

Take the case of a contract negotiations with a wholesaler. To get the best selling price, the wholesaler will ask you for a good deal and will sign up to a certain volume of orders over the year.

You can then propose a price based on the volume that the wholesaler agrees to sell. But then you don't have any control over his orders. If at the end of the year the wholesaler hasn't taken the agreed volumes then you can't do anything. At most you can review his terms for the following year.

Rebates at the end of a campaign can help you avoid this sort of problem. You can propose a contract where the price is dependent on the usual wholesaler's terms. You can propose a rebate grid which will be assigned at the end of the year as a function of the actual sales made. Install the `discount_campaign` module (in `addons-extra` at the time of writing) to generate rebates at the end of the campaign. Once the modules have been installed you can configure your campaign using the menu *Sales Management → Configuration → Discount campaign*.

Note: *Year-end rebate*
Most companies use the term year-end rebate*, where rebates are applied at the end of the year. But if you're using rebates at the end of a campaign, this would only actually be the case if the campaign lasts exactly one year.*

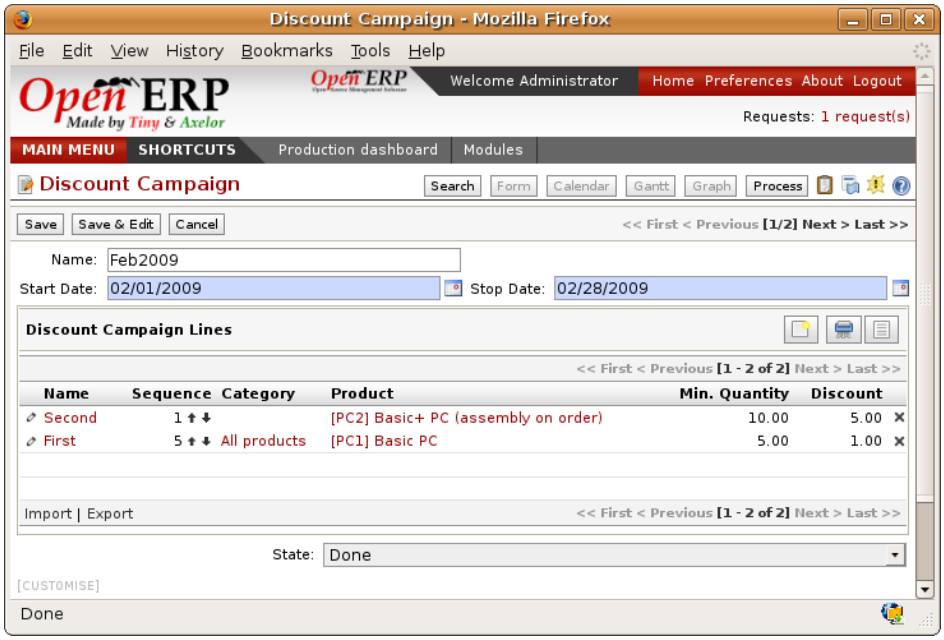


Figure 20.18: *Configuring a year-end rebate*

A campaign must have a name, a start date, and an end date. After entering this information, you should describe the lines of the campaign. Each line can be applied to a product or a category of products. Then set the quantity of products sold from which the discount is applied, and the amount of the rebate as a percentage of the actual sales volume.

When you've defined the campaign you can active it by clicking the **Open** button. The figure *Configuring a discount campaign for computers* shows a campaign with a rebate on computers which is between 10% and 20% depending on the sales volume.

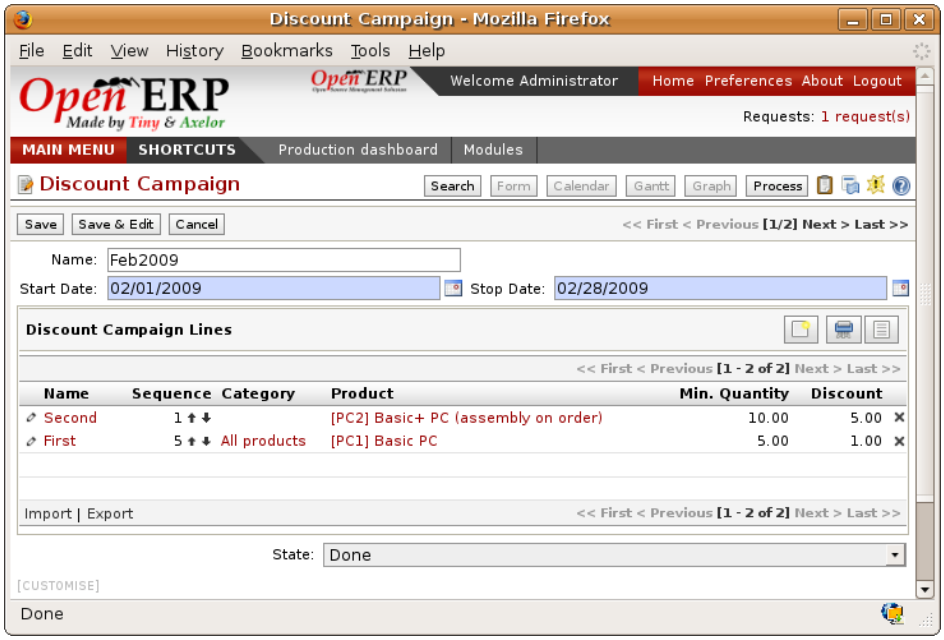


Figure 20.19: *Configuring a discount campaign for computers*

Once the campaign has been defined you can assign a given campaign to various partners. To do that set a **Discount**

Campaign in the second tab **Sales and Purchases** of the partner form.

Finally at the end of the campaign you should close it and Open ERP will automatically generate invoices or credit notes for your partner associated with this campaign. Open ERP opens credit notes in the `Draft` state that you can modify before validating them. To calculate the amount on the credit note, Open ERP uses all of the invoices sent out during the period of the campaign as its basis.

You can also reach all of the draft credit notes using the menu *Financial Management → Invoices → Customer Refunds*.

20.9 Open orders

In some industries, customers commonly place orders for a certain volume of product and ask for regular deliveries from an order up to the total amount on it. This principle, called open orders, is managed by the `sale_delivery` module in Open ERP.

Open ERP handles open orders easily. An open order is an order for a certain quantity of products but whose deliveries are planned for various dates over a period of time.

To do that you must install the `sale_delivery` module (in `addons-extra` at the time of writing). A Sales Order is entered as a normal order but you also set the total quantity that will be delivered on each order line.

Then you can use the new tab **Deliveries** on the order to plan the quantities sold and enter your delivery planning there.

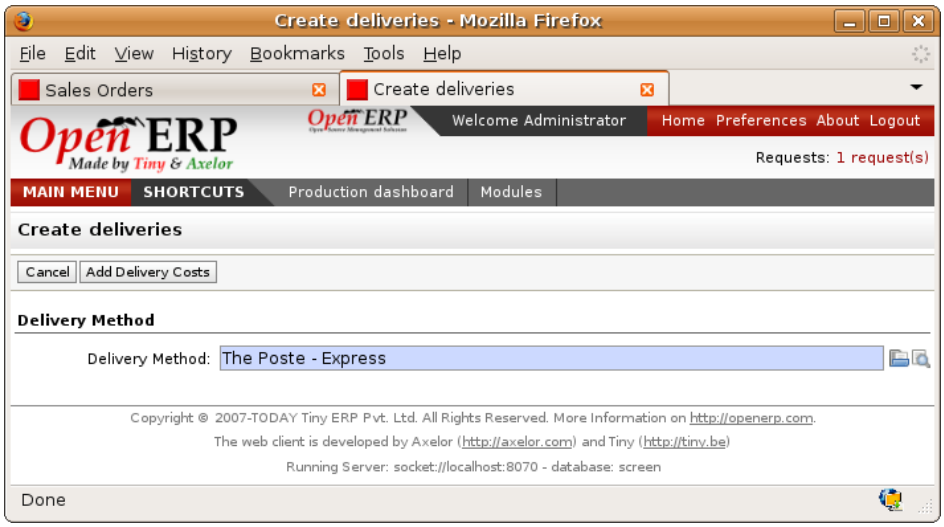


Figure 20.20: *Managing open orders, planning forecasts*

In the order lines, Open ERP shows you the quantity planned in addition to the quantity sold so you can verify that the quantities sold equal the quantities to be delivered. When you confirm the order, Open ERP no longer generates a single delivery order but plans scheduled despatches.

Tip: *Invoicing Mode*
*If you work with Open Orders, you should set the order into the mode **Invoice from the Packing**. Then the storesperson will be able to replan and change the quantities of the forecast deliveries in the system.*

20.10 Layout templates

The `sale_layout` module enables you to have a more elaborate template than the standard order forms.

For example you could put the following in the order lines:

- a horizontal separator line,
- titles and subtitles,
- subtotals at the end of the section,
- comments,
- a page break.

This enables you to lay out a more elaborate professional-looking quotation page. There's also the module `account_invoice_layout` which gives you the same functionality for invoice templates.

The two figures *Template for an invoice in Open ERP using the account_invoice_layout module* and *The resulting printed invoice* show an invoice template in Open ERP and the resulting printed invoice.

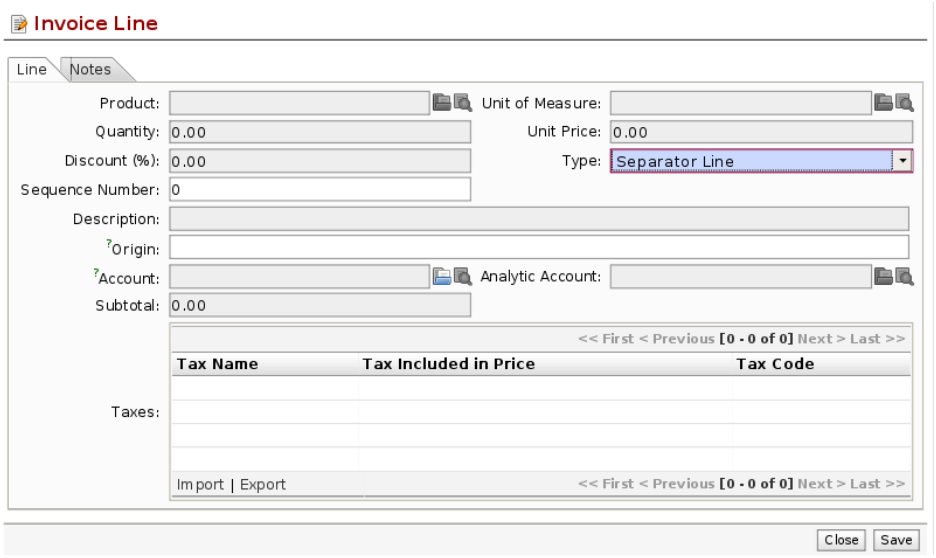


Figure 20.21: *Template for an invoice in Open ERP using the account_invoice_layout module*

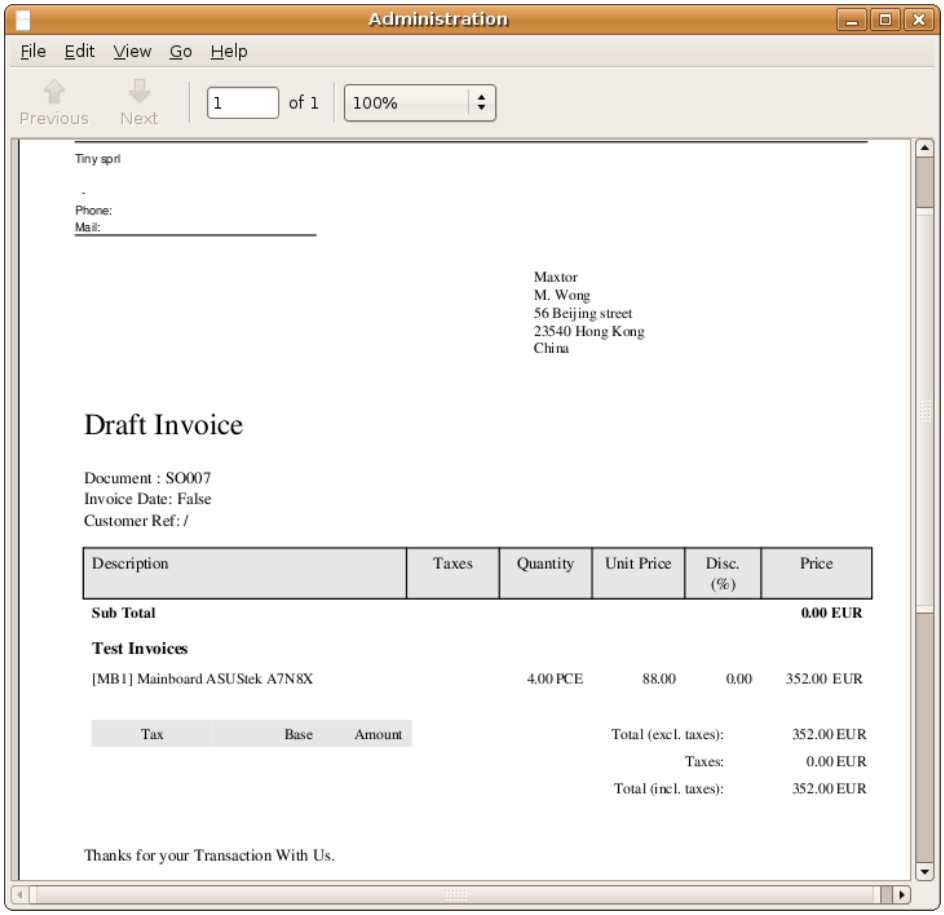


Figure 20.22: *The resulting printed invoice*

CHAPTER

TWENTYONE

PURCHASING MANAGEMENT

In the preceding chapters you saw how to use customer invoices and delivery notes in Open ERP. This chapter is about the management of purchases, the process ahead of these two operations. You'll now see how Open ERP handles and simplifies this and the control of purchases from suppliers.

For this chapter you should start with a fresh database that includes demonstration data, with `sale` and its dependencies installed (which indirectly depends on, and installs, the `purchase` module) and no particular chart of accounts configured.

21.1 All the elements of a complete workflow

The supplier order is the document that lets you manage price negotiations, control supplier invoices, handle goods receipts and synchronize all of these documents.

Start by looking at the following order workflow:

1. Price request to the supplier,
2. Confirmation of purchase,
3. Receipt and control of products,
4. Control of invoicing.

21.1.1 Setting up your database

To set a system up for these examples, create a new database with demonstration data in it, and select the **Minimal Profile** when you log in as the *admin* user. You can enter your own company details when asked, or just select the default of **Tiny SPRL** if you want. Then install the `purchase` module, which installs several other modules as dependencies. Continue the remainder of this chapter logged in as the admin user.

21.1.2 Price request from the supplier

To enter data for a new supplier price request, use the menu *Purchase Management → New Purchase Order*. Open ERP opens a blank purchase form that you use for requesting prices from a supplier. This is shown in the figure *Data entry for a supplier order*. If the price request came from an automatic procurement created by Open ERP you'll find a reference to the document that generated the request in the **Origin** field.

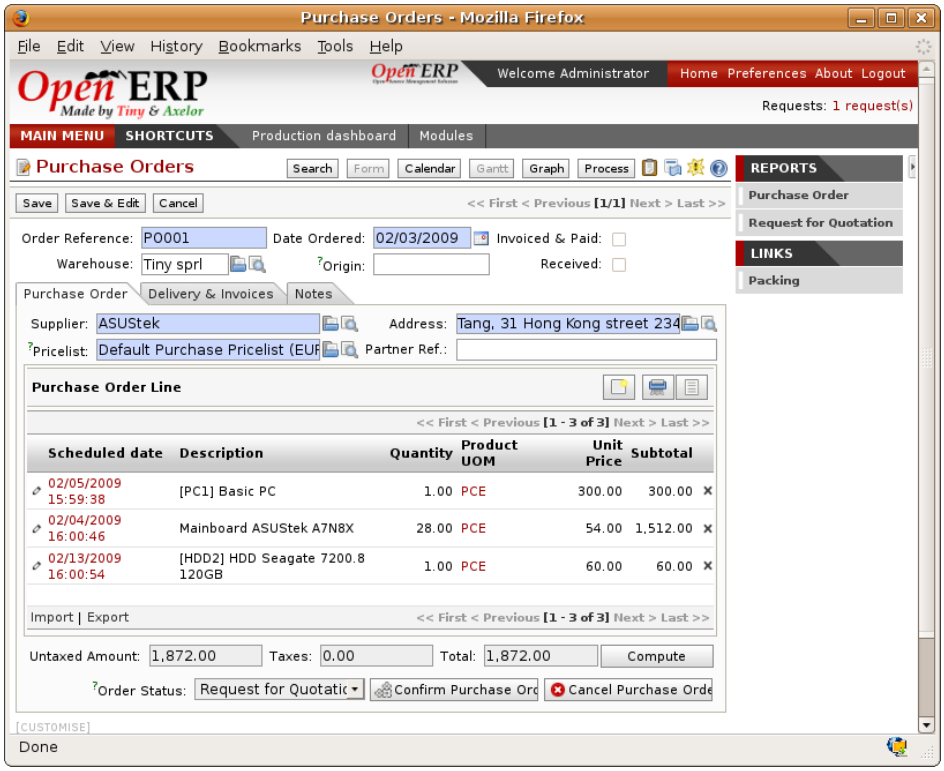


Figure 21.1: *Data entry for a supplier order*

Note: *Managing Alerts*
If you install the `warning` *module you will be able to define alerts that appear when the purchaser enters a price request or order. You can set alerts on the product and on the supplier.*

The internal reference, the date, and the warehouse that the products should be delivered to are completed automatically by Open ERP but you can change these values if you need. Select a supplier. Once a supplier has been selected, Open ERP automatically completes the contact address for the supplier. The pricelist is also completed when you select the supplier. This should bring in all of the conditions that you've negotiated with the supplier for a given period.

Tip: *Supplier Selection*
Searching for a supplier is limited to all of the partners in the system that have the ***Supplier*** *checkbox checked. If you don't find your supplier it might be worth checking the whole list of all partners to make sure that the supplier hasn't been partially entered into the system.*

Once the main body of the purchase order has been completed you can enter the product lines.

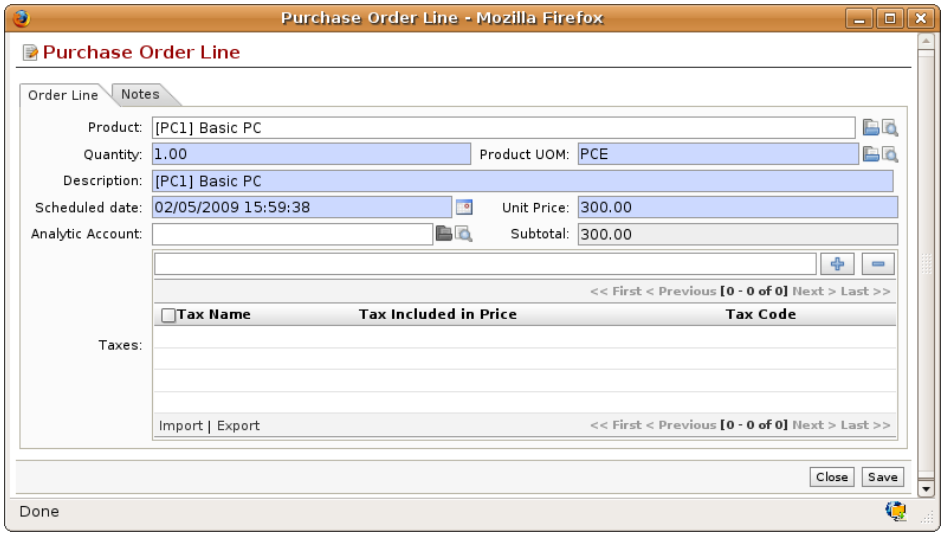


Figure 21.2: *Order line on a supplier order*

When you've completed the product, Open ERP automatically completes the other fields on the form:

- **Unit of Measure**, taken from the **Purchase UoM** field on the product form,
- The **Description** of the product in the supplier's language,
- **Scheduled date**, calculated from the order date and the lead time
- **Unit price**, provided by the supplier pricelist,
- **Taxes, taken from the information on the product form and partner form,** depending on the rules seen in *Financial Analysis*.

Tip: *Product wording and code*
When you enter supplier names on the product form, you can set a name and a product code for each individual supplier. If you do that, Open ERP will then use those details in place of your own internal product names for that selected supplier.

If you work with management by case you can also set the analytic account that should be used to report all the purchase costs. The costs will then be reported at the receipt of the supplier invoice.

Tip: *Management by case*
Analytic accounts can be very useful for all companies that manage costs by case, by site, by project or by folder. To work with several analytic axes you should install the module `purchase_analytic_plans`*.*

For that the analytic account is automatically selected as a function of the partner, the date, the products or the user, you can install the module `account_analytic_default` (which is installed automatically as a dependency of `purchase_analytic_plans`, since the latter depends on it).

In the second tab of the product line you can enter a note that will be attached when the order confirmation or price quotation is printed. This note can be predefined on the product form to automatically appear on each order for that product. For example you can put "Don't forget to send by express delivery as specified in our contract reference 1234."

Once the document has been completed, you can print it as a price estimate to send to the supplier. You can set a note for the attention of the supplier in the form's third tab.

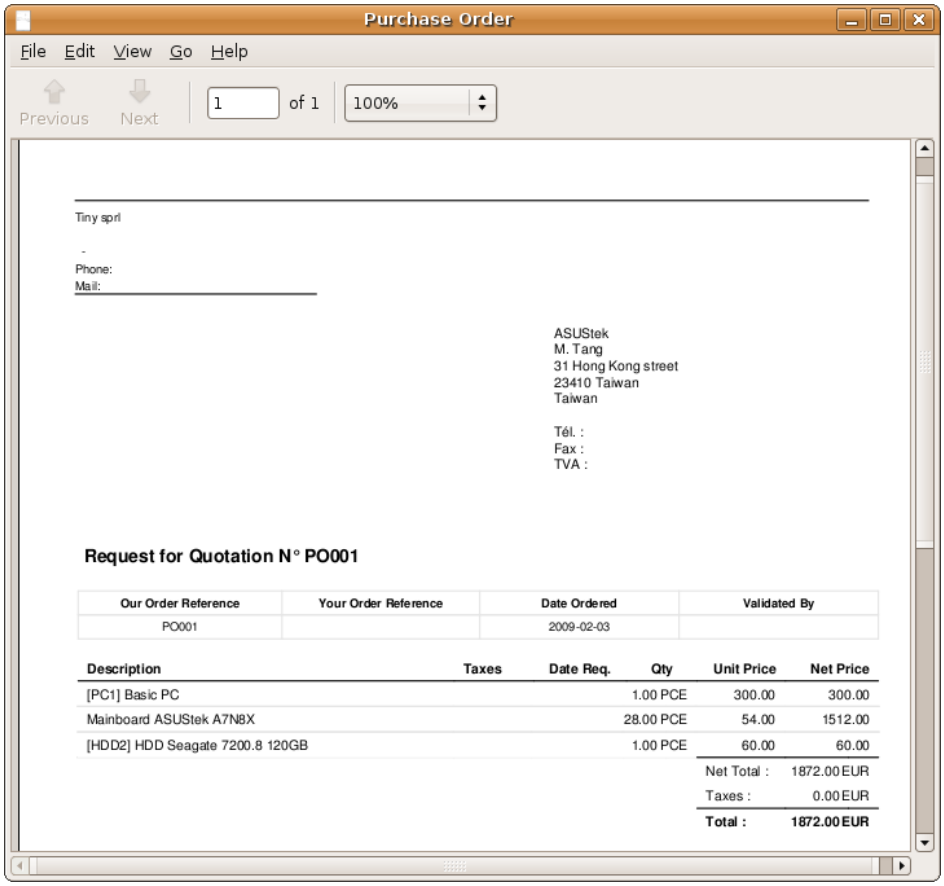


Figure 21.3: *Printing the supplier price quotation*

Then leave the document in the `Draft` state. When you receive a response from the supplier, use the menu *Purchase Management → Purchase Orders → Requests for Quotation*. Select the order and complete its details.

When you want to approve the order, use the button **Confirm Purchase Order**. The price request then passes into the `Confirmed` state. No further changes are possible. To approve it for purchase click the button **Approved by Supplier**.

Tip: *Approval Receipt*
You can confirm the order but not approve it straightaway. Do this when you want to approve the order after you've received an order acknowledgement from the supplier. This gives you an intermediate state for all orders waiting validation from the supplier using the menu Purchase Management → Purchase Orders → Purchase Orders Awaiting Approval.

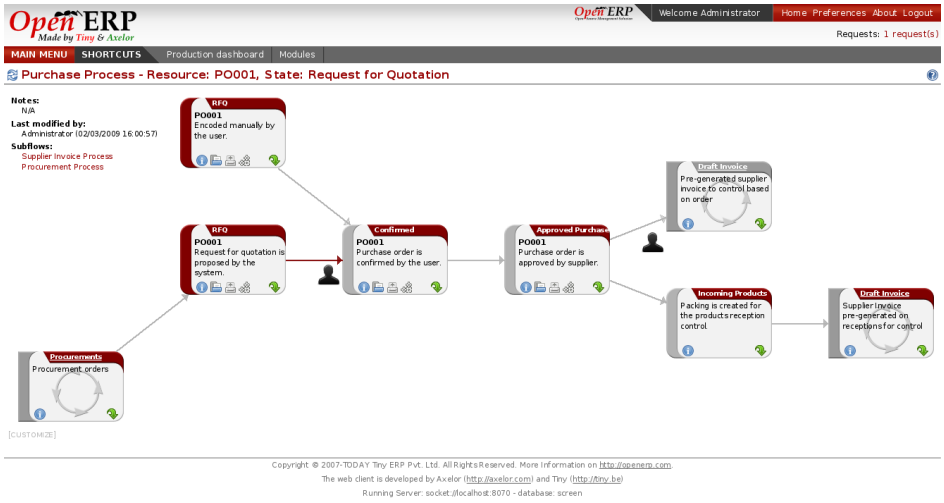


Figure 21.4: *Supplier order process*

Note: *Supplier Approval*
If you want to automate the data entry stage at goods receipt, install the module `purchase_approve`*. This will automatically approve all the orders that have been confirmed.*

21.1.3 Goods receipt

Once the order has been approved, Open ERP automatically prepares the goods receipt order in the draft state for you. To get a list of the products you're waiting for from your suppliers, use the menu *Stock Management → Incoming Products → Packings to process*.

Tip: *Purchasing Services*
If you buy services from your supplier, Open ERP doesn't generate a goods receipt note. There's no service receipt equivalent to a goods receipt.

Select the document that corresponds to the item that you're receiving. Usually the goods receipt note is found by making a search on the order reference or the supplier name. You can then confirm the receipt of the products.

As you saw in *Logistics and Stock Management*, if you receive only part of the order, Open ERP manages the remainder of that order. A second receipt note is then automatically created for the goods not received. You can cancel it if you think that you will never receive the remaining products.

After receiving the goods, Open ERP will show you which orders are open and the state of their receipt and invoicing if you return to the list of orders.

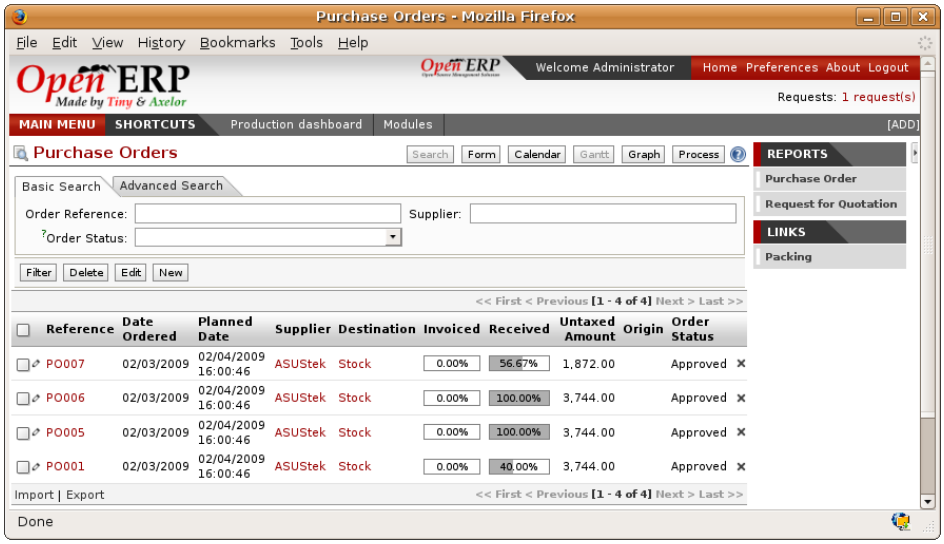


Figure 21.5: *List of open orders, and their receipt and invoice status*

21.1.4 Control of invoicing

To control supplier invoicing, Open ERP provides three systems as standard, which can differ order by order:

- Invoicing based on quantities ordered,
- Invoicing based on quantities received,
- Manual Invoicing.

The mode of invoicing control is set in the second tab of the purchase order in the field **Invoicing Control**.

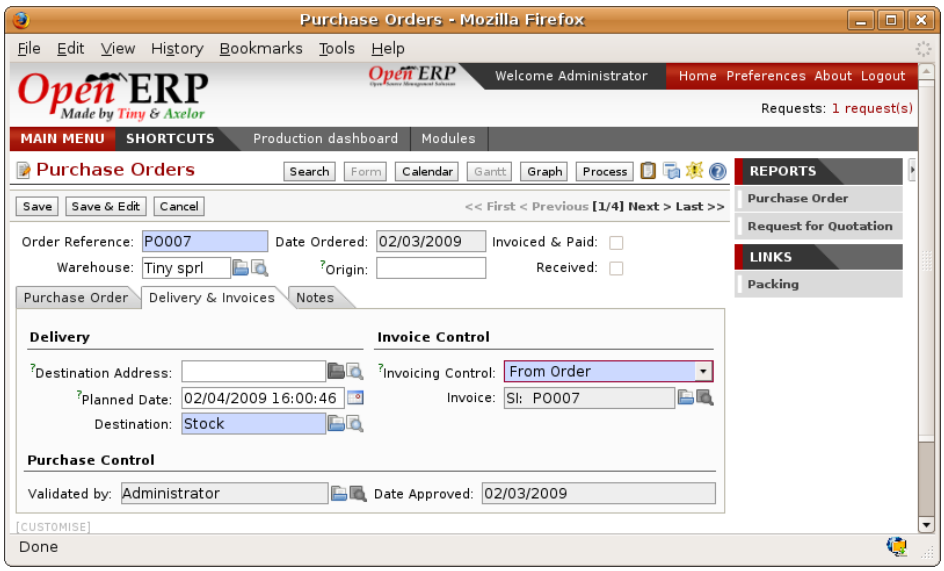


Figure 21.6: *Supplier order, invoice control*

Tip: *Default value*
A company generally uses a single invoicing control method for all of its invoices. So you're advised to go and set a default value in the ***Invoicing Control*** *field after installation.*

21.1.5 Control based on orders

If you selected your invoicing control based on orders, Open ERP will automatically generate a supplier invoice in the draft state when the order is confirmed. You can obtain a list of invoices waiting using the menu *Financial Management → Invoices → Supplier Invoices → Draft Supplier Invoices*.

When you receive a paper invoice from your supplier, all you need to do is validate the invoice pre- generated by the system. Don't forget to check the price and the quantities. When the invoice is confirmed the accounting entries represent the cost of purchase and are automatically entered into the system.

The supplier order is then automatically set as `Paid` when you pay the supplier invoice.

This method of controlling invoices is often used in service companies, because the invoiced amounts correspond to the ordered amounts. In logistics by contrast you most often work with invoicing controlled by goods receipt.

21.1.6 Control based on goods receipt

To control your supplier invoices based on goods receipt, set the field **Invoicing Control** on the second tab of the order to **From Picking**.

In this case no invoice, draft state or any other, is generated by the order. On the goods receipt note, the field **Invoicing Control** is set to **To be Invoiced**.

The storesperson can then receive different orders. If he wants to generate the draft invoice for a goods receipt, he can click the action **Create Invoice**. Open ERP asks you then for the journal for this invoice. It then opens that or the generated invoices (in the case of creating invoices for several receipts at one time) which enables you to modify it before confirming it.

This approach is useful when you receive the invoice at the same time as the item from the supplier. Usually invoices are sent by post some days later. In this case, the storesperson leaves the item unchanged without generating an invoice. Then once per day or once per week the accountant will create the draft invoices based on all the receipts for the day. To do that he uses the menu *Stock Management → Incoming Products → Generate Draft Invoices on Receptions*. He clicks on the action to generate all draft invoices from the list of receipts that haven't yet been invoiced. At that point, the accountant can decide if he wants to generate an invoice per item or group all items for the same partner into the same invoice.

Invoices are then handled just like those controlled from `On Order` . Once the invoice arrives at the accounting service he just compares it with the invoices waiting to control what the supplier invoices you.

Tip: *Delivery Charges*
To manage delivery charges, install the module `purchase_delivery` *(which was in* `addons-extra` *at the time of writing). This will automatically add delivery changes to the creation of the draft invoice as a function of the products delivered or ordered.*

21.1.7 Tenders

To manage tenders, you should use the module `purchase_tender` (which was in `addons-extra` at the time of writing). This lets you create several supplier price reqests for a single supply requirement. Once the module is installed, Open ERP adds a new *Purchase Tenders* menu in *Purchase management*. You can then define the new tenders.

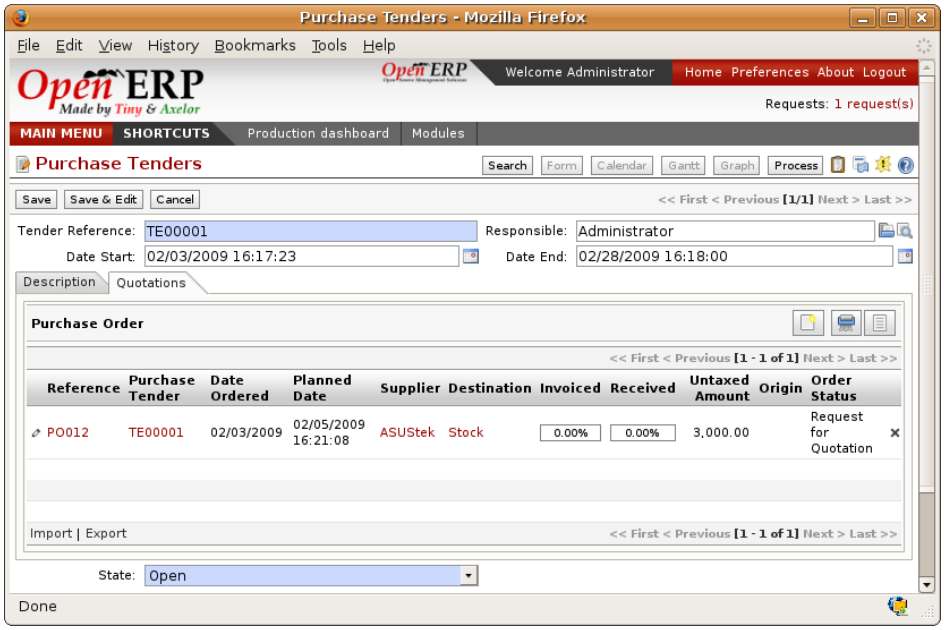


Figure 21.7: *Defining a tender*

To enter data for a new tender, use the menu *Purchase Management → Purchase Tenders → New Purchase Tenders*. Open ERP then opens a new blank tender form. The reference number is set by default and you can enter information about your tender in the other fields.

If you want to enter a supplier's response to your tender request, add a new draft purchase order into the list on the **Quotation** tab of your tender document. If you want to revise a supplier price in response to negotiations, edit any appropriate Purchase Order that you've left in the draft state and link that to the tender.

In the general list of purchase orders, Open ERP shows, in the new second column **Purchase Tender**, if the order has a tender reference.

When one of the orders about a tender is confirmed, all of the other orders are automatically cancelled by Open ERP. That enables you to accept just one order for a particular tender.

21.1.8 Price revisions

Open ERP supports several methods of calculating and automatically updating product costs:

- Standard price: manually fixed, and
- Standard price: revalued automatically and periodically,
- Weighted average: updated at each receipt to the warehouse.

This cost is used to value your stock and represents your product costs. Included in that cost is everything directly related to the received cost. You could include such elements as:

- supplier price,
- delivery charges,
- manufacturing costs,
- storage charges.

21.1.9 Standard Price

The mode of price management for the product is shown in the third tab **Prices & Suppliers** on the product form. On each individual product you can select if you want to work in `Standard Price` or on weighted `Average Price`.

Tip: *Simplified view*
If you work in the `Simplified View` mode you won't see the field that lets you manage the price calculation mode for a product. In that case the default value is standard price.

The `Standard Price` setting means that the product cost is fixed manually for each product in the field **Cost Price**. This is usually revalued once a year based on the average of purchase costs or manufacturing costs.

You usually use standard costs to manage products where the price hardly changes over the course of the year. For example the standard cost could be used to manage books, or the cost of bread.

Those costs that can be fixed for the whole year bring certain advantages:

- you can base the sale price on the product cost and then work with margins rather than a fixed price per product,
- accounting is simplified because there's a direct relationship between the value of stock and the number of items received.

To get and automated periodic revaluation of the standard price you can use the module `product_extended` (from `addons-extra` at the time of writing). This adds an action on the product form enabling you to set a date on all the selected products. Open ERP then recalculates the price of the products as a function of the cost of raw materials and the manufacturing operations given in the routing.

21.1.10 Weighted average

Working with Standard Prices does not lend itself well to the management of the cost price of products when the prices change a lot with the state of the market. This is case for many commodities and energy.

In this case you'd want Open ERP to automatically set the price in response to each goods receipt movement into the warehouse. The deliveries (exit from stock) have no impact on the product price.

Tip: *Calculating the price*
*At each goods receipt the product price is recalculated using the following accounting formula: NP = (OP * QS + PP * QR) / (QS + QR), where the following notation is used:*

- *NP: New Price,*
- *OP: Old Price,*
- *QS: Quantity actually in stock,*
- *PP: Price Paid for the quantity received,*
- *QR: Quantity received.*

If the products are managed as a weighted average, Open ERP will open a window that lets you specify the price of the product received at each goods receipt. The purchase price is by default set from the purchase order, but you can change the price to add the cost of delivery to the various received products, for example.

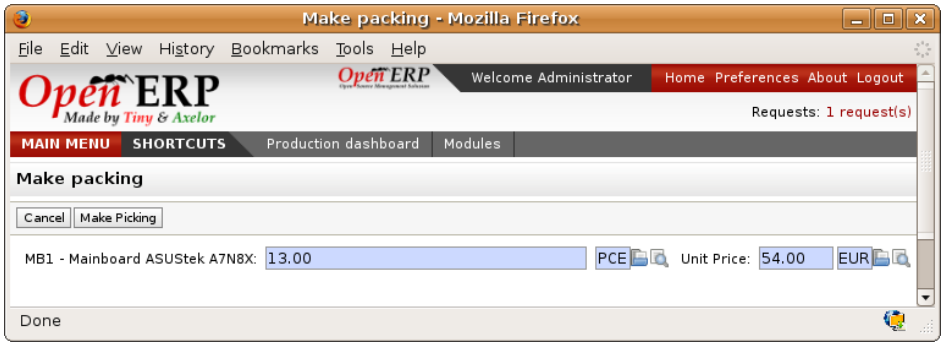


Figure 21.8: *Goods receipt of products managed in weighted average*

Once the receipt has been confirmed, the price is automatically recalculated and entered on the product form.

21.2 Analyis of purchases

21.2.1 Elementary statistics

To get statistics about your purchases you can install the modules `report_purchase` and `product_margin`.

The first, `report_purchase`, will add two new reports in your purchase menu, analysis of purchases by month and by product, and analysing product by month and by product category. To use these reports use the menu *Purchase Management → Reporting → This month → Purchases by product*.

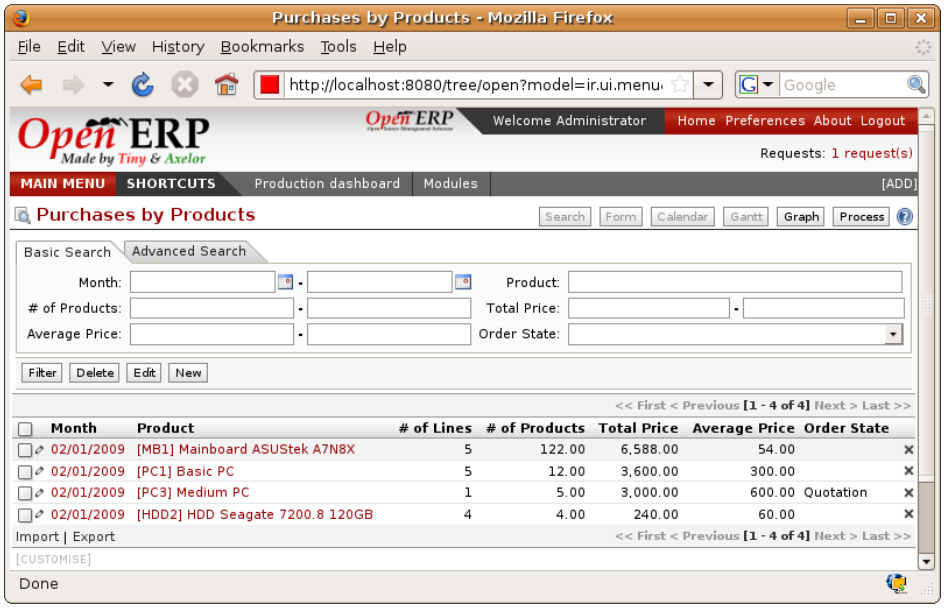


Figure 21.9: *Analysis of purchases over the month by product*

This analysis is carried out on supplier orders and not on invoices or the quantities actually received. To get an analysis by product, use the module `product_margin`. The function of this module is described in detail in the chapter *Management of Sales*.

To analyze the received quantities, you can use the statistical modules in Stock Management.

21.3 Supplier relationship management

To manage supplier relations, you should install the `crm_configuration` module. You will then be able to manage supplier complaints and integrate them with your emails and document management.

Once you've installed the `crm` module, check the checkbox by the **Complaints** option during configuration. Open ERP will then create a menu in your working database for managing supplier complaints.

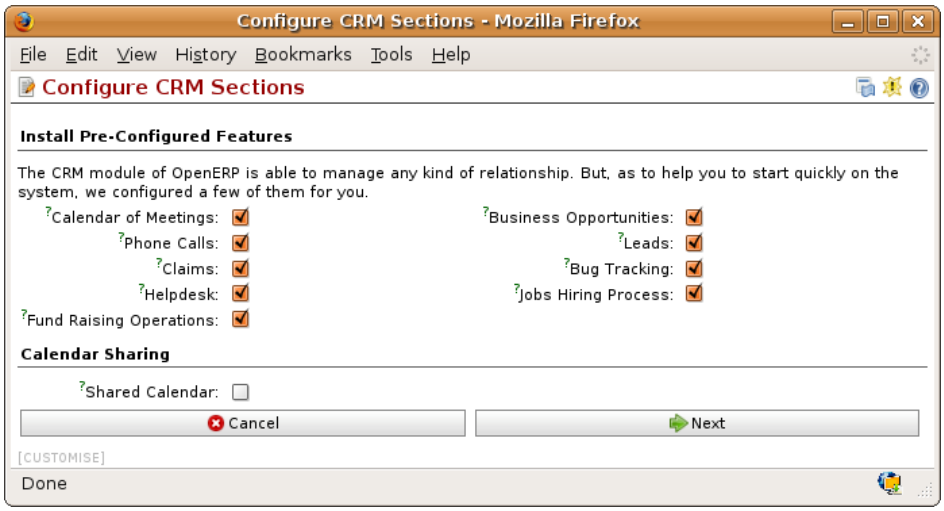


Figure 21.10: *Selection of the management of complaints in the CRM installation*

Once the module is installed you can use the menu *CRM & SRM → After Sales Service → Complaints → New Supplier Complaint*.

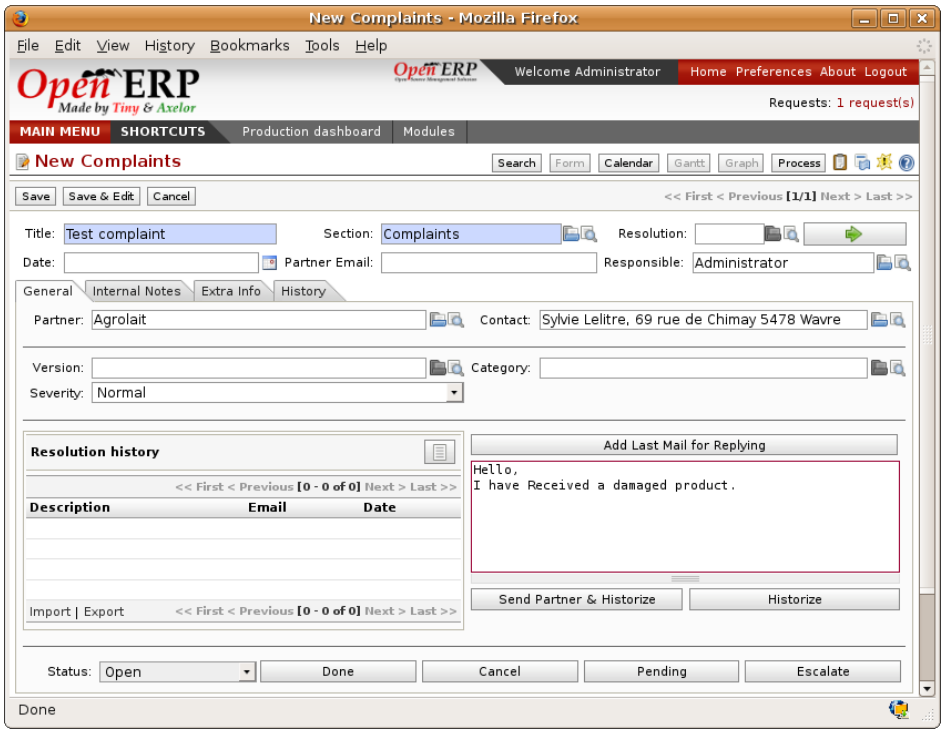


Figure 21.11: *Data entry screen for a supplier complaint*

The CRM module has many reports predefined. You can analyse:

- the number and the severity of the complaints by supplier or user,
- the response time of your suppliers to your requests,
- the supplier problems by type.

21.4 Analytic accounts

To manage purchases by project you should use the analytic accounts. You can set an analytic account on each line of a supplier order. The analytic costs linked to this purchase will be managed by Open ERP from the goods receipt and confirmation of the supplier invoice. The `hr_timesheet_invoice` module lets you reinvoice the analytic costs automatically using parameters in the analytic accounts such as sale pricelist, associated partner company, and maximum amount.

So you can put an invoice order with a defined invoice workflow in place based on the analytic accounts. If you're working `Make to Order`, the workflow will be:

1. Customer Order,
2. Procurement order on Supplier,
3. Receive invoice and goods from the supplier,
4. Delivery and invoicing to the customer.

When re-invoicing based on costs you'd get the following workflow:

1. Enter the customer contract conditions from the analytic accounts,
2. Purchase raw materials and write the services performed into the timesheets,
3. Receive the supplier invoice and the products,
4. Invoice these costs to the customer.

Tip: *Analytic multiplans*
If you want several analysis plans you should install the module `purchase_analytic_plans`. These let you split a line on a supplier purchase order into several accounts and analytic plans. Look back at Analytic Accounts *for more information on the use of analytic accounts.*

Part VIII

Process and Document Management

CHAPTER

TWENTYTWO

PROCESS

If you have reached this far in the book, your mind may well be reeling with the number of new documents (based on business objects) and processes that you need to encounter to model and manage your business.

Open ERP's process module, which is installed automatically when a process-aware module is installed, shows you cross-functional processes and technical workflows for those nodes in the process that have them. This visualization is invaluable for documentation - but it also goes a step further. You can modify processes and workflows and even generate entirely new processes and workflows for your various document types.

If your starting point is a specific document, such as an invoice or order, then you will also be shown the exact position of that document on its process and workflow diagrams.

For this chapter you should start with a fresh database that includes demonstration data, with `sale` and its dependencies installed and no particular chart of accounts configured. `process` is one of those dependencies. Also install some of the `hr` modules for the second example in this chapter, such as `hr_attendance`, `hr_contract`, `hr_holidays`, and `hr_holidays_request`.

22.1 The integration of processes into the management system

Processes are at the heart of a company: they form a structure for all activities that enable the company to function effectively. A company's human dimension is often disconnected from its processes at the moment, preventing individual employees' aspirations from being directed towards a collective objective.

From a mapping process, integrating management and the changing needs of each employee becomes very useful for the fulfillment of each. Based on that, each employee becomes aware of his own personal contribution to the company's value chain. This representation also helps an employee's own personal management because it shows his place and his role in the overall process, very often over several departments.

The system of 'Corporate Intelligence' will also be highly useful to system implementers who, after studying the requirements, have to formalize a company's processes to put them into operation in Open ERP.

22.1.1 Examples of process

To understand the aims of the system of Corporate Intelligence (process) better, you'll now see an overview of the functions available to you in a the study of two processes:

- A customer order quotation,
- The engagement of a new employee.

22.1.2 Following a customer sales order

The example *Example of a process handling a customer order quotation* shows the process for handling a customer sales order. Use the menu *Sales Management* → *Sales Orders* to list all orders, then choose Order SO001 – you can either check the checkbox to its left, or you can open the order itself by clicking the order date to the left of its name in the list.

To view the process for that specific order, click the **Process** button at the top right of the list or form. The process for this order is shown in the window, and the current state of this document can be seen by looking for the node whose left edge is colored maroon rather than grey.

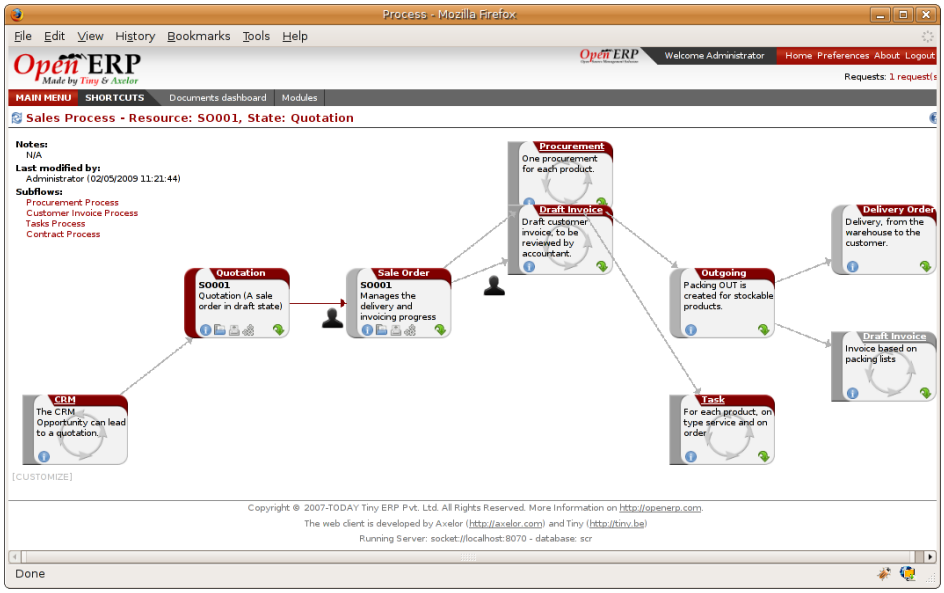


Figure 22.1: *Example of a process handling a customer order quotation*

This order is in the Quotation state. The whole of some nodes is greyed out because the selected document will never enter into that state, such as invoicing based on deliveries (the order is in an invoicing mode that's based on orders, not deliveries).

The process is completely dynamic and based on that specific sale order document. You can click each of the process nodes (**Quotation**, **Sale Order**, **Procurement**, **Draft Invoice**, **Outgoing Products**) using one of the links or icons on it:

- Obtaining the documentation and the corresponding process in the quality manual, using the **Help** (or **Information**) icon,
- Opening the corresponding Open ERP document, using the **Open** icon,
- Printing the document, using the **Print** icon,
- Printing the technical workflow by using the Gears (or **Print Workflow**) icon.
- Obtaining the documents that an employee needs to carry out the process by clicking the green arrow icon,
- Seeing the menu that Open ERP uses to get the document by hovering over the green arrow icon.

Returning to the process diagram, note that you can also get more information about the transitions between nodes by hovering the mouse cursor over a transition:

- A description of the transition,

- A list of the roles that can carry out the transition,
- The actions available to you from the state.

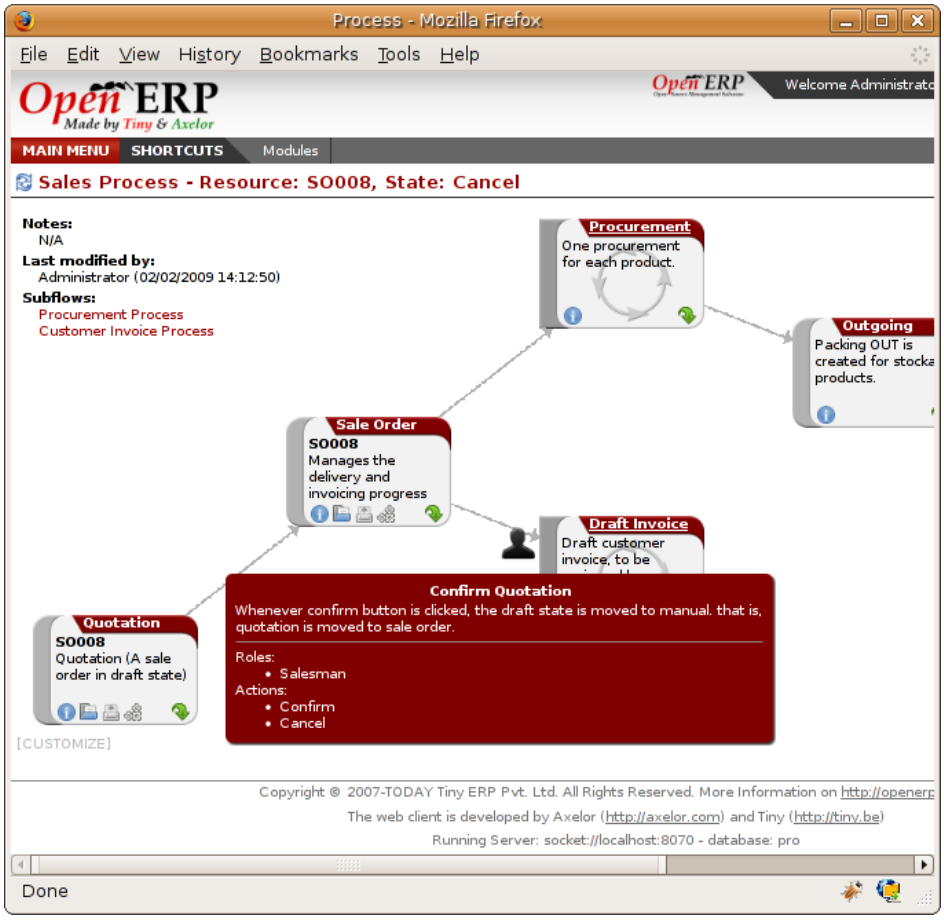


Figure 22.2: *Detail of a transition in the process*

Confirm quotation SO001 by clicking on the icon of a person beside the maroon-colored transition that takes the document from quotation to order. Then click the **Confirm** button. The process automatically moves on to the next state and updates its references to some new delivery reservations that you've just created (see the third tab **History** for a reference to the Packing List PACK13).

This dynamic response is extremely useful for learning about the software. It gives you a high-level view of the different actions carried out and their results.

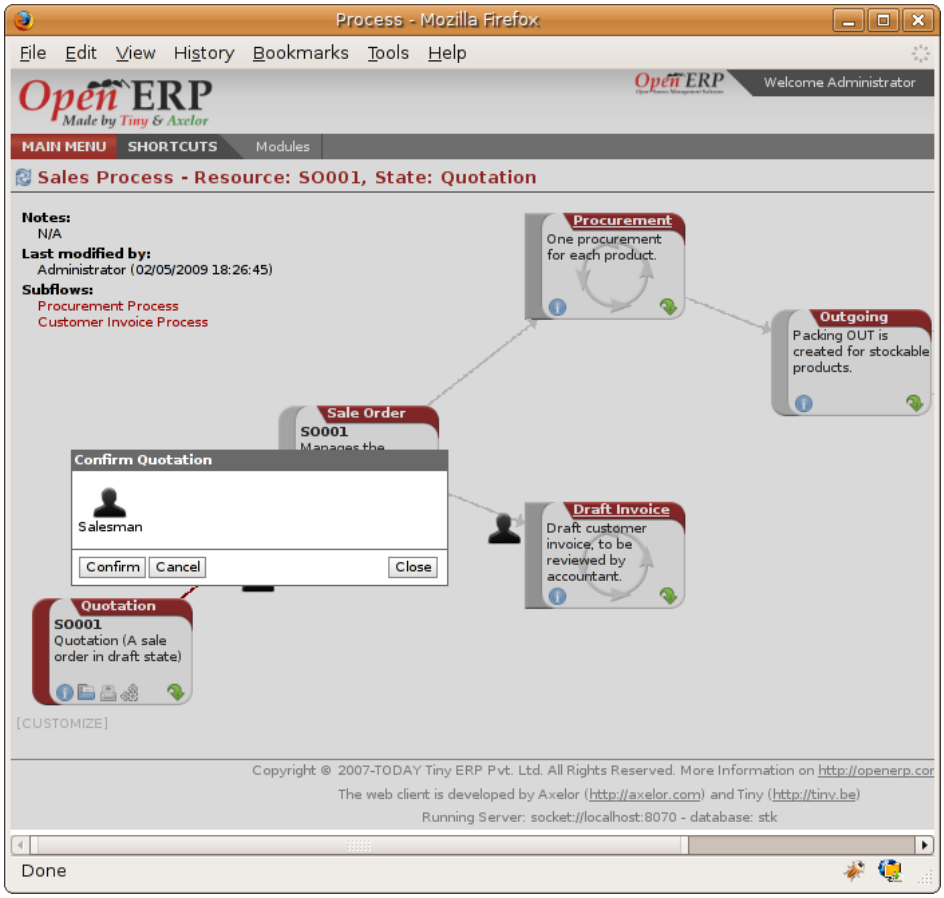


Figure 22.3: *The process after confirming a process into an order*

During order processing, the salesperson can quickly:

- Print the corresponding delivery note,
- Zoom into the invoice to see payment details,
- Get examples of the necessary documents (such as quotation types, export documents, and fax to confirm the order with the customer).

Create a draft invoice by starting the next step on your own.

It should be clear that this system of user processes gives you great visibility of the company's overall functions. Each process individually reflects the specific situation of the company and its documents.

22.1.3 New employee induction

Open the employee form for Fabien Pinckaers from the menu *Human Resources → Employees → All Employees*. Click the **Process** button to open the detailed process of engagement.

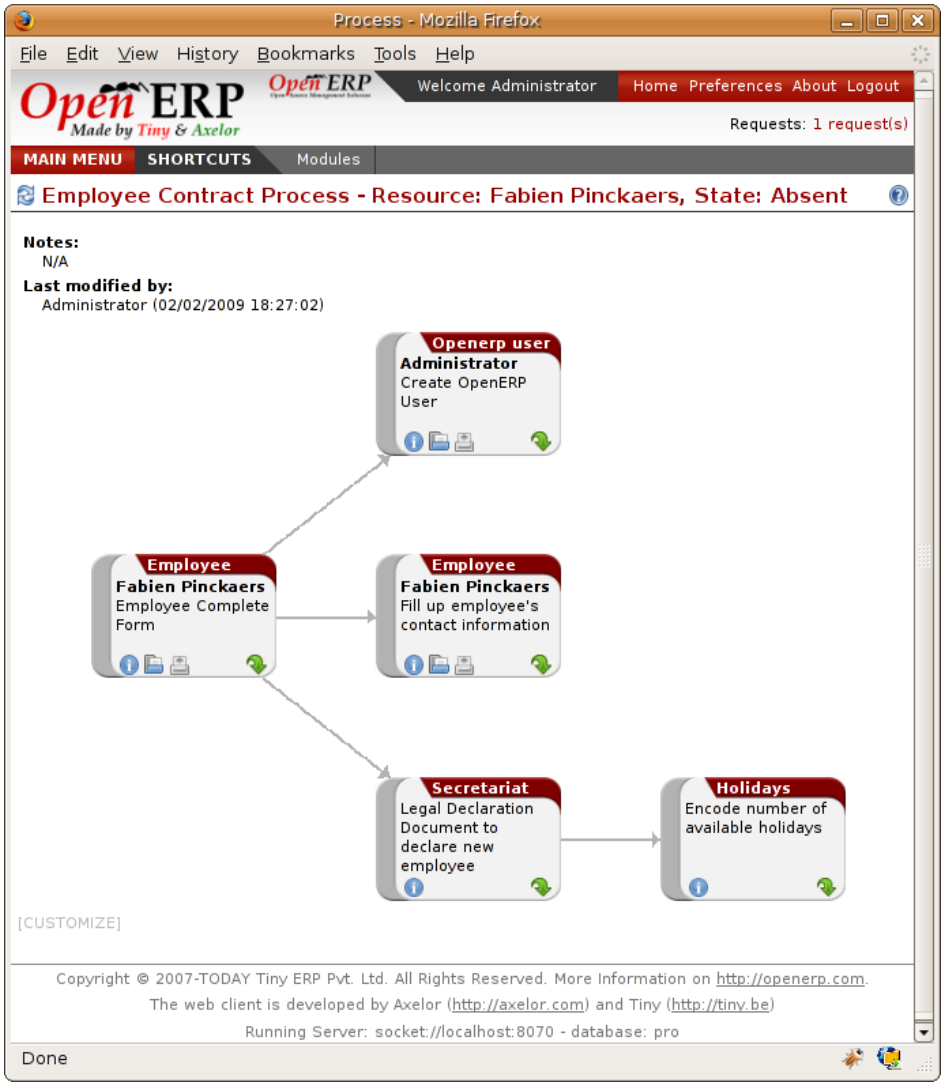


Figure 22.4: *Example of a process engaging a new employee*

You can immediately see things that might interest the HR manager. On a single screen she has all of the documents about the selected employee. She can then zoom into each document to look at employee holidays, associated documents, or the user account in the system.

It's also a great help for day-to-day management. When a new employee is engaged, an HR manager - or anyone else with a suitable role - can complete each node in the corresponding process, such as:

- Entering his address,
- Creating his user account in the system,
- Sending any mandatory employment documents to the relevant government departments,
- Declaring the required insurance documents,
- Setting meal preferences, perhaps,
- Entering statutory public holidays into the system.

You can click on each node to open the corresponding form in Open ERP. Some actions aren't owned by Open ERP, such as contacts with government offices and insurance companies. In this case click on the document icon to get the documents to be completed and posted or faxed to the institutions:

- Fax for insurance declarations,
- Statutary forms for government departments.

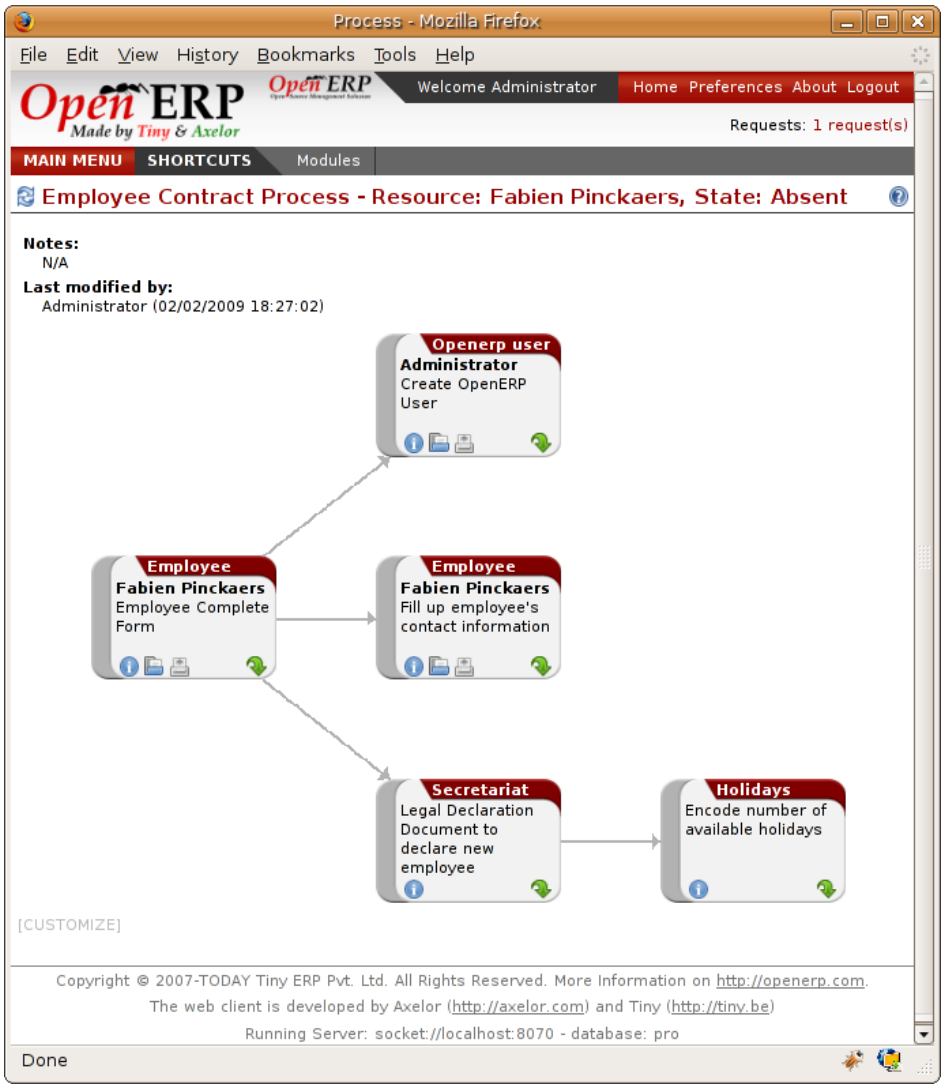


Figure 22.5: *Example of a process required for the declarations for a new employee*

The system of *Corporate Intelligence* gives you a complete overview of all the company's processes. So if you click on the node to the left it will start the recruitment process of selecting and interviewing new employees if the necessary modules have been installed.

22.2 Workflows and User Processes

Workflows are used to define the behaviour of a given document. They are used by developers and system implementers to determine which object should execute which actions and at which moments. These are principally

technical processes defined in a vertical way on the lifecycle of a complete object (represented by a document). Changing a workflow will have a direct impact on the behaviour of the software in response to user actions. You handle all possible exceptions there so that the software is robust.

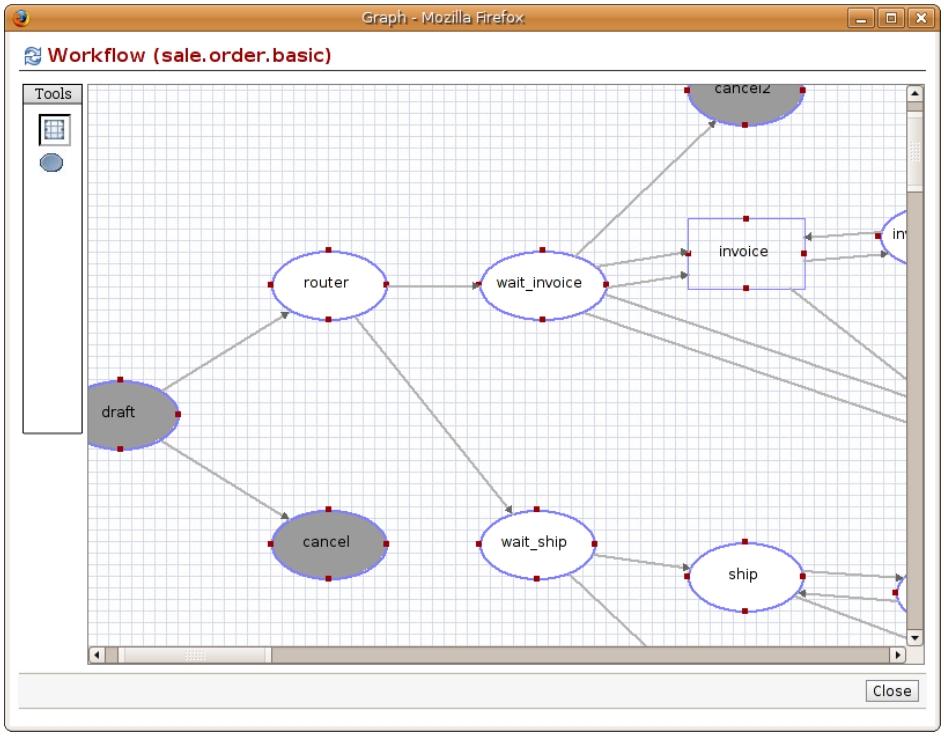


Figure 22.6: *Example of a workflow handling a customer order*

Unlike workflows, user processes represent workflows across all of a company and its documents. They are used by end users to locate an action for more complete handling. A change of user process won't have any effect on the software but will show the user another way of working on a given problem.

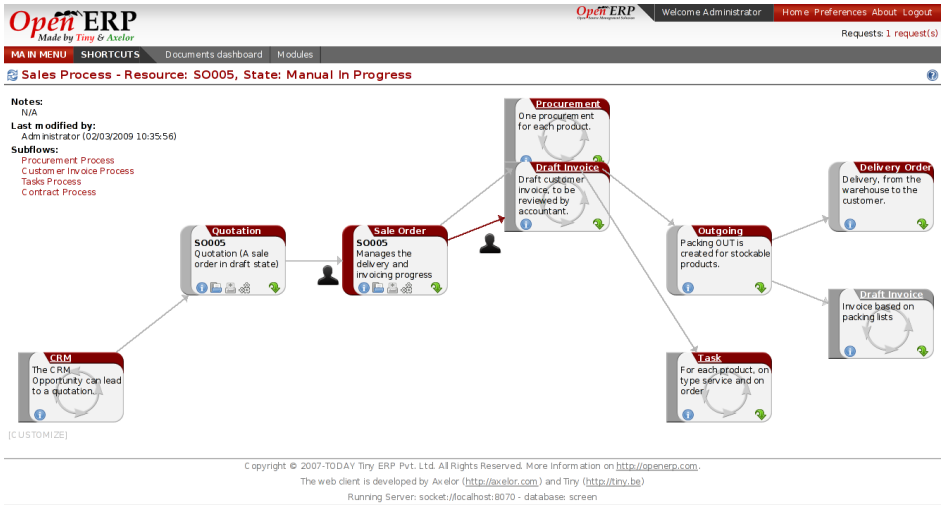


Figure 22.7: *Example of a process handling a customer order*

Processes are used by end users to help them understand the problems which haven't been handled in Open ERP. You can find actions that have no influence on the software, such as "Telephone customer to thank him", and "Send a fax to reassure him". As well as providing user help, processes provide functions such as:

- integration with Open ERP help and the company's quality manual,
- showing the user menu for finding a specific document.

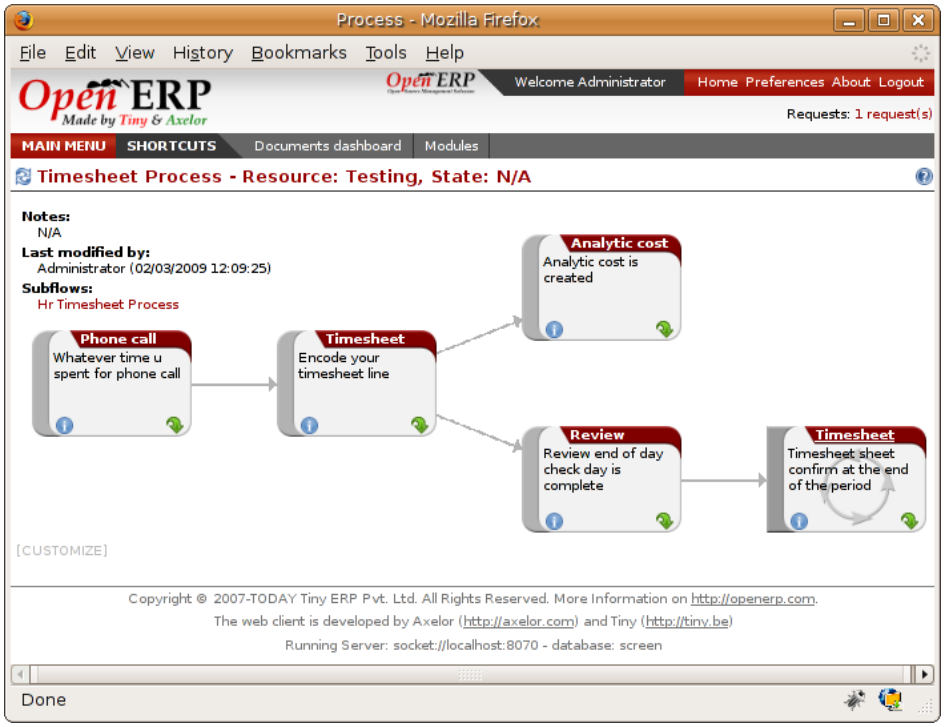


Figure 22.8: *Relationship between workflow and user process*

User processes are thus connected to technical workflows. If you modify the software's behaviour with a workflow, the changes will be directly visible in the user processes that are based on the modified document. So if you add new required roles for certain transitions on a workflow they will automatically be shown in the process corresponding to the modified document.

To get maximum benefit from the power of user processes and the workflow engine, Open ERP provides an integrated workflow editor and user process editor. This enable you to modify them through the client interface.

You'll only work with the process editor in this chapter. If you want to test the workflow editor click on the link to the bottom left of a document and select the menu *Customize* → *Manage Workflows*. Open ERP opens a graphical editor to modify the workflow for the selected document type.

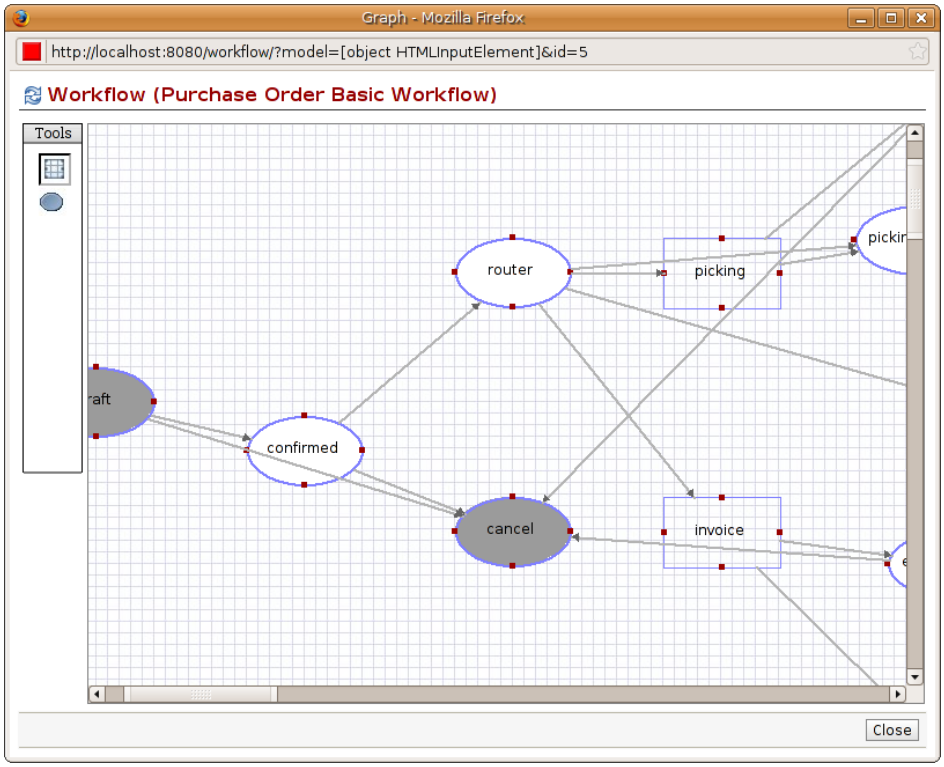


Figure 22.9: *Workflow editor modifying the behaviour of invoices*

The workflow editor is only available in Open ERP's web client at the time of writing. If you have the GTK client you can use the menus in *Administration → Low Level Objects → Workflow Items*. These are text-based not graphical.

22.2.1 Using processes effectively

Regardless of which Open ERP screen you're in you can call up a process on the current document by clicking the **Process** icon. Depending on the document you can have several processes defined using it, Open ERP then asks you to choose which one of them you want.

For example if you are in a meeting form, Open ERP will ask you to choose from the processes it knows about that involve such forms:

- processes for selecting and inducting new employees,
- tracing customer orders in pre-sales,
- processes for visiting customers and handling expenses.

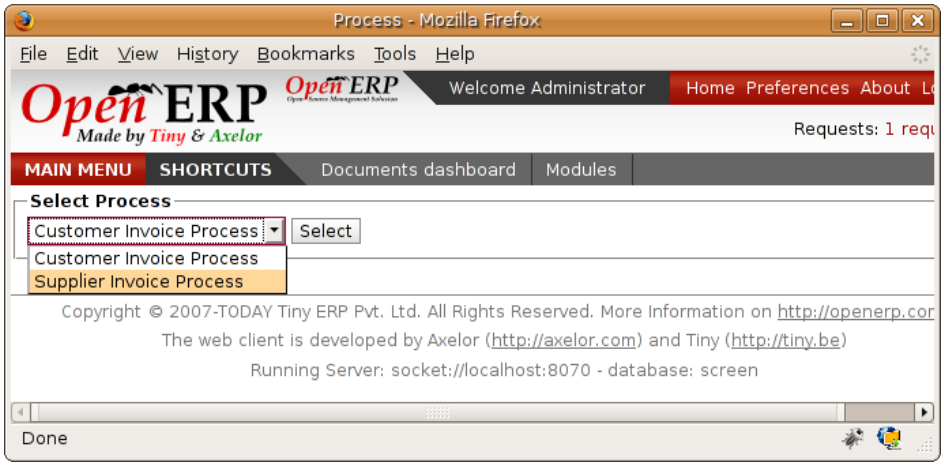


Figure 22.10: *Button for entering a user process from a form*

The element colored red shows the active process for the selected document. Elements in grey are the states that the selected document won't go through because of its configuration. You can use the different icons to open the document, print it, or get its documentation.

Some states have an image inside of arrows formed into a circle. These show that the state refers to another process. To go to this other process you can click on the title of the state. For example you can click on the invoice in the customer order management workflow to see in detail how that invoice is handled.

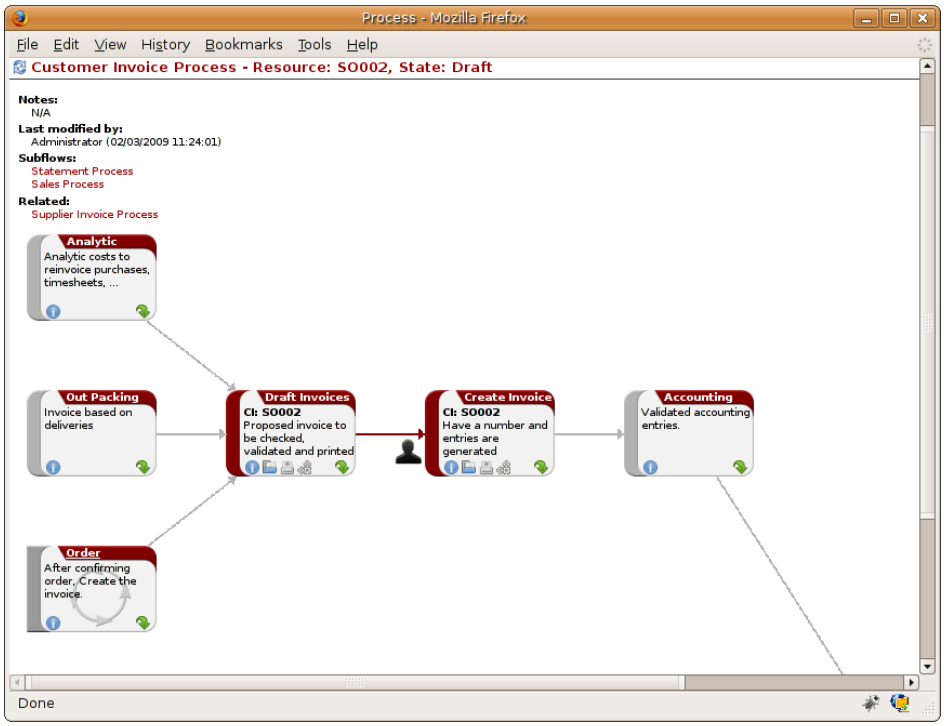


Figure 22.11: *A state that refers to another workflow*

Finally, you can place your mouse for a second over a transition (hover over a transition) to get a help balloon appearing about this transition. Open ERP then shows you:

- A description of the transition,
- The actions you can take at this step,

- The roles you need to make anything happen from this step.

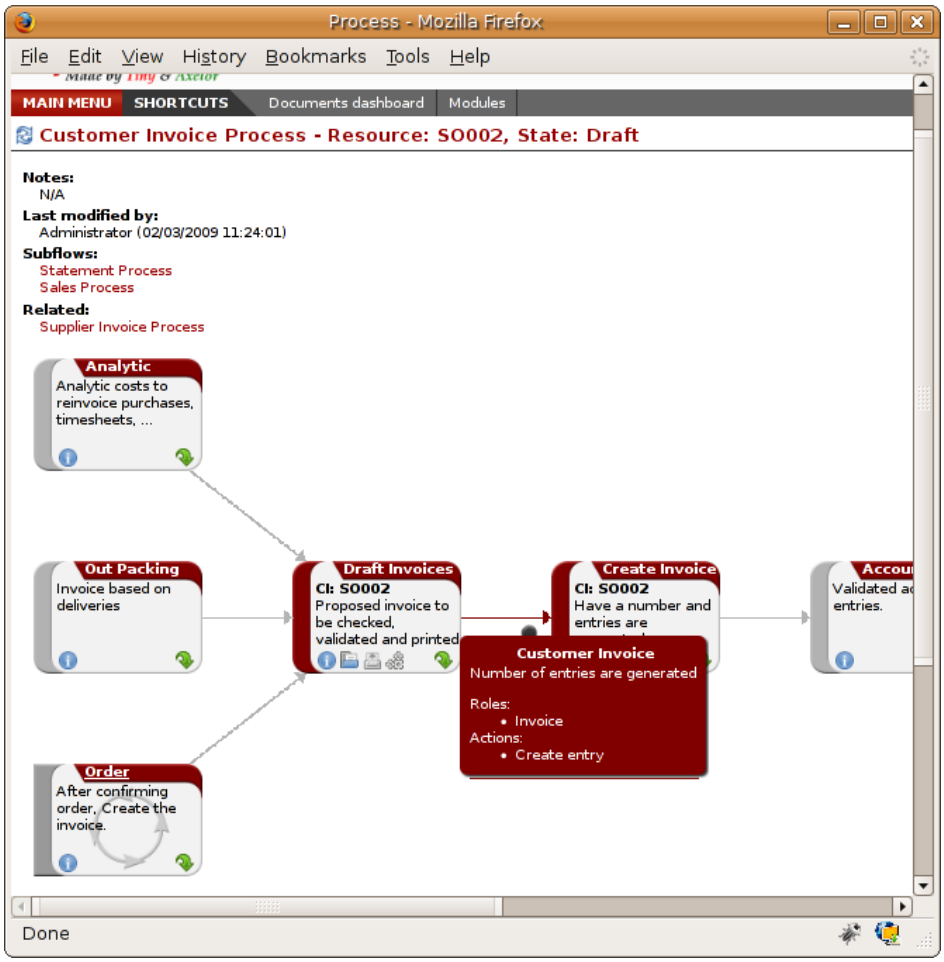


Figure 22.12: *Detail of a transition in a workflow*

If you click on the transition, Open ERP opens a dialog box with buttons that enable you to change the document state. These are the same buttons that you see on the active document form. They enable you to confirm an order directly from the process and then see the consequences in real time at a macro level.

22.2.2 Defining your own user processes

Use the menus under *Administration* → *Customization* → *Enterprise Processes* to define new processes or modify existing processes. When entering a process, Open ERP shows you the list of states available for that process.

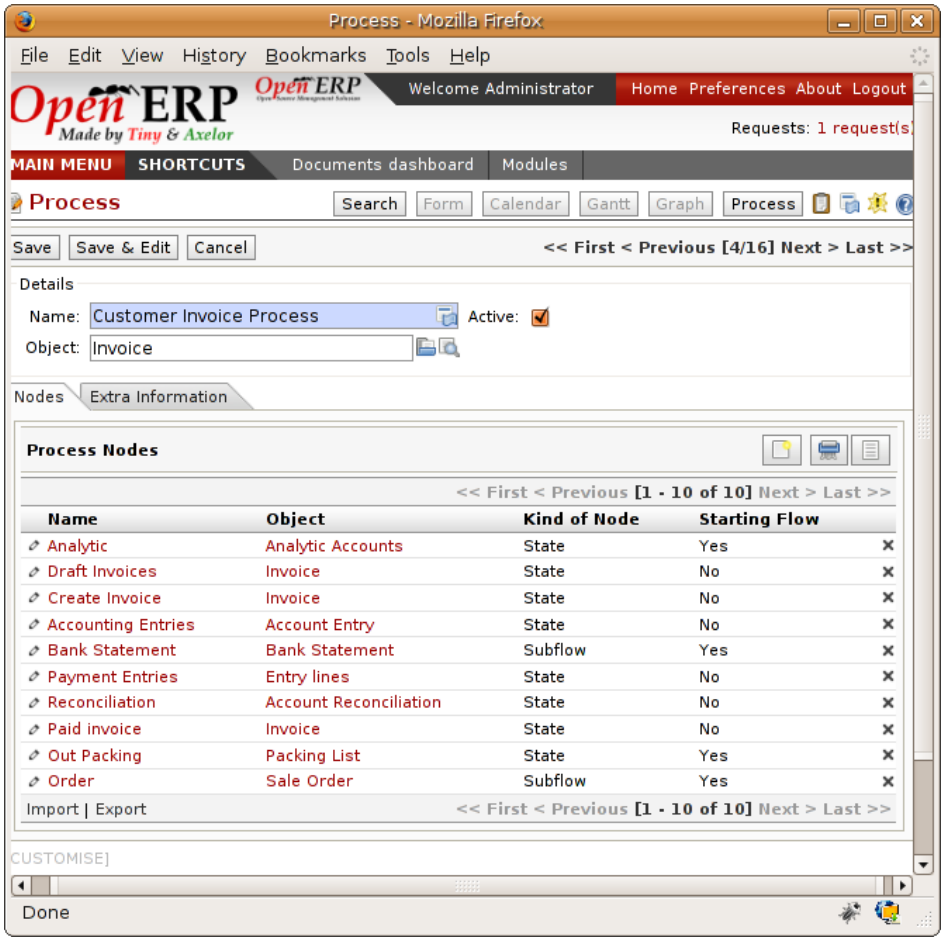


Figure 22.13: *Form for defining a process*

You can add a new state or modify an existing state. A state can be associated with an object (whose instances are represented by documents). If that is the case, choose it in the case object. You can set an expression that shows if the object can be found in that state or not. Expressions are in Python format. For example for the quotation state choose the object `sale.order` and set the following expression `object.state == 'draft'`.

You can also link to a menu so that users can learn which menu to use to access objects in a state. You can set the conditions in which this object is in a greyed-out state in the second tab **Conditions**. These expressions, too, are encoded in Python format.

Once the node has been defined you should set the transitions leaving this object. For each transition you can:

- Give the leaving and destination states,
- Set up a list of buttons that start various transitions in the process,
- Map between workflow transitions and the document that's selected,
- Put an explanatory notice in different languages.

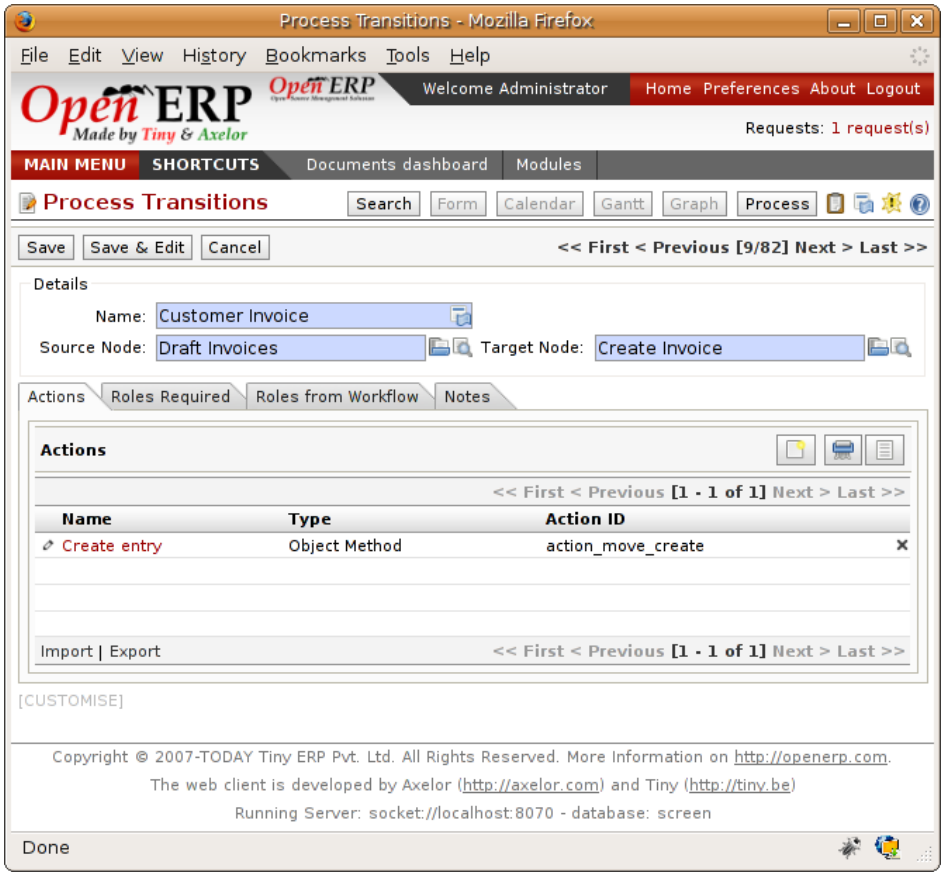


Figure 22.14: *Screen for defining a process transition*

The organization and quality of a company is typically related to its maturity. A mature company is one where processes are well established, and where staff don't waste much time searching for documents or trying to find out how to do their different tasks.

From this need for effective organization and explicit quality improvement, have appeared numerous tools:

- The ISO9001 quality standard,
- Business Process Management (BPM) tools,
- Use Case workflows, and formalized standards such as UML,
- The company Quality Manual.

The problem is that these tools are usually quite separate from your management system and often reserved for the use of just a few specific people in your company. They're treated separately rather than put at the heart of your management system. When you ask company staff about ISO9001 they usually see it as a constraint rather than a helpful daily management tool.

To help the company meet its quality requirements and to form these processes into assistance integrated with everyday work, Open ERP supplies a 'Corporate Intelligence (r)' tool that enables you to put company processes at the heart of your management system.

The system enables:

- new employees to learn how to use the software by graphically and dynamically discovering how each document and action works,

- easy access to the all the links to a document and everything that's attached to it,
- people to see both a high-level map and the detail of all a company's processes,
- access to a graphical model and integrated quality manual for rapid access that depends on the work context,
- use of a knowledge base and capitalization of that knowledge for all of the company's actions in the form of interactive processes,
- an employee to become more aware of his role in the whole environment.

CHAPTER

TWENTYTHREE

INTEGRATED DOCUMENT MANAGEMENT

Information management has become a major strategic factor in companies' development. It's important to get the right information circulated to the right people as efficiently as possible yet still keep it secure. Documentation management provides a way for companies to organize their information, in all its forms, in one place.

The objectives of document management include easier archiving, access, and reference, intelligent classification, and distribution of documents and the information they contain. It concerns sets of all sorts of company documents such as work procedures, meeting reports, documents received from customers and suppliers, documents sent to customers, faxes, sales presentations, and product datasheets.

For this chapter you should start with a fresh database that includes demo data, with `sale`, `document` and their dependencies installed and no particular chart of accounts configured.

23.1 The importance of good document management

Globalization means that workplaces are ever more geographically dispersed. This means that documents are also used more than ever by people in several countries and continents for communicating and collaborating.

You'll see communication problems even between employees in the same office because they don't have easy access to the documents that they need. You find some documents kept by someone in the accounts office, shared directories that serve everybody, some documents in paper form, others in electronic form – quite a free-for-all.

An explosion in the number of documents that a company needs doesn't help. If their storage and indexation are badly organized, these documents become useless because they're almost impossible to find.

The results of poor document management can lead to a significant loss of time. Ask yourself how often you find yourself looking for:

- A supplier catalogue that's been send to a purchasing manager,
- A customer contract signed several months ago,
- The final set of Terms and Conditions offered to a specific customer,
- The documents required for employing a new member of staff,
- An order confirmation sent by a customer to one of your salespeople or, perhaps even more common when the relevant salesperson has gone on vacation, if you ever received such an order confirmation,
- A procedure from your quality manual if there's been a process fault,

- An email which was sent to one of your colleagues,
- A document that you need to be a template for a specific type of contract,
- A complete history of communications between yourselves and a supplier about a given contract.

Even worse than the loss of time, perhaps, the lack of good document management is bad for the quality of your organization and the service provided by your company. In such a company it's likely that:

- sets of documents don't follow a standard layout,
- all the salespeople prepare quotations in their own way and gradually change the way they do it for themselves but not for the group,
- a correction to a type of contract stays with a small group of people and doesn't percolate back into the rest of the company to benefit other users,
- version management is chaotic or even non-existent.

So a good integrated document management system can be a powerful tool to help in day-to-day company management. With it you could also easily:

- Continue the work started by a colleague if she's gone on vacation, and respond to her customers if needed,
- Get hold of examples of all document types with just a few clicks, so that you can follow company standards in such areas as order confirmation, price requests, meeting minutes, customer deliverables, contract examples, and models for faxes and letters,
- Retrieve procedures and other associated documents if you don't know how to do a certain task – such as things you should do when hiring a new employee, organizing a conference, or how to structure meeting minutes,
- Very easily reuse work done by a colleague to meet similar needs and build on all the individual work done in your own company,
- Find all the orders for a customer or from a supplier in just a few seconds to answer questions or two continue a discussion when the initial contact point in your company is not available,
- Build on your working methods and enable your colleagues to benefit from each improvement in a document type or a procedure.

From these examples you can see the importance of a good document management system, and what it might contribute to the improvement of productivity and the quality of the output from each employee.

23.2 Classic document management solutions

Faced with the need to organize documents, companies have looked at a number of document management solutions that are promoted today, from simple email archiving to complete electronic management systems dedicated to arbitrary documents.

Unfortunately these solutions haven't always been very useful because they're too little integrated in companies' management systems. Most solutions that we've come across are underused by the employees – often used by some of them but not by all.

The primary reason for this is that a document management system that's not integrated imposes extra work on an employee. For example a salesperson should ideally save each customer confirmation in the document management system. Only that means quite a heavy additional workload just for an order confirmation:

1. Receive and read the email from the customer,
2. Save the email and its attachments on the desktop,
3. Connect to the ERP and confirm the order,
4. Connect to the document management system,
5. Look for the best place to store the document,
6. Create a directory for the customer and the order if it doesn't yet exist,
7. Copy the files from the desktop to the right place in the document management system.

This is obviously a lot of operations just to handle a simple order confirmation. You can understand why many companies hardly use their document management system even if they've gone to the cost and effort of purchasing and installing one.

Tip: *Free document management systems*
A number of free document management applications exist. The most well known are:

- *Alfresco: http://www.alfresco.com*
- *Quotero: http://www.quotero.com*

It's very difficult to keep the information in the company's management system synchronized with that in the document management system. For example when a customer changes his address, users will modify the details in the management software but usually not in the document management system.

Furthermore, since users should create the same storage structure in both systems, you quickly find after only a few months that the information in the document management system is quite disconnected from that in the company's management system if the two are separate. For example, how do you know where to store your least-frequently used documents such as (perhaps) employee car-leasing documents? Also, document management systems are typically very complex because they must manage user access rights in just the same way as those that are available in the company management system. This means that you have to enter the same sort of data about access rights twice for the system administrators.

You'll see that the total integration of Open ERP's document management system with the main company management system, and plugins to Outlook and Thunderbird email clients, offers an elegant solution that addresses these problems.

23.3 The Open ERP solution

Open ERP's management of documents is unique and totally innovative in its integrated approach. Its complete integration with the company's management system solves most of the problems that are encountered when you use independent document management systems:

- Login and the management of access rights is integrated with that of Open ERP for controlling access to different document types,
- Ultra-rapid access to documents, which are directly accessible through your email client or through the company management software,
- Automatic assignment of meta-information comes directly from information contained in your Open ERP login registration,
- Document workflow which automatically follow Open ERP's documentation process provide complete synchronization between the systems,

- Document classification is determined by Open ERP itself so that the structure that is created is always synchronized between the systems,
- Automatic indexation and classification of all documents produced by Open ERP for maximum efficiency.

23.3.1 Getting Started

This section is about how to get started with the document management system from its installation to advanced use with FTP access.

Installation

To install Open ERP's document management system you just need is to install the `document` and `board_document` modules through *Administration → Modules Management → Modules → Uninstalled modules*. After installing the module the system automatically proposes that you configure the document management system.

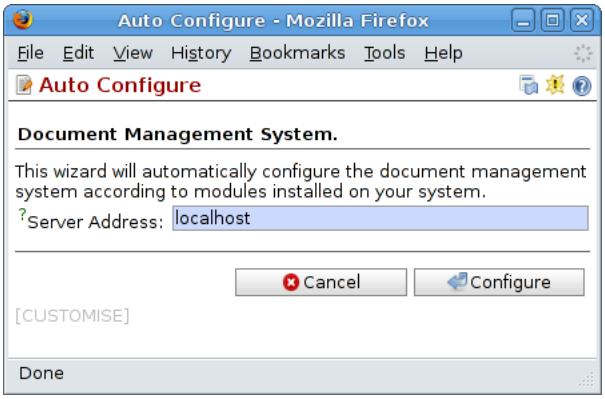


Figure 23.1: *Screen for configuring document management*

Once the module has been installed you'll see a new entry in the main menu called *Document Management*.

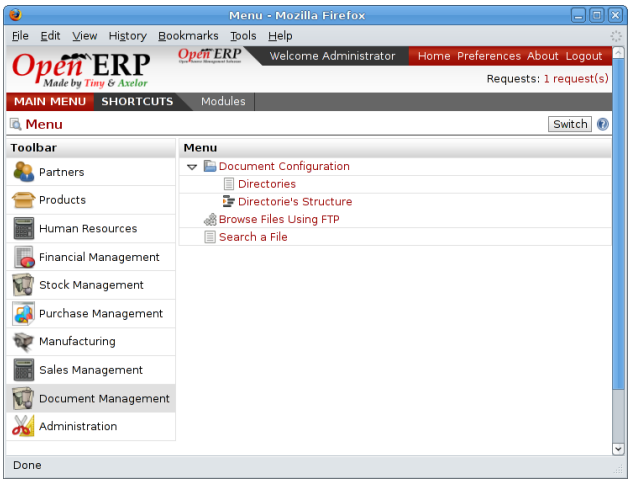


Figure 23.2: *The document management menu*

23.4 Internal and external access using FTP

The first configuration step is to create a directory structure that will be used to classify your document set. You can use the structure automatically proposed by Open ERP from the menu *Document Management → Directory Structure*.

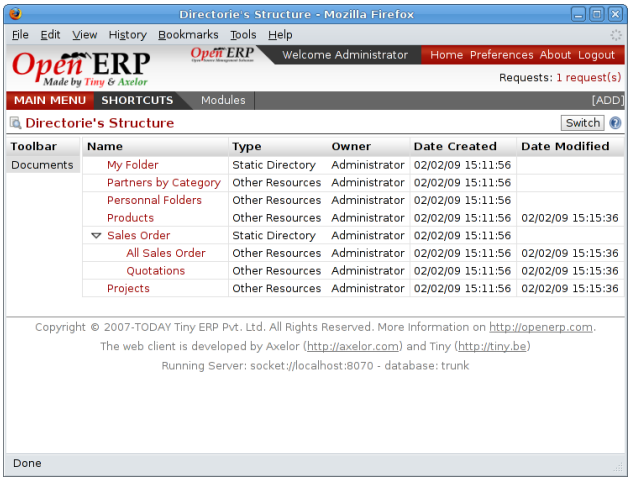


Figure 23.3: *Structure of directories when the document module has been installed*

In addition to the usual access to documents through Open ERP, you will be able to connect to them directly through the file system using the FTP protocol. To connect to the FTP server, use the following address:

Parameter	Value
Server	Your Open ERP server, for example 127.0.0.1
Port	8021
Path	The '/' character, for the root
User	Your user account in Open ERP
Password	Your Open ERP password

Note: *FTP server*
These comments about an FTP server may appear a bit technical, but it's just a general standard for getting hold of files without worrying too much about the platform standards (Windows, Mac, Linux, or other Unix-like system). So FTP is just a way of getting access to files without needing to use an Open ERP client. There could have been other ways, but FTP proved itself to the developers to be the one that performed best at lowest cost.

Once you're connected using FTP you get to the root of a directory for the document management system. Once you enter that directory you find a structure that matches the structure defined in Open ERP.

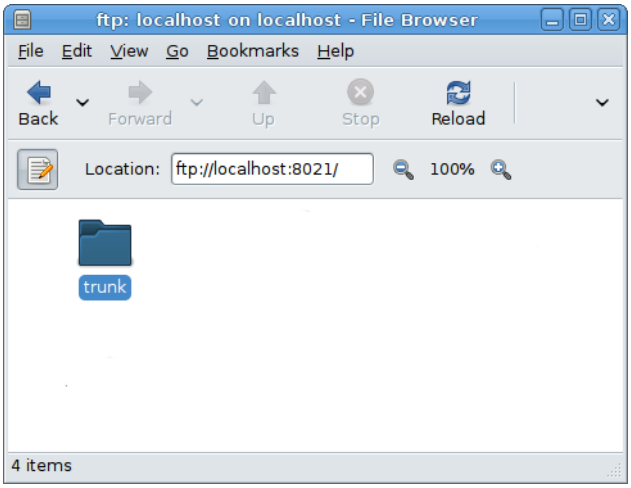


Figure 23.4: *Root of the database directory seen through FTP*

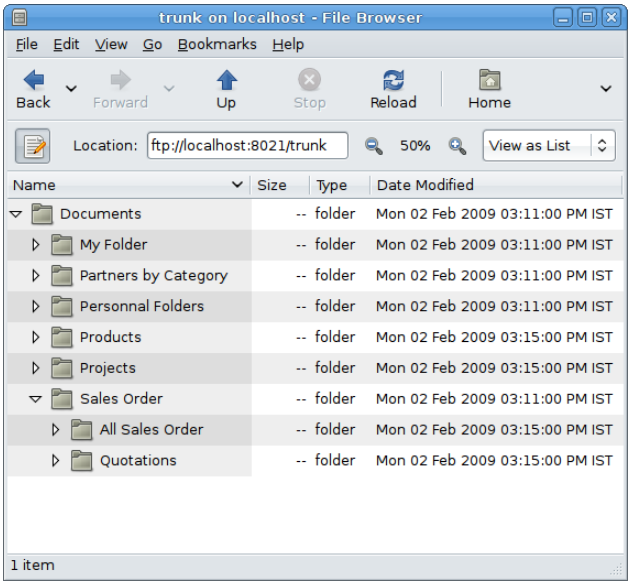


Figure 23.5: *Structure of the directories in the document management system*

23.5 Mapping between Open ERP resources and directories

Each directory can either have the type `Static` or be linked to another resource. A static directory, as with Operating Systems, is the classic directory that can contain a set of files. The directories linked to systems resources automatically possess sub-directories for each of resource types defined in the parent directory.

Tip: *Directories in English*
To keep them synchronized to the working language, directory names are not translatable. But Open ERP's demonstration data automatically creates directories in English. You can rename them through the menu Document Management → Configuration → Directories.

For example you can look at the directory shown in *Main Repository → Sales Orders → All Sales Orders*. You'll see the directory for all the orders present in Open ERP that was created automatically by the system.

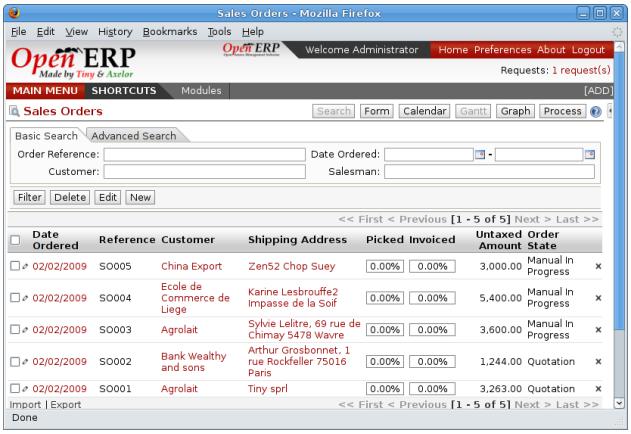


Figure 23.6: *Orders in Open ERP*

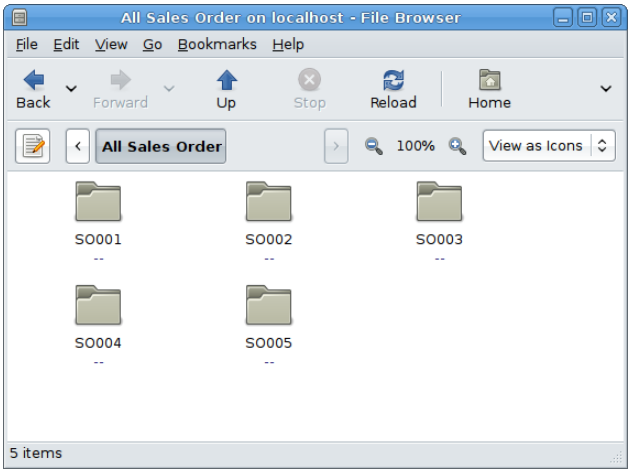


Figure 23.7: *Directories representing all the orders in the document management system*

Directories can follow a tree like the tree of resources in Open ERP. For example if you go to the directory *Main Repository → Projects* you'll see the structure of the analytic accounts.

To define a directory containing a specific type of resource you have to define parameters when you define the directory itself:

- **Type** : Other Resources
- **Child Models** : Choose one of the system objects
- **Domain** : an event filtered so that it sees only a subset of the resources
- **Tree structure** : to show the resources hierarchically

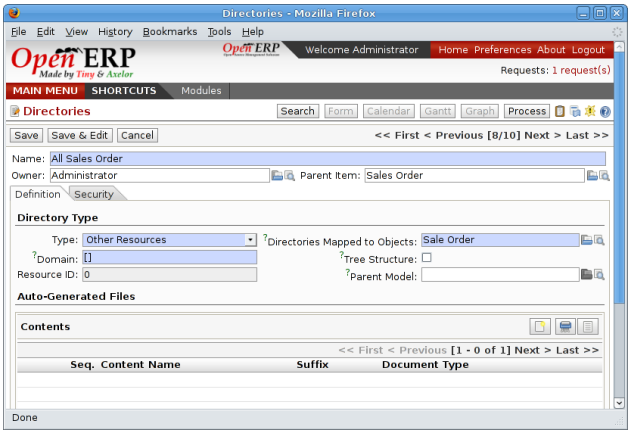


Figure 23.8: *Configuration of the directory containing quotations (draft orders)*

This is a very flexible approach because any modification of the resource in Open ERP is automatically reflected in the document management system. So when the quotation gets confirmed in Open ERP the directory no longer appears as a quotation through FTP access.

Here are some examples of directories linked to Open ERP resources that could be helpful when configured in the document management system:

- Quotations and Order: storing documents that relate to orders,
- Products: for storing products' technical datasheets,
- Users: to automatically define a directory owned by each user of the system,
- Employees: to store documents about employees, such as their CVs, your interview notes, contract details, and their annual assessments,
- Support Requests: storing items about requests or about technical support responses,
- Analytic accounts or project: to store project management and tracking documents.

23.6 Managing Attachments

As you see, you can connect any directory in the document management system to an Open ERP resource. The system then manages its creation and keeps the directory synchronized with the reports generated by Open ERP from its own data. You don't have to create or rename these directories because Open ERP does all this automatically as it resychronizes with its own database.

You can then copy the files in the directories that correspond to any of the resources. The files are automatically attached to Open ERP's documents through attachment management. Conversely, if you attach a document to one of Open ERP's resources then that document will automatically become visible over FTP in the document management system.

Note: *File storage*
If you don't install the document management system then the files that are attached to an Open ERP resource are stored directly in the database. Once the document management system has been installed, the contents of the files are no longer stored in the database but are stored instead on the Open ERP server filesystem in a directory named 'filestore'.
You can then read and add attachments to Open ERP resources quite independently of the Open ERP interface or the FTP server using simple drag and drop.

23.7 Virtual Files

The most well-organized companies keep track of all the documents they've sent to customers in their document management system. It's very useful to be able to retrieve every document about a customer or a project. But the work of storing these documents can itself often take up quite a bit of time for staff. Each report must be saved in the document management system as well as simply being sent by email to the customer.

That's not the case in Open ERP. To automatically make Open ERP reports available in the FTP server, Open ERP automatically uses *virtual files*. You can put virtual files into directories that have the special type of *linked resource* and link the virtual files to Open ERP's reports.

Note: *Virtual Files*
Virtual files don't actually exist in Open ERP but are made visible with a size of 0 in the FTP server. Once these files have been read by the client software, Open ERP prints the document related to this file and returns a PDF document linked to the resource.
When you copy or open a virtual file you print the selected resource. You don't then have to go and print a document through Open ERP – you just open the file containing that document in the document management system. The PDF file is then created in real time by Open ERP by reading the relevant data.

The screen *Virtual files for Sales Orders in Open ERP* shows the parameters of the virtual files in Orders. You define the virtual files using the name ORDERNUM_print.pdf, where ORDERNUM represents the reference to the order. To do this you must complete the section **Descriptive Contents** of the file for a directory. You can then find a virtual file for each report associated with an order.

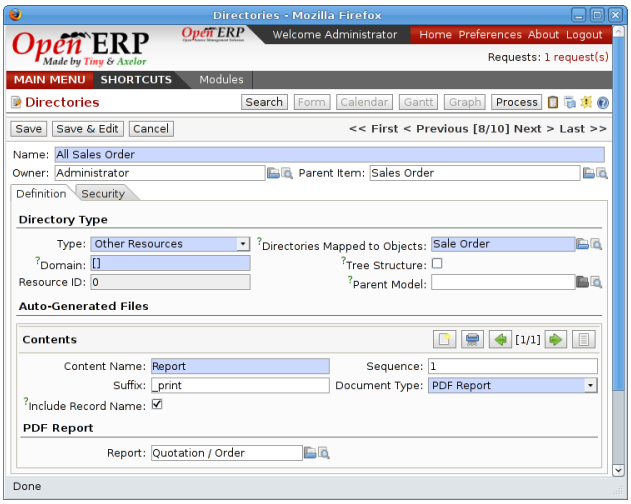


Figure 23.9: *Virtual files for Sales Orders in Open ERP*

To see the effect of this configuration, connect to the FTP server and go into a directory for an order such as *Main Repository → Sales Orders → All Sales Orders → SO003*. You can then just double-click the file **SO003_print.pdf** to get a printout of Order SO003. You can attach it to an email or put it on your desktop.

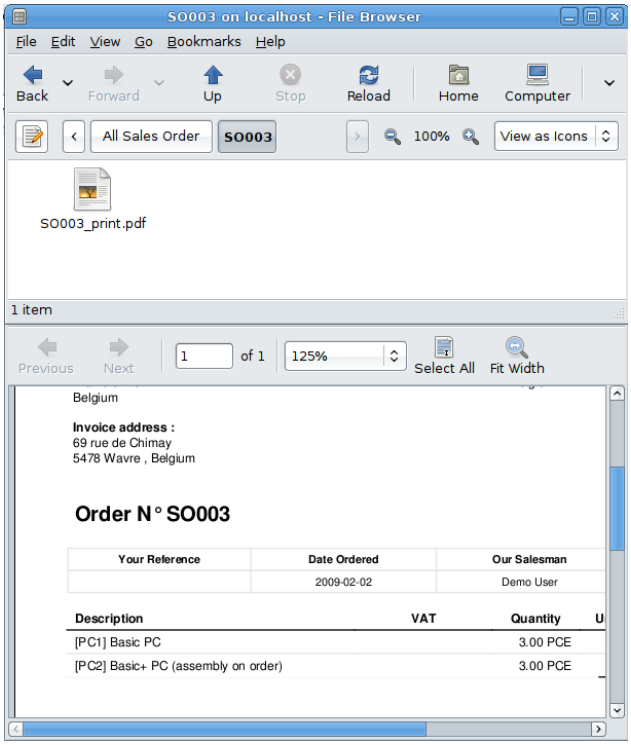


Figure 23.10: *Virtual files for Sales Orders through FTP*

This system of virtual files is very useful in a lot of situations. For example if you must quickly re-send a quotation to a customer you don't have to open Open ERP, you can just attach the relevant virtual file to your email.

Importantly, once files have been read or copied they become real files, taking up real space, rather than just virtual. This means that you can keep a legal record of all documents that have been created and sent to customers and suppliers.

23.8 Standardizing Structures

You now have a configuration that enables you to automatically get a directory structure linke to Open ERP for each resource, such as for projects and orders. The ideal situation would now be to automatically structure the documents about projects, say. For example, you could classify them depending on their type:

- Quotations,
- Meeting Minutes,
- Delivery Documents,
- Documentation.

Open ERP provides you with a system that lets you create a structure type for each type of a given document. It then provides that classification for all documents in the directories structured in that type.

So create the structure above for your project management system. To do that, create the four directories above and give them the following data:

- **Type** : Static Directory,

- **Linked Model** : Analytic Account.

Then in each project (represented by analytic accounts) you'll get this substructure for organizating your documents efficiently.

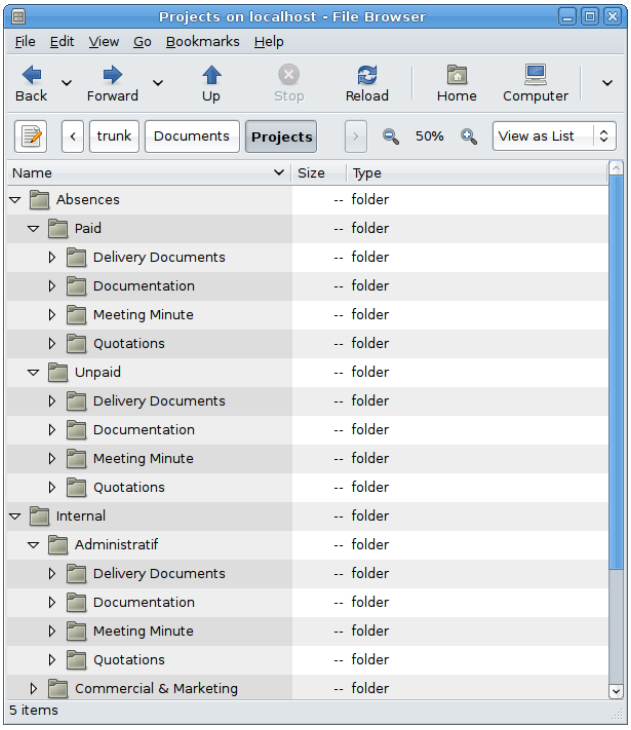


Figure 23.11: *Substructure common to all projects*

Tip: *Mapping*
In practice, Open ERP doesn't create directories or files for every resource. It actually manages this by mapping between Open ERP resources and the FTP interface
This approach gives a lot of flexibility because there's no synchronizing to do, nor any redundancy. Changes in either the document management system or in Open ERP will automatically be reflected over in the other side.
And system resources are obviously not used up by storing things twice.

Once a new project has been defined in Open ERP, the system automatically creates a directory corresponding to the project in the right place in the document management system, and creates a structure type there for classifying documents.

23.9 Searching for documents

You've seen several methods of accessing documents quickly:

- From attachments to an Open ERP resource,
- Through FTP access to Open ERP,
- Using the menu *Document Management → Structure of Directories*.

But if you don't know where a specific document can be found, Open ERP also has a search tool integrated into its document management. To search for a file use the menu *Document Management → Search for a file*. You get to a document search screen that lets you search amongst all the attachments and all the documents in the FTP server.

You can search for a file using various different criteria:

- The filename,
- The owner of a file,
- The title of the resource that the file is attached to,
- The partner that the document is about,
- The directory that it's found in,
- Its creation and modification dates.

Notice here an important advantage for an integrated document management system. Information such as which partner is associated with a document is automatically detected by Open ERP when the document has been stored in a directory. This information is never input by the user – it's detected automatically using the information about the resource when it's being saved as a file.

But your search isn't limited to these few fields. You can also search on the content in the files. Each file is automatically indexed by the system to give you a search engine rather like Google's on the whole set of company documents.

Note: *Supported file formats*
The Open ERP document management system can index the following file formats:

- ***TXT** : text files,*
- ***PDF** : PDF files,*
- ***SXW** : Open Office V1 files,*
- ***ODT** : Open Office V2 files,*
- ***DOC** : Microsoft Word files.*

The other file formats are properly handled in the document management system but their content is not indexed automatically.

This functionality is very significant. All you need to do is search for a partner name or an order number to automatically get all the documents that are referenced there. And you can use a fragment of text to find the document you need from within that subset.

23.10 Integration with emails

23.10.1 Using Outlook and Thunderbird

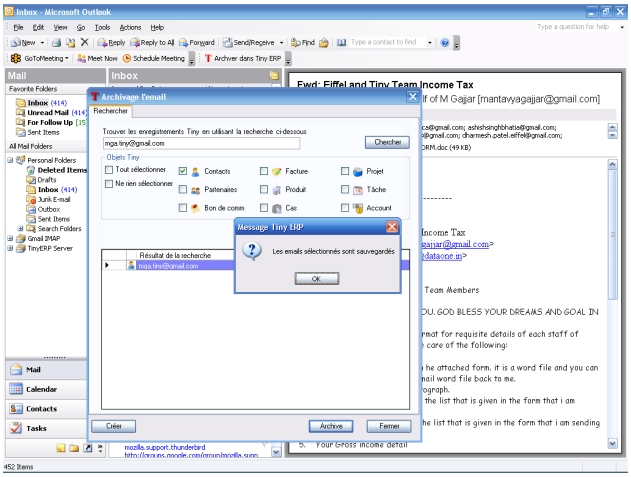


Figure 23.12: *Sending an attachment that's in the document management system from Outlook*

23.11 Working with users' changes

To make the document management system's use as unobtrusive as possible the system's users should easily be able to store all the documents that they produce or receive from their customers and suppliers. So Open ERP supplies dashboards to help system users approve their acceptance of such documents.

So you'll find two dashboards in the menu *Dashboards → Document Management*. One dashboard is for the document management system manager and one dashboard is for tracking use by different users.

The first lets you track the change of documents by month, by customer and by type of resource. You could also quickly assess the use that's made of the system by the various users.

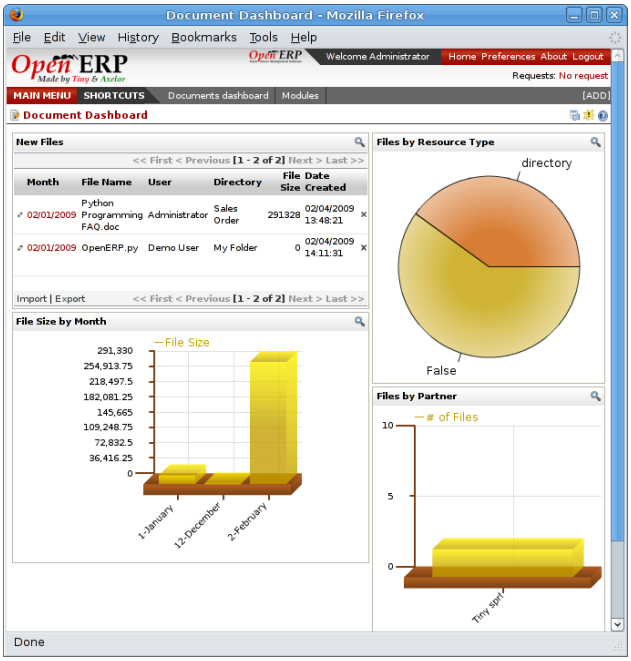


Figure 23.13: *Dashboard for the document management system manager*

The second dashboard shows you how different employees use the system. You can see the number of files sent by each user and who uses the document management system the least. That tells you something about your user training and whether you need to do something about changing work methods.

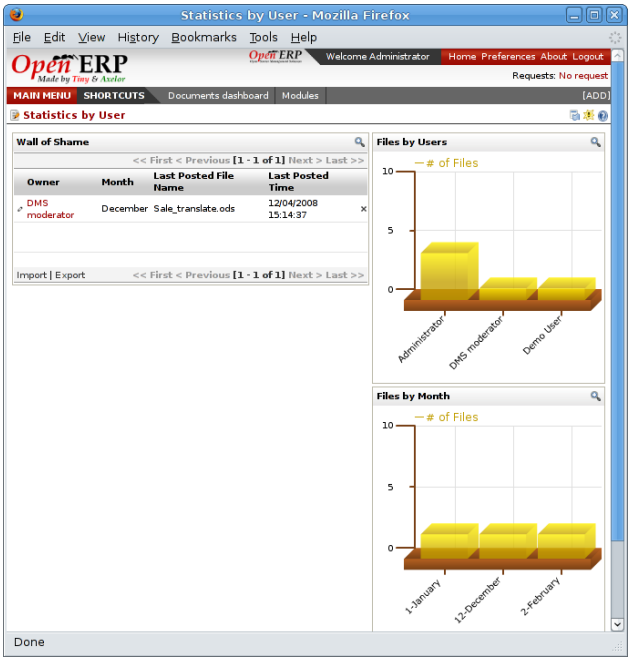


Figure 23.14: *Dashboard for the document management system analyzed by user*

23.12 Version Management

There's usually a need to keep track of all the important documents that you have printed. For example, when you send an invoice to a customer it's a good idea to store a copy of that invoice internally in paper or electronic form. Then you can reprint it exactly in the same format as when you sent it, even if the company's details have changed in the meantime.

To do this, Open ERP can automatically store as attachments the different reports printed by users. By default, only invoices are saved as attachments, and they're saved when they are printed. That's because they are commonly legally required.

But you can configure the system so that it doesn't matter which type of report is printed - they can all be stored automatically. To activate that functionality on another type of report, modify this in the menu *Administration → Configuration → Low Level → Actions → XML Reports*.

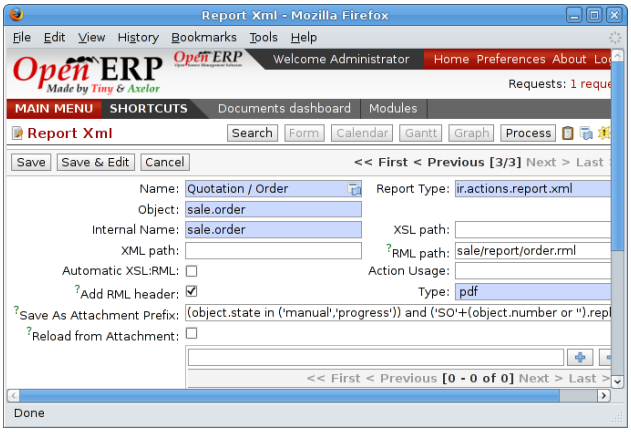


Figure 23.15: *Modifying the definition of a report*

Select the report that you want to change and complete the field **Prefix for saving as an attachment**. Once you've done that each document print action will automatically be saved as an attachment to the document.

23.13 Documents used for company processes

Finally, the document management system is also completely linked to the main system that manages company processes. Then on each node of your management process you could store a procedure. Once the user sees a process view of the relevant document he would be able to click on the directory to get all the documents that might be useful for this phase of the process.

So you could also efficiently store the documents required for each phase of a process.

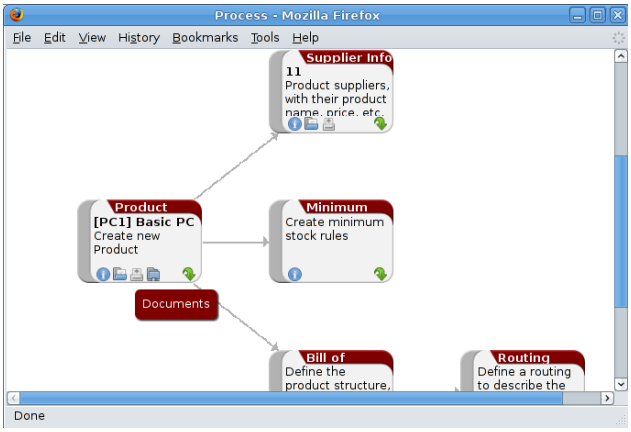


Figure 23.16: *Example of a document linked to process management*

Part IX

System Administration and Implementation

After you've tested and evaluated Open ERP, you'll need to configure it to match the software to your company's needs. Its flexibility enables you to configure the different modules, adapting them to your industry or sector of activity.

Designed for ERP project managers, this section deals with the administration and configuration of the system, giving you powerful tools for integrating the software in a company and driving and tracking the project, taking account of different problems, a range of supplier types, implementation risks, and the options available to you.

CHAPTER

TWENTYFOUR

CONFIGURATION & ADMINISTRATION

This chapter is for the administrators of an Open ERP system. You'll learn to configure Open ERP to match it to your company's needs and those of each individual user of the system.

Open ERP gives you great flexibility in configuring and using it, letting you modify its appearance, the general way it functions and the different analysis tools chosen to match your company's needs most closely. These configuration changes are carried out through the user interface.

Users can each arrange their own welcome page and their own menu, and you can also personalize Open ERP by assigning each user their own dashboard on their welcome page to provide them with the most up to date information. Then they can immediately see the information most relevant to them each time they sign in.

And Open ERP's main menu can be entirely reorganized. The management of access rights lets you assign certain functions to specific system users. You can also assign roles, which define the part that each system user plays in the workflows that move system documents from state to state (such as the ability to approve employee expense requests).

For this chapter you should start with a fresh database that includes demonstration data, with `sale` and its dependencies installed and no particular chart of accounts configured.

Note: *Configuration, Parameterization, Personalization, Customization*
The word personalization *is sometimes used in this book where you might expect to find* configuration *or* customization*.* Customization *generally refers to something that requires a bit of technical effort (such as creating specialized code modules) and creates a non-standard system.*
Configuration *is less radical – it's the general process of setting all the parameters of the software to fit the needs of your system (often called* parameterization *or* setup*). Configuration is also, by convention, the name of the sub-menu below each of Open ERP's top-level menus that is accessible only to the administrative user for that section.*
Personalization *is just that subset of configuration options that shapes the system to the particular operational and/or stylistic wishes of a person or company.*

Using the *OpenOffice.org Report Designer* module you can change any part of any of the reports produced by the system. The system administrator can configure each report to modify its layout and style, or even the data that's provided there.

Note: *The OpenOffice.org Report Editor*
The OpenOffice.org plug-in enables you not only to configure the reports of the basic products in Open ERP but also to create entirely new report templates. When the user uses Open ERP's client interface, OpenOffice can create a report template that has access to all the data available to any Open ERP document type.
You can easily create fax documents, quotations, or any other commercial document. This functionality enables you to considerably extend the productivity of your salespeople who have to send many proposals to customers.

Finally, you'll see how to import your data into Open ERP automatically, to migrate all of your data in one single go.

For this chapter you should start with a fresh database that includes demo data, with `sale` and its dependencies installed and no particular chart of accounts configured.

24.1 Creating a Configuration Module

It's very helpful to be able to backup your specific configuration settings in an Open ERP module dedicated just to that. That enables you to:

- automatically duplicate the configuration settings by installing the module in another database,
- reinstall a clean database with your own configuration in case you have problems with the initial configuration,
- publish your specific configuration to benefit other companies in the same industrial sector,
- simplify migrations, if you have modified some elements of the basic configuration, there's a risk in returning them to their original state after the migration, unless you've saved the modifications in a module.

Start by installing the module `base_module_record` in the usual way. Then start recording your actions using the menu *Administration → Modules Management → Modules Recording → Start Recording*. Manually make all your configuration changes through the user interface as you would normally (such as menu management, dashboard assignments, screen configuration, new reports, and access rights management – details of some of these possibilities are described later in this chapter).

Once you've done all this, go to the menu *Administration → Modules Management → Modules Recording → Save Recorded Module*.

Note: *Contributing to the development of Open ERP*
Once your personal configuration has been saved into a module, install the module `base_module_publish`. *T*
gives you a new possible action ***Publish Module*** *in the menu* Administration → Modules Manage → Modules.
Use this function to publish your module on the official Open ERP site. It could then be reused by other companies t
have the same needs as yours. You could then yourselves benefit from improvements made by these same compan
in future.
Don't forget to create a user account beforehand on http://openerp.com.

Open ERP then creates a ZIP file for you containing all of the modifications you made while you were carrying out your configuration work. You could reinstall this module on other databases and/or publish it online to help other companies. This could turn out to be useful if you want to install a test server for your company's users and give them the same configuration as the production server.

To install a new module saved in ZIP file form, use the menu *Administration → Modules Management → Import a new module*.

24.2 Configuring the menu

Open ERP's menu organization isn't subject to any restriction, so you can modify the whole structure, the terminology and all access rights to it to meet your specific needs in the best possible way. However, before you do all that and just as you would for any other customizable software, you should balance both the benefits you see in such changes and the costs, such as the need to train users, to maintain new documentation and to continue the alterations through subsequent versions of the software.

This section describes how to proceed to change the structure of the menu and the welcome page, to configure the terminology of the menus and forms in the user interface and for managing users' access rights to the menus and the various underlying business objects.

24.2.1 Changing the menu

As administrator, and using the web client, select a menu item (but don't click it). Click on the line containing *Administration → Translations → Import/Export → Export a Translation File* (but not on the string `Export a`

`Translation File` itself) and click the **Switch** button to bring up the menu item as an editable form (you can do the same using the GTK client – there you select the line and click the **View** button instead).

You could now edit this form (**but don't do that, read the next paragraph first!**) – change its **Parent Menu**, which moves the entry to a different part of the menu system; edit its **Menu** name to change how it appears in the menu tree, or give it a new **Icon**. Or you could give it a new **Action** entirely (but this would lose the point of this particular exercise).

Instead of editing this form, which is the original menu entry, duplicate it. With the web client you must first make the form read-only by clicking the **Cancel** button, then you click the **Duplicate** button that appears (in the GTK client, click *Form → Duplicate* from the top menu). The form that remains is now the duplicate entry, not the original.

To move this duplicate entry, change the **Parent Menu** field by deleting what's there and replacing it with another menu that everyone can see, such as **Tools** or **Human Resources**, and make sure that the entry moves to the end of the menu list by replacing the **Sequence** with `99` . You can experiment with icons if you like. Save the form and then click **Main Menu** to see the results.

Tip: *Duplicating the menu*
If you're planning to modify a menu you should duplicate it first. In this way you'll always keep a link to the original menu that works if you need it to.

24.2.2 Personalizing the welcome page for each user

When you sign into Open ERP for the first time, a welcome page appears. In a minimal system, such as that created in the original `openerp_ch02` database before it was expanded in *Guided Tour*, and in the `openerp_ch03` database, you only get the main menu – the same as you get by default when you click the *Main Menu* button. As you add functionality to your database you get more choices for the welcome page, with different dashboards automatically assigned to various company roles as they're created in the demonstration data.

The administrator can change both the welcome page and the main menu page individually for each user of the system, and can adapt Open ERP to each role in the company to best fit the needs of everyone.

To make modifications for a particular user, edit the user configuration again in *Administration → Users → Users*. Open the form for a particular user, and select different menu entries for the two fields **Home Action** and **Menu Action**.

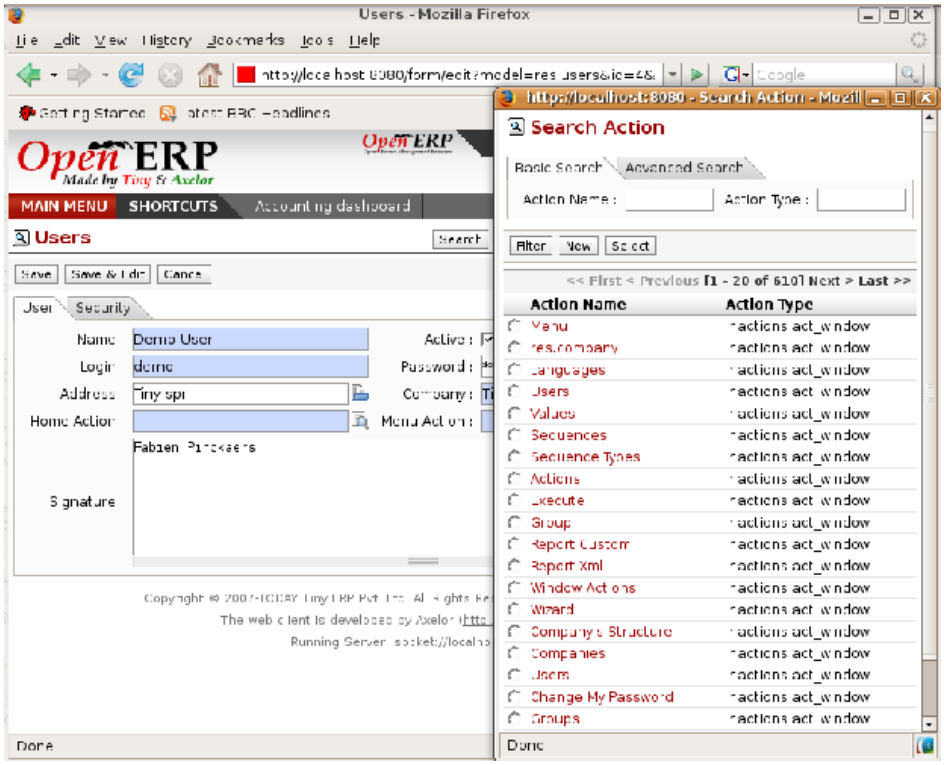


Figure 24.1: *Selecting a new welcome page*

The **Home Action** is the menu item that is automatically opened when you first sign on, and is also reached when you click the **Home** link in the top right toolbar of the web client. There you can choose any page that you'd reach through any menu – one of the dashboards could be most useful. The **Menu Action** is the one you reach through the **Main Menu** button in the web client (the **Menu** button in the GTK client). You can choose the main menu and the dashboards there.

Tip: *Actions on the administrator's menu*
It's very easy to change the welcome page and the menu of the different users. However, you shouldn't change the main administrator's menu because you could make certain menus completely inaccessible by mistake.

24.2.3 Assigning default values to fields

You can quite easily configure the system to put default values in various fields as you open new forms. This enables you to pre-complete the fields with default data to simplify your users' work in entering new documents.

- If you're using the web client hold `Ctrl` down and Right-Click at the same time (that's a mouse right-click while the mouse pointer is in the field and the Control key is held down on the keyboard).
- If you're using the GTK client, you just need to right-click the mouse while the pointer is in the field.

An administrator has the choice of making the default work just for that user, or for all users of the database.

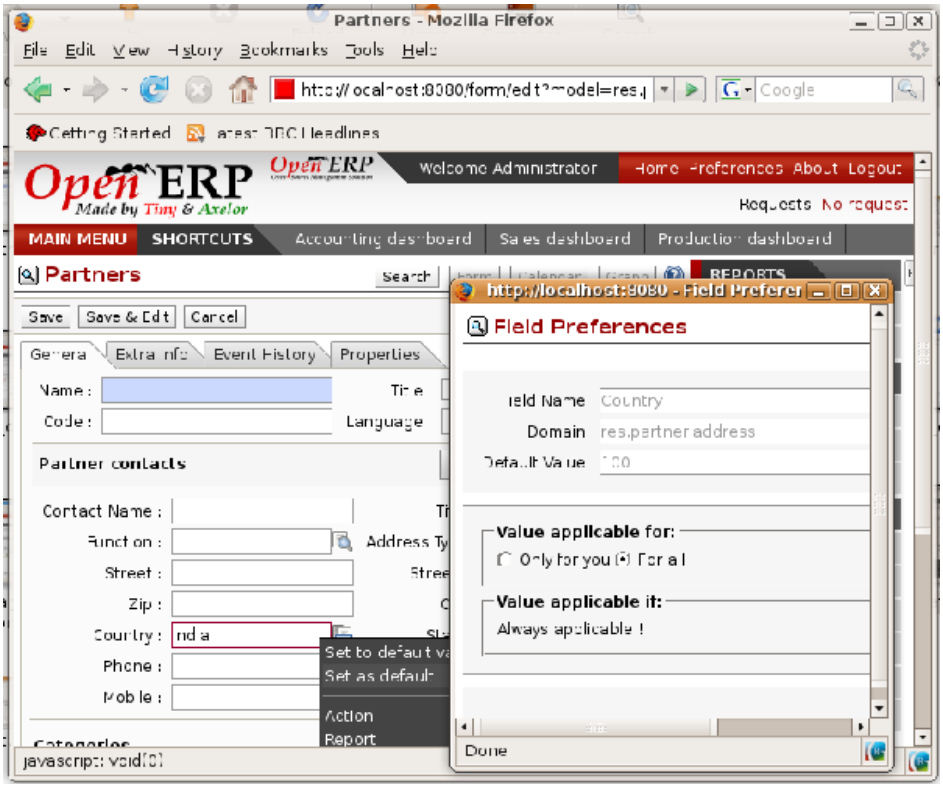


Figure 24.2: *Inserting a new default value*

To check this new configuration, open a new partner form: the field **Country** should now contain the entry `New Zealand`.

This is a very powerful feature! An administrator can use this functionality to redefine the behavior of your whole system. You can test that in database `openerp_ch13` by opening up a new **Purchase Order** form, clicking the second tab **Purchase Shippings**, selecting `From Picking` in the **Invoicing Control** field and then making that the default.

From that moment on, you'd automatically create draft purchase invoices only when goods are received, so you could very easily restrict your accountants from paying any invoices that turn up until you were sure you had received the goods. It wouldn't stop anyone from selecting another method of invoice control, but they'd start with the default definition.

24.2.4 Changing the terminology

You can use Open ERP's language translation functionality to substitute its standard terminology with terminology that fits your company better. It's quite straightforward to adapt the software with different terms specific to your industry. Moreover, this can strengthen acceptance of your new Open ERP system, because everybody will be able to retain their usual vocabulary.

You can do this one of two ways:

- translate them in a CSV file, which gives you a global overview of all of the system terms so that you can search and replace specific occurrences everywhere,
- translate the phrases directly in the client, which means that you can change them in their context, and that can be helpful to you while you're translating.

The same approach is used to translate terms that haven't been created yet. This can be useful, for example, with modules that haven't yet been translated into English or any other language that you want.

Translation through a CSV file

To translate or modify all of the system's phrases you first have to export a translation file in CSV form. And to do that, you have to install a language into Open ERP. To load a translation that already exists in Open ERP use *Administration → Translations → Load an Official Translation* choose a language and then click **Start Installation**.

Then export it using *Administration → Translations → Import/Export → Export a Translation file. Select the language, then the :guilabel:'CSV File* format, then one or more (or all) modules. Click **Get File** to start the download process, then click the small **Save** icon to save the file somewhere. A French translation would be named `fr_FR.csv` by default, but you can name it whatever you like.

Note: *UTF-8 format*
*The CSV file is encoded in the UTF-8 format. Make sure that you retain this format when you open the file in a spreadsheet program because if you **don't** retain it you risk seeing strange character strings in place of accented characters.*

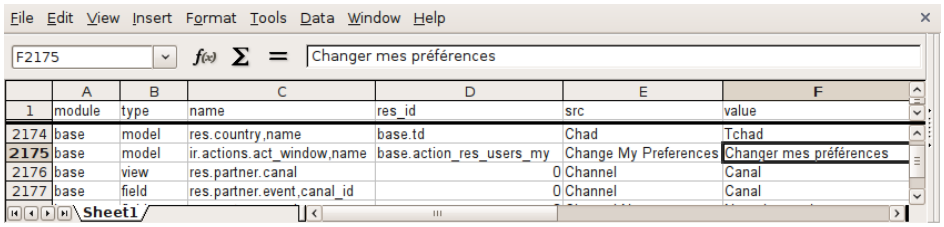


Figure 24.3: *CSV translation file with a translation in view*

The file contains six columns: **module** , **type** , **name**, **res_id**, **src**, and **value**. You have to ensure that the first line, which specifies these column names, remains untouched.

The **src** field contains the base text in English, and the **value** field contains a translation into another conventional language or into a specialist technical phrase. If there's nothing at all in the **value** field then the English translation will automatically be used on the the form you see.

Tip: *Where should you modify the text?*
*Most of the time, you will find the text that you want to modify in several lines of the CSV file. Which line should you modify? Refer to the two columns **type** (in column B) and **name** (in column C). Some lines have the name **ir.ui.menu** in the **name** column which shows that this is a menu entry. Others have **selection** in the **type** column, which indicates that you'd see this entry in a drop-down menu.*

You should then load the new file into your Open ERP system using the menu *Administration → Translations → Import/Export → Import a Translation file*. You've then got two ways forward:

- you can overwrite the previous translation by using the same name as before (so you could have a special 'standard French' translation by reusing the **Name** `Français` and **Code** `fr_FR`),
- you could create a new translation file which users can select in their **Preferences**.

If you're not connected to the translated language, click **Preferences**, select the language in **Language** and finally click **OK** to load the new language with its new terminology.

Tip: *Partial translations*
You can load a selection of the lines in a translation file by deleting most of the lines in the file and then loading back only the changed ones. Open ERP then changes only the uploaded lines and leaves the original ones alone.

Changes through the client interface

You can also change labels and other screen items on screen in the web client. To do that, open the form that you want to translate, then click the **Translate this resource.** icon to its top right. You then have the choice of translating:

- the data in the system (contained in the **Fields**),
- the field titles (the **Labels**),
- all of the **Action** buttons to the right of the form (the **Relates** option),
- the terms used in the form **View**.

You can modify any of these.

The procedure is slightly different using the GTK client. In this you just right-click on a label or button with the mouse. You can choose to translate the item itself or the whole view.

This method is simple and quick when you only have a few entries to modify, but it can become tiresome and you can lose a lot of time if you've got to change some terms across the whole system.

In that case it would be better to use the translation method that employs a CSV file.

Tip: *Tacking account of translations*
In the GTK client the modified terms aren't updated immediately. To see the effects of the modifications you must close the current window and then reopen the form.

24.3 User Login

Tip: *Managing Passwords*
If you let users change their passwords for themselves you'll have no direct control over the password they choose. You should have a written policy about password strength to try to maintain a level of security in your system.

Tip: *Managing users through LDAP*
With the `users_ldap` *module, user accounts can be managed through an LDAP directory that can be made common to various different company resources.*
Connection parameters for the LDAP directory are then registered with the company definition. You can provide a user profile template there from which new users are automatically created during their first connection to Open ERP.

Note: *LDAP*
The LDAP protocol (Lightweight Directory Access Protocol) enables you to manage common directories for various different resources through your standard TCP/IP network.
This enables users in the company to have the same username and password to access all their applications (such as email and intranet).

24.4 Managing access rights

One of the most important areas in configuring Open ERP is how to manage access rights to the information in it.

You're planning to put everything significant to your business into the system, but most of your staff need see only part of it, and may need to change even less of it. Who should have rights to what, and how do you manage that?

Open ERP's approach to rights management is highly flexible. Each user can belong to one or more groups, and the group(s) you belong to determine(s):

- the visibility of each menu item and
- the accessibility of each table in the database.

For example, the group `Stock`may only be given access to some of the menus in *Stock Management*, and may have no access to any of the accounting information. Each system user who works in Stores is given membership of the `Stock` group. If some users also work elsewhere, they'd also be given membership of other groups.

Open ERP users can also belong to various roles. Just as group gives a user access rights, each role determines the user's duties. This is managed at the level of workflows, which form the company's business processes.

24.5 Groups and Users

To configure access rights you'd start by defining the groups. It's important for the groups to be representative of your company's job functions rather than of its individual employees.

So if your finance director is also your sales director, you should create both a Finance Director group and a Sales Director group, even though they're both the same person, and would both be assigned to this user in practice. This gives you flexibility for the future.

You should also create groups within a departmental areas that have different levels of access rights. For example, if you create a `Sales Director`group and a `Sales` group avoid assigning exactly the same rights to each group. The first could see all the of reports, while the second could be restricted to seeing quotations. You could either make the `Sales Directo`a member of both groups, and give the Sales Director group a limited set of extra rights, or give the `Sales Director`group all the rights it needs for a Sales Director to belong only to this one group. You should choose the scheme that gives you most flexibility and then stick with it to maintain consistency.

Tip: *Flexibility in managing access*
To give yourself flexibility, you can ensure that a trusted staff member (perhaps a director or someone in accounts, or even the system administrator) is given wide rights to use the system, and is authorized by the management to carry out specific tasks for people.

24.5.1 Access rights for menus

To get a feel for rights management in Open ERP you'll create a new `Stock1` group, with access to the *Stock Management* menu items. You'll then create a stores person user who's a member of the `Stock1` group.

To create a new group, use the menu *Administration* → *Users* → *Groups*. Enter the group name Stock1.

Then to create a new user linked to this, use *Administration* → *Users* → *Users* to enter the following:

- **Name** : `Stores Person` ,
- **Username** : `stores` ,
- **Password** : `stores` ,
- **Company** : `<your company>` ,
- **Action** : `Menu` ,
- **Menu Action** : `Menu` .

In the second tab of the user form, **Security** , add the `Stock1` group that you just created.

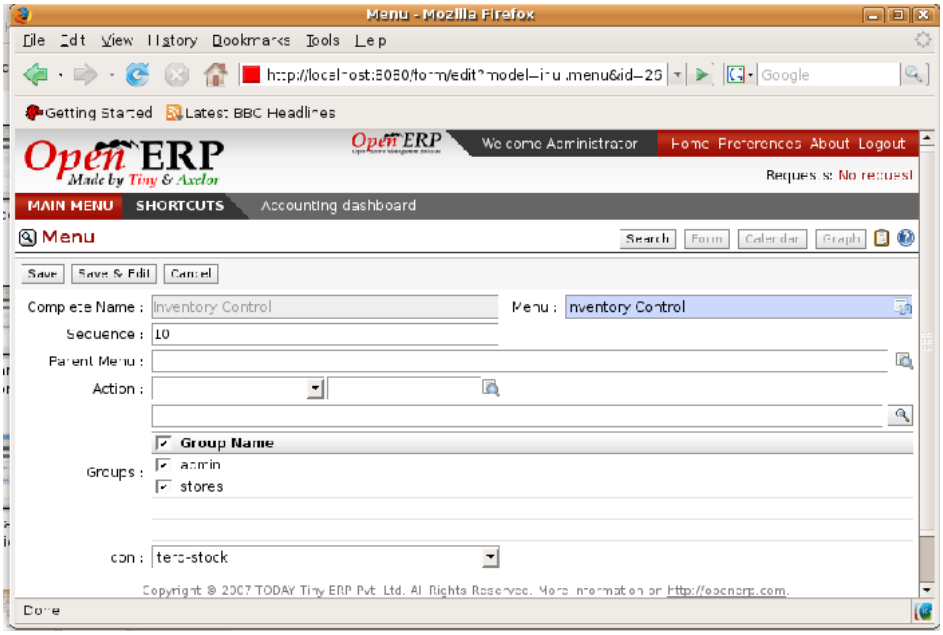


Figure 24.4: *Groups that have access to the Stock Management menu*

Save the user, then go into the menu *Administration → Security → Grant Access to Menus* to get a list of menus. Filter this list using the search field **Menu** to get the *Stock Management* menu item. In the form describing the menu, add `Stock1`into the **Groups** field. While you're at it, also add the `admin` group there. From now on, only members of the `Stock1` group and the `admin` group will be able to see this menu item in their main menu list.

Tip: *Menu hierarchy*
Since menus are hierarchical there is no need to hide access to lower menus: once you've configured Stock Management *this way, all lower-level menus become invisible to members of other groups.*

Tip: *Security*
This method of managing access to menus doesn't guarantee that users are prevented from reaching hidden business objects in the system in other ways. For example, hiding the Invoices menu won't prevent people reaching invoices through purchase and sales orders, or by guessing the URL.
For effective security management you must use the methods for managing access rights to objects presented in the following section.

Note: *Initial access configuration*
In the initial configuration, Open ERP's admin user, a member of the admin group, is given access to the Configuration menu in each section of the main menu. This is a general convention. For example, Partners → Configuration *is visible in the administrator's menu amongst the other Partner menu items, but only those other menu entries are visible to other users. Similarly, the main menu entry* Administration *is, by convention, visible only to users who are members of the admin group.*

24.5.2 Access Rights to Objects

The menu access rights determine who can access which menu, but doesn't define what you can do once you're in the menu.

Access controls on the objects give you the possibility of defining what your users have the right to do with your data when they get access to it. Access control of objects is structured the same way as access to menus.

Note: *Object*
An object represents a document in the system. Objects are linked to database tables and also have additional concepts, such as the functions of fields, inheritance from other objects, and class methods that give them behavior.

If no group is assigned to an object, all users can access it without any restriction of any sort. Conversely, when an access control is defined for an object, a user must be a member of a group owning appropriate access rights to have any sort of access to that object.

You must always ensure that you don't lock the `admin`group out of any objects that control administration and configuration options, such as the `ir.model.access` model.

You can manage four access modes on objects independently:

- **Read access** : members of the group can read the data in the object,
- **Create access** : members of the group can create a new record in the object,
- **Write access** : members of the group can modify the contents of records in the object,
- **Delete access** : members of the group can delete records from the object.

Figure 24.5: *Access control to invoices for the Finance/Admin group*

To configure access rights on a Open ERP objects, use the menu *Administration* → *Security* → *Access Controls* → *Access Controls List* and click **New** or choose one there and click **Edit**. You give a **Name** to the access control, select a **Group**, and the object (**Model**), then check the checkbox corresponding to each of the four **Access** modes.

If you don't specify any group in the access rules, the rule is applied to all groups. So to remove access to an object for all users you could create a rule:

- which is defined for a specific object,
- which is linked to no group,
- for which none of the four access options is checked.

You can then create additional rules on the same object to give specific rights to certain groups.

24.5.3 Modification history

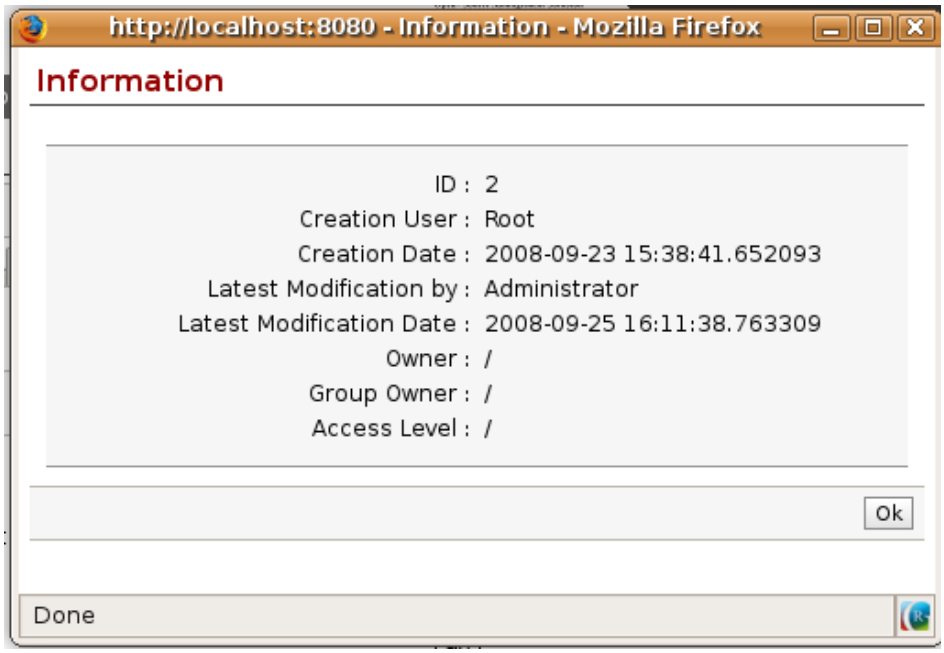


Figure 24.6: *Partner Record history*

Each record in a Open ERP database carries a note of its history. You can find out who it was created by and when that occurred, and who last modified it and when that occurred. Click the **View Log** icon at the top right of any form in the web client (but only when it's read- only, not when it's editable) to display a dialog box showing this information, as shown in the figure *Workflow for order SO005*. It can help you identify who to contact if there are any problems with the data in the records.

Tip: *Audit Trail*
Open ERP has an Audit Trail module `audittrail` *which can be used to track any or all of the changes to one or more objects. It should be used with care, because it can generate huge amounts of data in the live database, but can be an invaluable tool.*

24.6 Configuring workflows and processes

Workflows represent the company's different document flows. They're completely configurable and define the path that any individual Open ERP object (such as an order) must follow depending on the conditions (for example an order over a certain value must be approved by a sales director, otherwise by any sales person, before the delivery can be triggered).

The figure *Workflow for order SO005* shows the standard workflow for an order. You can show it from the GTK client starting with *Sales Management → Sales Order → All Sales Order*. Select an order, then go to the top menu *Plugins → Execute a plugin → Print Workflow* to show the menu below.

In the web client you can reach a workflow from the associated cross-company process (the process itself is reached by going to the sales document and then clicking the **Process** button above it), Chapter *Process* provides all of the information needed to create and modify technical workflows and cross-company processes.

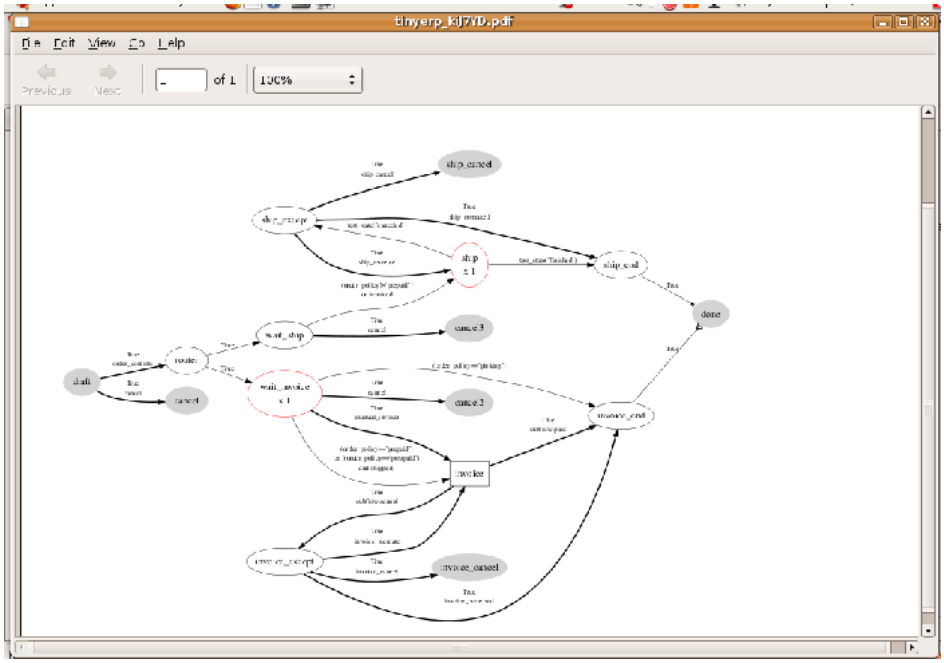


Figure 24.7: *Workflow for order SO005*

24.6.1 Assigning roles

Users can be linked to several roles specifying their duties in certain phases of different workflows accompanying the various documents. For example, if a user has taken the role of services manager he takes on the task of approving holiday requests from his staff. So his role will be integrated in the holiday request workflow.

Role definition is done in *Administration* → *Users* → *Roles Structure* → *Roles*, the same way you define groups, except that roles can be hierarchical: a parent role has the same influence as all of its child roles (for example, the sales director would be able to do all of the things that have been defined for a sales person, as well as anything defined specifically for the sales director group, if the sales director has been made a parent of the sales group).

Once the roles have been defined, you can add them into the workflow transitions using the **Role** field. This means that users who have the required role can make the transitions in the workflow, which enable them to pass from one activity to another (for example confirming an order or an invoice).

24.7 Configuring reports

Open ERP has two distinct report types:

- Statistical reports: these are calculated data, often represented in the form of lists or graphs. These reports are dynamic and you can navigate through the data that comprise the figures through the client interface.
- Report documents: they're used to print system documents. The result is usually a PDF generated by a selection made on the screen. Furthermore, Open ERP enables you to open these reports in OpenOffice.org to edit in any changes you want before sending them to your customer.

Because of the power of the Open ERP engine, these two types of report can be created or modified without needing any development and this can be done directly in the client interface of Open ERP or from OpenOffice.org.

24.7.1 Managing statistical reports

Many reports are configured in advance in Open ERP. You can find them in the *Reporting* submenus under each main menu entry.

You can also install more new reports using various different modules whose name usually starts with `report_` .

Modeling a new report

Open ERP gives you the possibility of developing your own analyses to meet your specific needs. To define a new analysis of the system's data you should install the module `base_report_creator` . This enables you to create complex queries on the database, in a simple and visual way.

Once the module is installed, create a new report using the menu *Dashboards* → *Configuration* → *Custom Reports*.

Give a **Report Name** to your new report and select the objects that you're going to analyze. For example, select the three following objects: **Partner**, **Sale Order**, **Sale Order line**.

Then turn to the second tab **View parameters** to select the views that you want in your report. Select `Tree` in the **First View** and `Graph` in the **Second View**. You can choose the type of graph displayed using the **Graph View** fields. You could also select `Calendar` as a view if you were going to add the **Date** field in your report.

Tip: *The MS Excel plug-in*
The Microsoft Excel plug-in enables you to connect to Open ERP and automatically extract the selected data. You can then apply formulas and graphs to make your own dashboards of measures directly in Excel. The .xls file can be saved and, when it is reopened, it reconnects to Open ERP to refresh the different lists and graphs with live data.

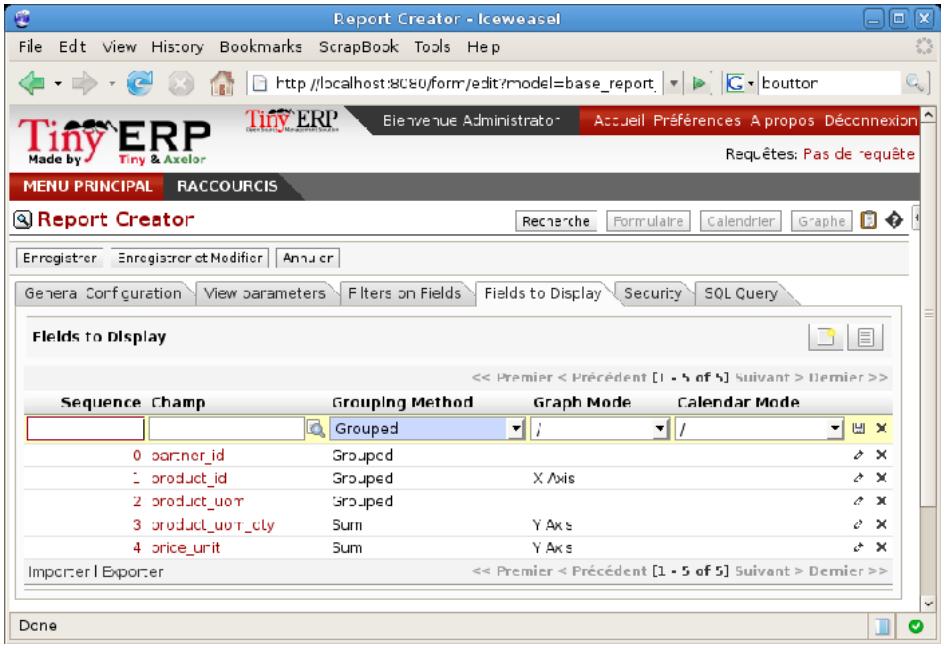


Figure 24.8: *Fields selected for the analysis of sales by customer and by product (plugin_excel.png)*

In the third tab **Fields to Display** you can add filters on all the fields of the selected objects (**Filters on Fields**). To do that, use the button **Add Filter** at the top of the form. For the moment, don't add a filter.

In the fourth tab you must indicate which of the fields in the list you want to be shown in your report (**Fields to Display**). Complete the screen along the lines of the figure below.

1. The **Sequence** field gives the order of the fields displayed.

2. **Field** the second column enables you to select a field from any of the three objects you selected in the first tab.
3. **Grouping Method** the third column lets you to determine the grouping operation that is to be applied to this field:
   - **Grouped** [enables you to group document entries with the same value in this] field.
   - **Sum** : gives the sum of values in this field.
   - **Minimum** : gives the minimum of all the values that appear in this field.
   - **Maximum** : gives the maximum of all the values that appear in this field.
   - **Average** : gives the arithmetic average of all the values in this field.
4. **Graph Mode** the fourth column, determines if the field will appear in the graph view and, if so, on which axis (X or Y).
5. **Calendar Mode** the fifth column, enables you to specify if the field can be the basis of a calendar view.

You can now **Save** the report you defined. Click on the **Open Report** button to the right of the form to get the requested analysis.

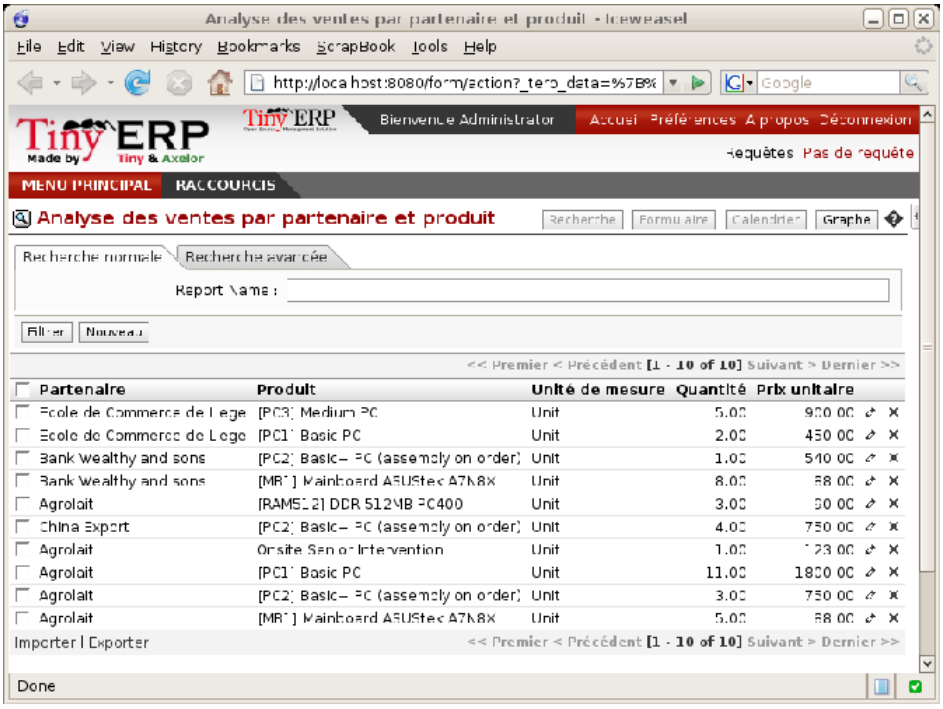


Figure 24.9: *Analyzing sales by partner and by product in list view*

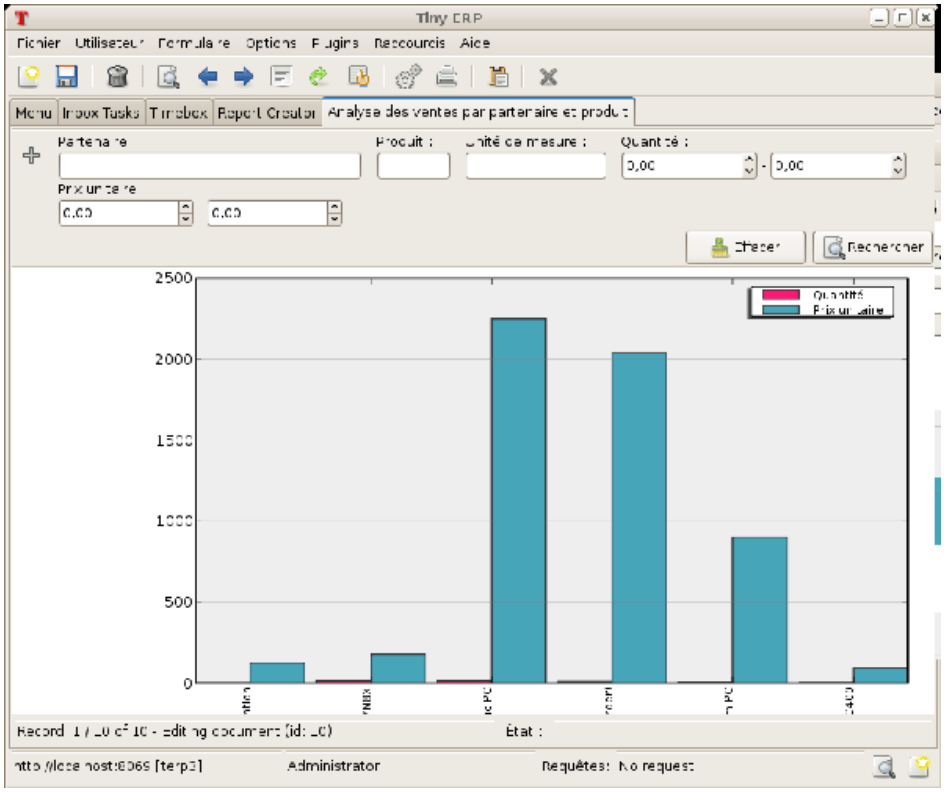


Figure 24.10: *Analyzing sales by partner and by product in graph view*

Configuring the dashboards

A dashboard is a selection of reports previously defined in Open ERP. You can choose from hundreds of predefined reports and, for each report, indicate its position on the dashboard.

Just like fields on reports, the **Sequence** field determines the order in which views appear in the dashboard.

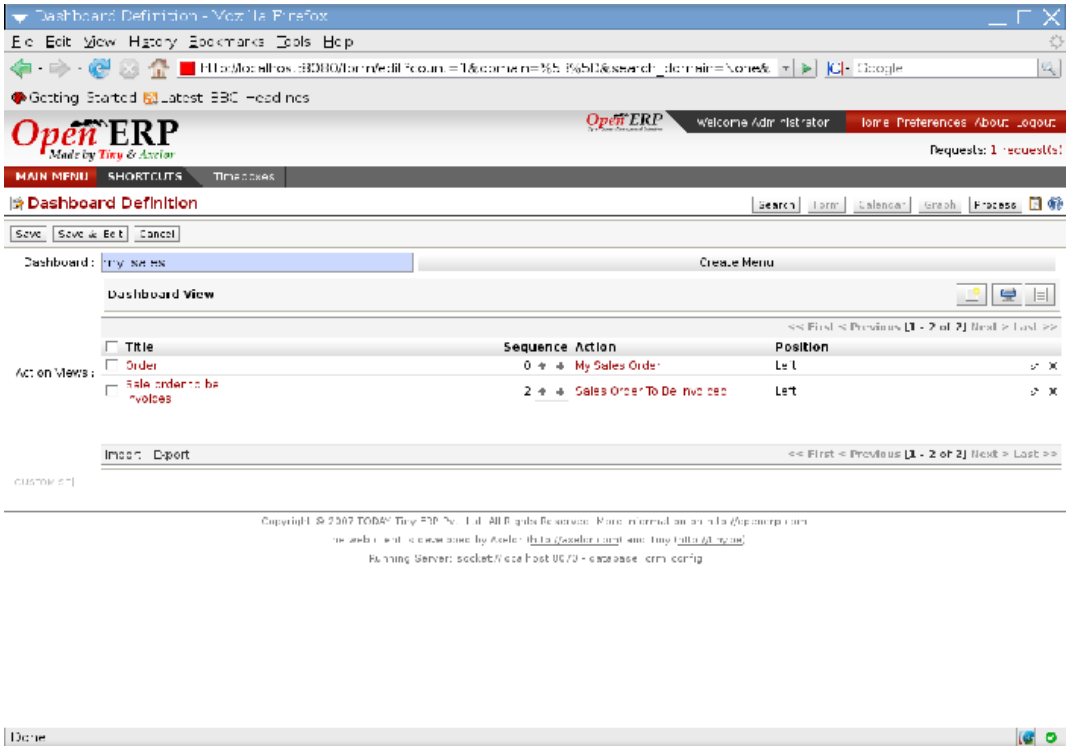


Figure 24.11: *Definition of a new dashboard*

Once the dashboard has been defined through the menu *Dashboards → Configuration → Dashboard definition* you can use the **Create Menu** button to create a menu entry for your dashboard anywhere in the menu system.

24.7.2 Managing document templates with OpenOffice.org

To configure your printable documents in Open ERP, use the module `base_report_designer`.

Tip: *The OpenOffice.org Writer plug-in*
You can create your own reports in just a few minutes using the OpenOffice.org Writer plug-in. This tool can give your team a big productivity improvement. Using it, you can create templates for all of your company's documents, reducing the work of creating and laying out data and customer documents.

The system is both simple and powerful, because it gives you the benefits of all of the layout facilities offered by OpenOffice.org Writer as well as all of the data and calculation provided by Open ERP. You could create or modify reports directly from OpenOffice.org and then use them in Open ERP.

Note: *Independence from OpenOffice.org*
OpenOffice.org is only used to generate new document templates. The system administrator is the only person who has to install it.
Once the document templates have been defined the users don't need it to carry out their normal work. They can use either Microsoft Office or OpenOffice.org as they choose.

The OpenOffice.org plug-in enables you to search for fields in Open ERP and integrate them into your document templates. You can use data loops in tables or sections, enabling you to attach several lines to an order, for example.

Once the new report has been defined it appears directly in the Open ERP client for the system users.

There are two modes of using reports:

- make the report produce a PDF document with data in it reflecting the selected record (for example, an invoice).
- make the report open a document for modification in OpenOffice.org, with data in it reflecting the selected record. This enables you to modify the document in OpenOffice.org before sending it to the customer (such as with a Quotation).

The personalized reports are stored in the Open ERP database and are accessible to everyone who has rights to use your database without any need for the installation of OpenOffice.org on their own computers. The document modifications are applied to a single database.

Installing the OpenOffice.org module

You should install two components before using the report editor:

- the module `base_report_designer` – first in your Open ERP installation if it's not already there, and then in the Open ERP database, you want to use it in.
- the OpenOffice.org Report Designer in the OpenOffice.org installation on your system administrator's computer.

You start by installing the module `base_report_designer` just like all the other Open ERP modules.

To install the OpenOffice.org extension, look for the file `openerpreport.zip` supplied with the *Report Designer* distribution. Check that OpenOffice.org is properly installed on your computer and that you have administration rights for installation.

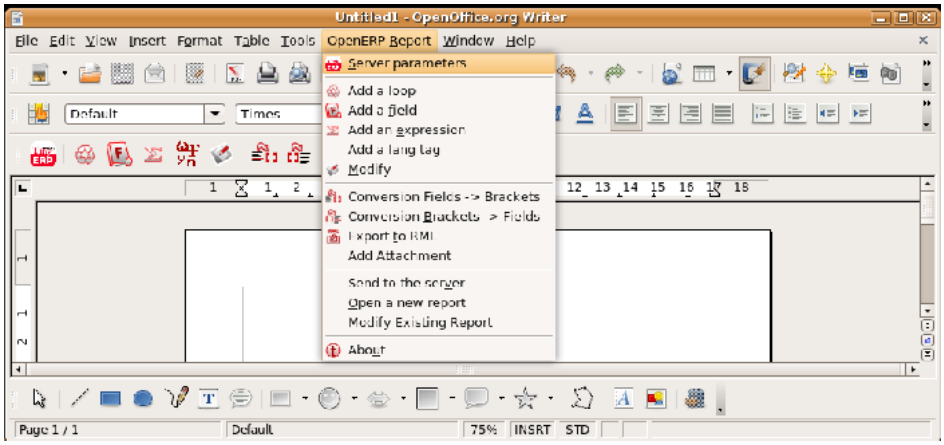


Figure 24.12: *Menu Open ERP Report in OpenOffice.org Writer*

Start OpenOffice.org Writer, select *Tools → Package Management...* to open the Package Management dialog box and then search for the `openerpreport.zip` file to install it. Then close the application and restart Writer: a new menu appears in the top menu bar – **Tiny Report** or **Open ERP Report**.

Connecting OpenOffice.org to Open ERP

Select *OpenERP Report → Server parameters* in the top menu of OpenOffice.org Writer. You can then enter your connection parameters to the Open ERP server. You must select a database `demo_min` in which you've already installed the module `sale`. A message appears if you've made a successful connection.

Modifying a report

The report editor lets you:

- modify existing reports which will then replace the originals in your Open ERP database,
- create new reports for the selected object.

To modify an existing report, select *OpenERP Report → Modify Existing Report*. Choose the report:menuselection:*Request for Quotation* in the **Modify Existing Report** dialog box and then click **Save to Temp Directory**.

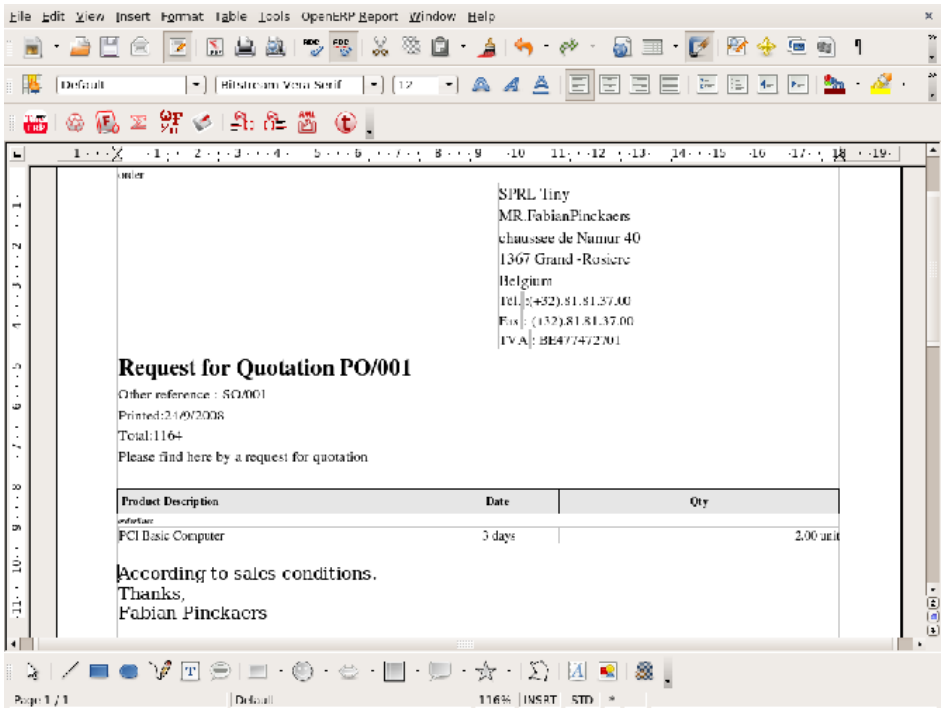


Figure 24.13: *Modifying a document template*

OpenOffice.org then opens the report in edit mode for you. You can modify it using the standard word processing functions of OpenOffice.org Writer.

The document is modified in its English version. It will be translated as usual by Open ERP's translation system when you use it through the client interface, if you've configured your own setup to translate to another language for you. So you only need to modify the template once, even if your system uses other languages – but you'll need to add translations as described earlier in this chapter if you add fields or change the content of the existing ones.

Tip: *Older reports*
The older reports may not all have been converted into the new form supported by Open ERP. Data expressions in the old format are shown within double brackets and not in OpenOffice.org fields.
You can transform an old report format to the new format from the OpenOffice.org menu OpenERP Report → Convert Bracket–Fields.

From the Open ERP toolbar in OpenOffice.org it's possible to:

- connect to the Open ERP server: by supplying the connection parameters.
- add a loop: select a related field amongst the available fields from the proposed object, for example `Order lines` . When it's printed this loop will be run for each line of the order. The loop can be put into a table (the lines will then be repeated) or into an OpenOffice.org section.
- add a field: you can then go through the whole Open ERP database from the selected object and then a particular field.

- add an expression: enter an expression in the Python language to calculate values from any fields in the selected object.

Tip: *Python Expressions*
Using the Expression button you can enter expressions in the Python language. These expressions can use all of the object's fields for their calculations.
For example if you make a report on an order you can use the following expression:
*'%.2f' % (amount_total * 0.9,)*
In this example, amount_total is a field from the order object. The result will be 90% of the total of the order, formatted to two decimal places.

You can check the result in Open ERP using the menu *Sales Management → Sales Orders → All Orders*.

Creating a new report

The general template is made up of loops (such as the list of selected orders) and fields from the object, which can also be looped. Format them to your requirements then save the template.

The existing report templates make up a rich source of examples. You can start by adding the loops and several fields to create a minimal template.

When the report has been created, send it to the server by clicking *OpenERP Report → Send to server*, which brings up the **Send to server** dialog box. Enter the **Technical Name** of `sale.order` , to make it appear beside the other sales order reports. Rename the template as `Sale Order New` in **Report Name**, check the checkbox **Corporate Header** and finally click **Send Report to Server**.

To send it to the server, you can specify if you prefer Open ERP to produce a PDF when the user prints the document, or if Open ERP should open the document for editing in OpenOffice.org Writer before printing. To do that choose `PDF` or `SXW` (a format of OpenOffice.org documents) in the field **Select Report Type**.

24.7.3 Creating common headers for reports

When saving new reports and reports that you've modified, you're given the option to select a header. This header is a template that creates a standard page header and footer containing data that's defined in each database.

The header is available to all users of the Open ERP server. Its template can be found on the file system of the server in the directory `addons/custom` and is common to all the users of the server. Although reports attach information about the company that's printing them you can replace various names in the template with values from the database, but the layout of the page will stay common to all databases on the server.

If your company has its own server, or a hosted server, you can customize this template. To add the company's logo you must login to the Open ERP server as a user who's allowed to edit server files. Then go to the `addons/custom` directory, copy your logo across (in a standard graphical file format), then edit the file `corporate_rml_header.rml` in a text editor. Text in the form `<image file="corporate_logo.png" x="1cm" y="27.4cm" width="6cm"/>` should be put after the line `<!-logo->` to pick up and display your logo on each page that uses the corporate header.

24.8 Importing and exporting data

Every form in Open ERP has a standard mechanism for importing data from a CSV file through the client user interface. That's the same format as used in the language translations.

Note: *Forms and Lists*
You have access to the Import and Export functions in the web client on a single form view in read- only mode – you can't reach Import or Export in any other view or when the form is editable. If you're using the GTK client you can find the functions from the top menu Form → Import... *and* Form → Export....

The CSV file format is a text format compatible with most spreadsheet programs (such as OpenOffice Calc and Microsoft Excel) and is easily editable as a worksheet. The first line contains the name of the field in the form. All the subsequent lines are data, aligned in their respective columns.

24.8.1 Exporting Open ERP data to CSV

Start exploring Open ERP's use of the CSV format by exporting a modestly complex set of data, the partners and partner addresses in the demonstration data.

Go to *Partners → Partners* for the list of partners and then scroll to the bottom of the list to click the **Export** link. This pops up the **Export Data** dialog box. Select the following fields:

- **Name**,
- **Contact Name** under the **Contacts** menu,
- **City** under the **Contacts** menu.

You can either select and add them one at a time, or `Ctrl-click` them and add the multiple selection - the order in which you select them is the order in which they'll be displayed.

Then click **Export** and save the resulting `data.csv` file somewhere accessible - perhaps your Desktop. You can open that file in a spreadsheet program or a text editor.

You'll see that you have a list of partners, with the name and city of each partner's contacts alongside. In the couple of cases where there is more than one address, the partner name is left out. So it is important to note that the order of entries is critical - do not sort that list!

Tip: *List limits*
There is a limit to the number of items you can export in the clients - it's the number you can actually see and that is limited to a maximum of 100 in the web client, but is arbitrary in the GTK client.
So if you want to export everything, use the GTK client. Set the export limit to an arbitrarily large figure (using the **+** *button to expose the* ***Parameters*** *and* ***Limit*** *fields), then click* Form → Export data...*, set up the fields to export, and then prepare to wait.*

24.8.2 Importing CSV data to Open ERP

Use this export file as a template for an import file by deleting all of the data and using new data (here you'll just import new data alongside the demonstration data, but the principle is the same for a blank database).

For example, to import partners with several contacts for which you specify a name and a city, you would create the following CSV file from the export file:

Table 24.1: Example of importing partner address fields

Name	Contacts/Contact Name	Contacts/City
Whole Globe Technologies	Graham Global	Athens
	Wanda World	Rome
	Emerson Earth	New York
Miles A Minute		

From the list of partners, click the **Import** button and then in the **Import Data** window click **Open** to search for and import the new `data.csv` file. The web client automatically matches column names but the GTK client requires that you click the **Auto detect** button.

You'll get a dialog box showing that you have imported 2 objects, and you can see the new partners and partner addresses when you refresh the list on screen.

24.8.3 The CSV format for complex database structures

When you import data you have to overcome the problem of representing a database structure in `.csv` flat files. To do this, two solutions are possible in Open ERP:

- importing a CSV file that's been structured in a particular way to enable you to load several different database tables from a single file (such as partners and partner contacts in one CSV file, as you have just done above),
- importing several CSV files, each corresponding to a specific database table, that have explicit links between the tables.

Note: *Server-side importing*
You can also import CSV data in through the server interface. The file format is the same, but column headings differ slightly. When importing through the user interface it checks that the column heading names match the names seen in the forms on the user interface itself. In contrast, when importing through the server the column heading names must match the internal names of the fields.

Start by building the header of the CSV file. Open the import tool on the object that you're interested in and select the fields that you want to import into your Open ERP database. You must include every field that's colored in blue because those fields are required (unless you know that they get filled by default with an appropriate value), and also any other field that's important to you.

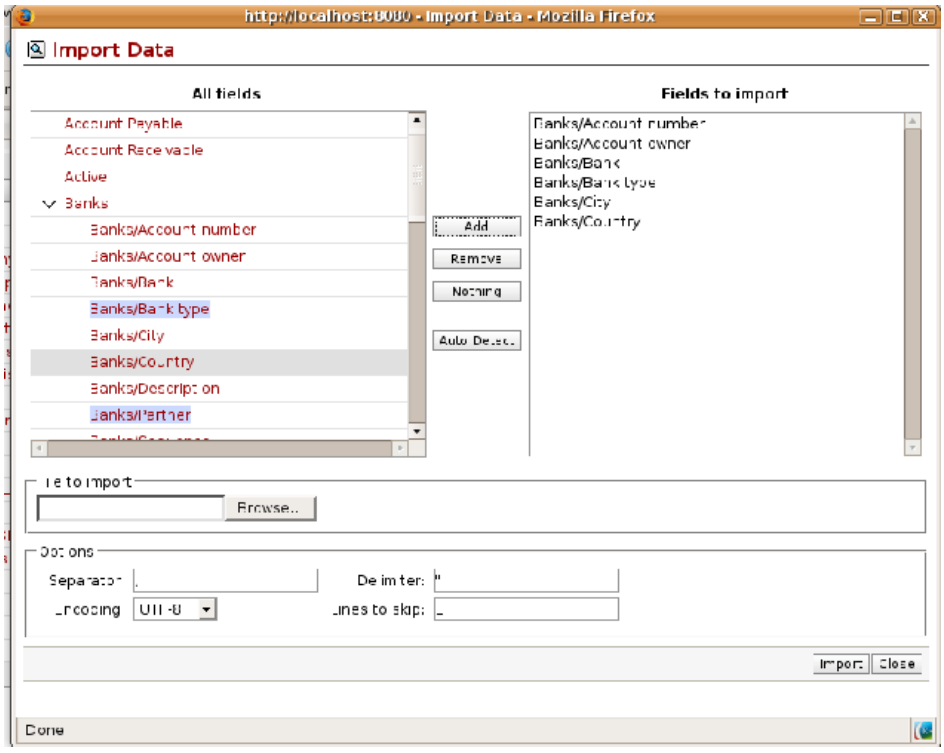


Figure 24.14: *Selecting fields to import using a CSV file*

Use the field names as the column names in the first line of your CSV file, adding one field per column. If your CSV file has these names in the first line then when you import your CSV file, Open ERP will automatically match the column name to the field name of the table. When you've created your CSV file you'll do that by clicking the **Nothing** button to clear the **Fields to Import**, then select your CSV file by browsing for a **File to import**, and then clicking the **Auto Detect** button.

To import CSV data that matches your database structure, you should distinguish between the following types of field in the Open ERP interface: *many-to-many* fields (between multiple sources and destinations), *many-to-one* fields (from multiple sources to a single destination), and *one-to- many* fields (from a single origin to multiple destinations).

Note: *Foreground table*
Each of these types is described in relation to a foreground table – the table whose entry form you're viewing and whose entries would be updated by a simple CSV file.
Just because one of these relation fields appears on the foreground table, does not mean that there is an inverse field on the related table – but there may be.
So there is no *one-to-many field in the User form to reflect the many-to-one* ***user_id*** *Salesman field in the Partner form, but there* is *a many-to-one* ***partner_id*** *Partner field in the Partner contact form to reflect the one-to-many* ***child_ids*** *Partner contacts field in the Partner form.*

Have a look at the screenshots below to see the differences.

Figure 24.15: *A many-to-one field: a salesperson linked to a partner*

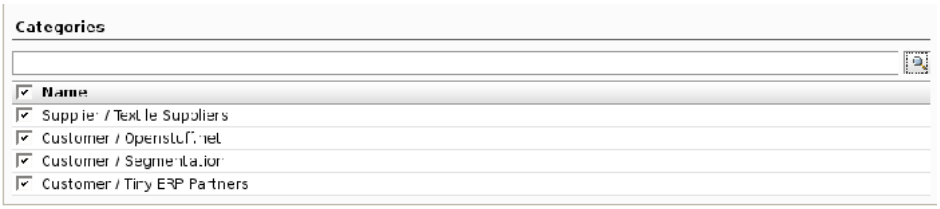


Figure 24.16: *A many-to-many field: partner categories*

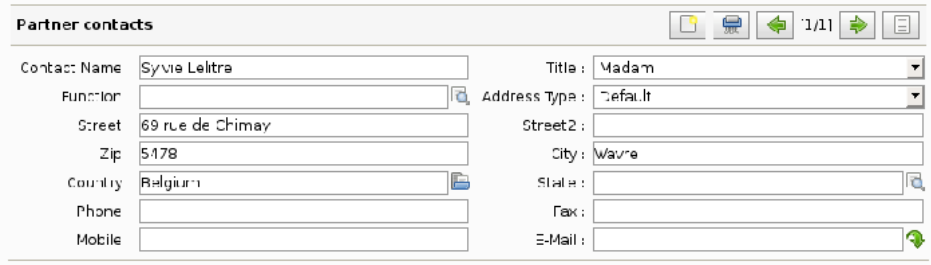


Figure 24.17: *A one-to-many field: partner contacts*

All of the other fields are coded in the CSV file as just one text string in each column.

Many-to-one fields

Many-to-one fields represent a relationship between the foreground table and another table in the database where the foreground table has a single entry for the other table. Open ERP tries to link the new record in the foreground table with the field in the other table by matching the field values.

Tip: *Field identifiers*
If you're working on the server side you can use identifiers rather than the names of resources to link tables. To do this you import the first file (for example, Products) with a column named ***id*** *in your CSV file that contains a unique identifier for each product. This could be an incrementing number.*
When you import other files which link to the first table, you can use the identifier in preference to the names (so, for example, when you're saving inventory you can use `product:id` *instead of the product name). You then don't need any complex conversion to create links between the two tables.*
This considerably simplifies the importation of another database into Open ERP. You just create a linking `id` *column for each table that you're importing that contains the identifier used in the first table.*

Many-to-many fields

Many-to-many fields are handled just like many-to-one fields in trying to recreate the relationship between tables: either by searching for names or by using identifiers.

There are several possible values in a single many-to-many field. Therefore a partner can be given several associated categories. You must separate the different values with a comma.

One-to-many fields

One-to-many fields are a bit different. Take as an example the **Partner Contacts** field in the Partner form, which contains all of the linked contacts.

To import such a field you don't have to link to an existing entry in another table, but can instead create and link to several partner contacts using the same file. You can then specify several values for different fields linked to that object by the one-to-many field. Each field must be put in a column of the table, and the title of that column must be expressed in the form `field_one-to- many/field_linked-object` . The partner data you imported earlier took that form.

Note: *Symmetry in relation fields*
Depending on the structure of your data it can be easier to use the one-to-many form or the many- to-one form in relating two tables, so long as the relevant fields exist on both ends of the relationship.
For example, you can:

- *import one partner with different contact in a single file (one-to-many),*
- *import the partners first, and then contacts with the field linking to the partner in a many-to- one form).*

24.8.4 Another example of a CSV import file

To illustrate data importing, you can see another example below. First import partner categories, and then import some partners and their contacts along with links to the categories just created. Although you can create new contacts at the same time as creating partners (because you can do this for *one-to-many* relations), you can't create new categories this way (because they use *many-to-many* relations). You must create new categories in a separate step.

Partner categories

Start by creating partner categories in a CSV file:

1. Create the following table in your spreadsheet program:

Table 24.2: Partner categories file

	Column A	Column B
Line 1	Category Name	Parent Category
Line 2	Quality	
Line 3	Gold	Quality
Line 4	Silver	Quality
Line 5	Bronze	Quality

On the first line, **Category Name** and **Parent Category** are the column titles that correspond to field names in the **Partner category** form.

Column A is for the different partner categories and **Column B** indicates if that category has a parent category. If **Column B** is blank then the category sits at the top level.

2. Save spreadsheet file in CSV format – separated by commas – and name the file `categories.csv`.
3. In Open ERP, select *Partners* → *Configuration* → *Categories* → *Edit Categories*.
4. Click **Import** (to the bottom left of the list) to bring up the **Import Data** dialog box, in which you'll find the ist of fields that can be imported.
5. Click **Browse...** on the **File to import** field and select the CSV file you just created, `categories.csv` Then click **Auto Detect** to atch the column names in the CSV file with the field names available in:guilabel:*Partner Categories*.
6. Click **Import** at the bottom-right of the dialog box to load your data. You should get the message `4 objects imported` in a new dialog box. Close both this and the **Import Data** dialog box to return to the original page.
7. Click *Partners* → *Partners by category* to view the tree of categories, including the new `Quality` branch that you loaded.

New partners

Here's how to create new partners with more than one contact, as you did before, and how to link them to these new categories:

1. Enter the table below into your spreadsheet program.

Table 24.3: Partner data file - partners.csv

	Column A	Column B	Column C	Column D
Line 1	Name	Categories	Contacts/Contact Name	Dedicated Salesman
Line 2	Black Advertising	Silver,Gold	George Black	Administrator
Line 3			Jean Green	
Line 4	Tiny sprl		Fabien Pinckaers	Administrator

2. The second line corresponds to the creation of a new partner, with two existing categories, that has two contacts and is linked to a salesman.
3. Save the file using the name `partners.csv`
4. In OpenERP, select *Partners* → *Partners* then import the file that you've just saved. You'll get a message confirming that you've imported and saved the data.
5. Verify that you've imported the data. A new partner should have appeared (`NoirAdvertising`), with a salesman (`Administrator`), two contacts (`George Black` and `Jean Green`) and two categories (`Silver` and `Gold`).

24.8.5 Exporting data in other forms

Open ERP's generic export mechanism lets you easily export any of your data to any location on your system. You're not restricted to what you can export, although you can restrict who can export that data using the rights management facilities discussed above.

You can use this to export your data into spreadsheets or into other systems such as specialist accounts packages. The export format is usually in the CSV format but you can also connect directly to Microsoft Excel using Microsoft's COM mechanism.

Tip: *Access to the database*
Developers can also use other techniques to automatically access the Open ERP database. The two most useful are:

- *using the XML-RPC web service,*
- *accessing the PostgreSQL database directly.*

Tip: *Module Recorder*
If you want to enter data into Open ERP manually, you should use the Module Recorder, described in the first section of this chapter.
By doing that you'll generate a module that can easily be reused in different databases. Then if there are problems with a database you'll be able to reinstall the data module you generated with all of the entries and modifications you made for this system.

CHAPTER

TWENTYFIVE

IMPLEMENTATION METHODOLOGY

You may have mastered the technical aspects of administering and using your enterprise management system, but you still have a great deal of work to do integrating Open ERP into your company. This work is more business-related and social in nature than technical.

The Open ERP implementation process encompasses several different phases: evaluation, planning, configuration, data migration, deployment, and user training, and affects both support and maintenance.

The management of ERP projects, and IT project management in general, are the subject of very many other books that you might want to investigate for yourself. The elements of the methodology presented here aren't intended to be an exhaustive review, just a brief overview of the different phases necessary to implement Open ERP in your company

Tip: *Implementation*
Implementation encompasses the whole process of integrating and deploying Open ERP, including evaluating it, establishing specifications, planning the deployment, the configuration of the software, loading data, installation and training the users. It doesn't generally extend to software customization, nor support and maintenance.

25.1 Requirements Analysis and Planning

Requirements analysis and planning are the keys to the success of an implementation. At this stage you should set up a management team to define the costs and benefits of the project, select a project team, and set out the detailed stages that will have to be carried out.

Open ERP is so easy to start using that it's not always obvious, particularly to IT staff, that a clear requirements plan is necessary for implementing the system successfully. The difficulty isn't particularly in installing the software nor in configuring it, but rather more about:

- knowing what to configure,
- deciding if you should adapt the software or perhaps change your method of working, for some of your specialized processes,
- forming teams that can specify and work on some of the changes,
- ensuring that your users are committed to the change.

ERP system implementation is a project carried out using information technology but it's a business project rather than an IT project in itself. The challenge of this type of project is in changing the behaviour of those involved at all levels of the enterprise.

People in the IT department will certainly be an integral part of the project but they should be managed by someone in a senior position who both understands the business impact across the organization and has experience of technical

projects. Ideally the project manager should know the company well, both its specific quirks and its different standard cross-company processes.

If the enterprise doesn't have its own IT group, you're probably better off opting for an SaaS offer. This means that you subcontract all the difficult technology, from the installation of the server to its maintenance, all the while being assured of the installation of a robust architecture with its redundancy, backed-up servers, and separation of authentication and data.

25.1.1 Planning methods

Planning methods vary in their degree of complexity, formality and level of automation. It's not the intention of this chapter to steer you towards one method or the other.

Open ERP's menus are organized to lead you through an implementation in a sensible order, so that information that has to be entered first is encountered first in the menu system. Forms are also organized so that if you enter data in the natural order you'll get later fields completed automatically by the earlier ones where possible. And demonstration data illustrates how Open ERP's functional areas are linked from one to the other

The menus themselves hint at several helpful implementation suggestions, for example the submenus of *Administration → Configuration* are useful for the configuration of the software. New functions such as the Module Recorder enable you to significantly accelerate the configuration of data.

25.2 Deployment

As you've seen the complete architecture of Open ERP includes the following elements:

- a database server,
- an Open ERP application server,
- an Open ERP client-web server,
- several clients that access the Open ERP server: they can either be web clients if the client-web server is installed, or GTK clients.

Note: *Deployment*
Deployment is the process of putting a Open ERP database into a production-ready state, where it can be used by everyone in your business for their daily work. You'd usually configure Open ERP and load data into it on one development system, train staff on that or another training system and deploy it onto a production system that has better protection against failure, better security and more performance.

25.2.1 Deployment Options

To deploy Open ERP in your company, several options are available to you:

- an SaaS (Software as a Service) or on Demand offer which includes the equipment, the hosting, the maintenance and the support on a system configured to your needs in advance,
- an internal installation, that you manage yourselves or have managed by an IT services company such as an Open ERP partner,
- hosting by a server supplier on which Open ERP is installed, which enables you to proceed to add adaptations on your server.

The first two approaches are the most commonly used.

The SaaS (Software as a Service) offer

SaaS is a complete package hosted at a supplier, that includes the following services: server hardware, hosting of the generic solution, installation and initial configuration, redundancy of the architecture, backups, system maintenance and support. It's also known as **On-Demand**.

It's provided in the form of a monthly subscription with a fixed price per user. You can find the detail of Tiny's SaaS packages at http://ondemand.openerp.com/.

SaaS packages don't permit you to develop specific modules to your needs. On the contrary, they offer a service at a set price based on standard software modules that contain few migration risks. SaaS suppliers are limited generally to the modules certified and validated by the original author and project manager, Tiny.

Here are the main advantages of an Open ERP SaaS solution:

- an unbeatable return on investment (cost of implementation: 0, cost of licenses: 0),
- costs that are controlled and without surprises (the offer includes maintenance, frequent migrations and support),
- a turnkey solution, installed in less than twenty-four hours,
- packages adapted and preconfigured for different sectors of activity,
- a very robust architecture guaranteed to have constant and permanent access, reachable from anywhere.

So this server is recommended for small companies with fewer than about fifteen employees.

Hosting by a supplier

At first sight a hosted Open ERP system appears similar to SaaS: it provides Open ERP from a remote installation through a web browser. But in general the similarities stop there.

To compare it with an SaaS package you should check if the hosting offer properly includes the following elements:

- server hardware,
- hosting,
- maintenance,
- future migrations,
- backups,
- server redundancy,
- telephone and email support,
- frequent updates to the modules.

Also get yourself up to speed on the following points:

- the version of Open ERP proposed,
- the costs of implementation (configuration, data loading, training),
- the cost of configuration (if it's proposed),
- the technology and the procedure used for securing your database,

- the technology and the procedure for preventing system faults,
- the technology and the procedure for restoring a faulty system,
- limitations on the number of users, the number of simultaneous users, and the size of the database,
- the level of support and its costs,
- the procedure used to update Open ERP (to fault-fixed versions)
- the procedure adopted for Open ERP upgrades (to versions that have both fault fixes and new functionality).

Calling such suppliers can be a good solution if you are willing to entrust all the technical specifications for the functioning of Open ERP to them, especially if you need to use customized or extension modules that aren't in the stable version released by Tiny.

Internal Installation

Large and medium-large companies typically install Open ERP using their own internal company resources. They usually prefer to have their own IT service in charge of maintenance.

Such companies can do the implementation work themselves internally, or turn to an Open ERP partner who will do the ERP implementation work or assist them with it. Generally companies prefer to adopt an intermediate solution which consists of:

1. Turn the initial implementation over to a partner to limit the risks and delays of integration. That enables them to be managed by experts and to obtain a high quality configuration.
2. Take charge of the simple needs for themselves once the software has been implemented. It's quite a lot more convenient for them to be able to modify the database tables, forms, templates and workflows internally than routinely depend on a supplier.

An internal installation will probably prove more costly than an SaaS package or hosted service. Even if you put yourself in charge of it all, you'll take quite a bit of time learning how to manage the implementation unless the team already has experience of Open ERP. This represents a significant risk.

However, an internal implementation can be particularly interesting where:

- you want to keep your data within your company,
- you think you want to modify your software,
- you want a specific package of modules,
- you'd like a very fast response time,
- you want the software to be available even if your Internet connection goes down.

These factors, and access to the resources needed to handle an implementation and the subsequent maintenance, are the reasons that large and medium-large companies usually do it for themselves, at least partly.

25.2.2 Deployment Procedure

The deployment of a version of Open ERP is quite simple when your server has been configured in your production environment. The security of the data will then be a key element.

When you've installed the server you should create at least two databases:

- a test or development database, in which the users can test the system and familiarize themselves with it,
- a production database which will be the one used by the company in daily use.

Note: *Version numbering*
Open ERP uses a version numbering model that comprises 3 numbers A.B.C (for example 4.2.2 or 5.0.0) where changes in the number A signify a major functional change, changes to number B signify an update that includes a batch of fault fixes and some new functionality, and the number C generally refers to some limited updates or fixes to the existing functionality.
The number B is special: if it's an odd number, (for example 4.3.2 or 5.1.0) it's for a development version which isn't designed for a production environment. The even numbers are for stable versions.

If you have prepared a data module for Open ERP (that is a module that consists just of data, not altered functionality), you should test it in your development version and check that it doesn't require any more manual adjustments. If the import runs correctly, it shows that you're ready to load your data in the production database.

You can use the Open ERP database backup procedure at different stages of configuration (see *Installation and Initial Setup*). Then if you've made a false step that you can't recover from you can always return to a prior state.

Since your data describes much of your company's value, take particular care both when you need to transfer it (in backups and across your network) and when you're managing the super-administrator password. Make sure that the connection between a PC client and the two servers is correctly secured. You can configure Open ERP to use the HTTPS protocol, which provides security for data transfer

Note: *HTTPS*
The HTTPS protocol (Secured Hyper Text Transfer Protocol) is the standard HTTP protocol secured by using the SSL (Secure Socket Layer) or TLS (Transport Layer Security) security protocols. It allows a user to verify her identify to the site to which she wants access, using a certificate of authentication. It also guarantees the integrity and confidentiality of the data sent between the user and the server. It can, optionally, provide highly secure client authentication by using a numbered certificate.
The default HTTPS port is 443.

You could also use the PostgreSQL database directly to backup and restore data on the server, depending on access rights and the availability of passwords for the serve.

25.3 User training

Two types of training are provided by the Tiny company and its partners:

- Technical training in Open ERP: the objective of this intensive training is to enable you to develop your own modules by modifying and adapting the existing ones. It covers the creation of new objects, menus, reports and workflows, and also of interfaces with external software. It lasts for five days and is designed for IT people
- User training: this enables you to be productive as rapidly as possible in the use of Open ERP. All of the modules there are detailed with concrete examples and different exercises. For the sake of realism the training uses data for a fictitious company. This training also lasts for five days. It is designed for those responsible for an ERP project, who will then be capable of training employees internally.

Tiny's training calendar is available on the official Open ERP site by clicking the menu *Services* → *Training*. The training is delivered in either French or English depending on the course.

Both Tiny, the creators of Open ERP, and the Open ERP partners can also provide customized training. This, although more expensive, is focused on your own needs.

Your training needs depend on the type of deployment you've chosen. If you have opted for an SaaS development, technical training isn't very useful.

In summary, you should arrange both user training and self-paced training (perhaps based on this book series) if you can. Technical training is strongly advised if you see yourselves developing your own modules. Although it's not obligatory it gives you quite a time advantage in any serious Open ERP engagement.

25.4 Support and maintenance

It's when you actually use your ERP that you will obtain value from your investment. For that reason maintenance and support are critical for your long term success.

- Support aims to ensure that end users get the maximum productivity from their use of Open ERP by responding to their questions on the use of the system. Support can be technical or functional.
- Maintenance aims to ensure that the system itself continues to function as required. It includes system upgrades, which give you access to the latest functionality available.

Some partners offer preventative maintenance. This makes sure that all the specific developments for your system are revised and tested for each new version so that they remain compatible with the base Open ERP.

Tiny themselves have changed their support strategy from time to time. At the time of writing they propose a maintenance contract supplied either direct to the end user or through partners that guarantees a quick fix to any faults discovered in the covered code. Although you can expect these fixes to become available to all users of the code in time, maintenance guarantees quick attention. And you're likely to get quicker migration support to new upgrades.

If you haven't anticipated your needs with a preventive maintenance contract, the costs of migration after a few years can become significant. If special modules that you developed have been allowed to become too old you may eventually need a new development to your specifications.

25.4.1 Updates and Upgrades

There are four sources of code change for Open ERP:

- patches supplied by Tiny to correct faults: after validation these patches shouldn't cause any secondary effects,
- minor updates, which gather the fault corrections together in one package, and are generally announced with a modification of the version number, such as from 5.0.0 to 5.0.1,
- upgrades, which bundle both the fault corrections and the improvements to the functionality in a major release such as from 5.0.3 to 5.2.0.
- new functions generally released in the form of new modules.

You should establish a procedure with your supplier to define how to respond to changes in the Open ERP code.

For simple updates your maintenance team will evaluate the patches to determine if they are beneficial to the use of your Open ERP. These patches should be tested on an offline instance of Open ERP before being installed in your live production version.

The maintenance team would also take charge of regular updates to the software.

Patches and updates can only be installed if you have the necessary access to the Open ERP server. You must first install the patch or update and then restart the server using the command line: `-update=all` .

Once Tiny has released a new upgraded version your response should be a cautious one. If you're perfectly satisfied with the existing system it would be best to not touch the new version. If you want to have access to the new functionality supplied by an upgraded version, you have a delicate operation to carry out. Most upgrades require your data to be migrated because the databases before and after the upgrade can be a little different.

25.4.2 Version Migration

Open ERP has a system to manage migrations semi-automatically. To update specific modules, or the whole database, you only need to start the server with the argument:`–update=NAME_OF_MODULE` or `–update=all`(that's minor module changes).

New stable versions of Open ERP sometimes require operations that aren't provided in the automated migration. Tiny, the creator and maintainer of Open ERP, has a policy of supporting migration from all official stable releases to the latest. Scripts are provided for each new release of a stable version. These carry out the upgrade from the previous major version to the new major version.

Managers responsible for the migration between two versions of Open ERP will find the documentation and the necessary scripts in the directory `doc/migrate` of the Open ERP server.

The changes between version 4 and 5 made the migration process more difficult than in the past so there was a greater delay in the provision of migration assistance and more manual work than usual.

The procedure for migrating runs like this:

1. Make a backup of the database from the old version of Open ERP
2. Stop the server running the old version
3. Start the script called `pre.py` for the versions you're moving between.
4. Start the new version of the server using the option `–update=all`
5. Stop the server running the new version.
6. Start the script called post.py for the versions you're moving between.
7. Start the new version of the server and test it.

A migration is never an easy process. It may be that your system doesn't function as it did before or that something requires new developments in the functionality of the modules that have already been installed. So you should only move to a new version if you have a real need and should engage a competent partner to help if the version that you use differs greatly from the basic version of Open ERP.

Similarly you should take care that this migration does not incorrectly change any setting that has already been made. The main menu structure might have been modified in place without proper recording of the changes. So you could find that you're making the wrong assumptions about that structure when later loading data in that was recorded with the Module Recorder.

Part X

Conclusion

Open ERP has become established as the main free market-changing alternative for enterprise management systems in amongst software from giants such as SAP, Oracle and Microsoft, and from the small software developers in their own niches.

Until now only two main alternatives existed for systems that manage a company's information: install a proprietary ERP system, complete but usually overweight, inflexible, and expensive; or develop a solution internally, adapted to current needs but often expensive to develop, not integrated, and incomplete.

With its free business model, Open ERP combines the advantages of a complete ERP system with the flexibility of an in-house solution. The open source code, the project's general flexibility, and its hundreds of modules let you construct a solution from a selection of the modules already available and you can then freely update it as your needs evolve.

The results will be at the top end of what you might expect from any ERP system, let alone an Open Source system. The considerable gains in productivity, efficiency and visibility become apparent only a few months after implementation. And you can gain from increased operational quality even if you reduce your human resourcing intensity. Because there are fewer repetitive tasks for your staff to do, they can concentrate on higher added-value work. We frequently receive the gratitude of senior management who get better results from their business because they've adopted Open ERP.

CHAPTER

TWENTYSIX

YOU AREN'T ALONE

Many resources are at hand to accompany you on your Open ERP adventure.

26.1 Bypass the technical difficulties by using the SaaS offer

For a quick low-cost start, you can make use of a month's comprehensive free trial of Tiny's Open ERP SaaS package found at http://ondemand.openobject.com/. Using this you sidestep any technical difficulties and get a comprehensive set of system administration services, server hosting, configuration to your environment, maintenance, support and initial training.

An SaaS package is suited to the needs of small enterprises that don't have very specific needs, and where the initial cost and the delay of implementation are critical factors.

To meet its objectives of minimal cost, the SaaS package aims for highly automated standardized data migrations, minimal support load by training customers well, and a strict limit to the number of modules offered. So you can't use your own modules, and are limited to the standard modules that are included in various package levels.

26.2 Consult the available resources

Larger companies often prefer a more classic implementation path. Even though Open ERP's simplicity makes this task easier than with other systems, you can't hide the fact that a project implementation is complex and introduces big changes to a company.

So you can turn towards some of the different actors in this free software ecosystem to help you out:

- the community of users and developers,
- Tiny's Open ERP partner companies,
- the main project developers, Tiny, themselves.

26.2.1 The community of users and developers

The community, supported by Tiny, hosts a set of communication tools which can help you in your Open ERP investigation.

- **The forum** http://openobject.com/forum

The forum enables you to discuss issues with other Open ERP users. It's very active and you have a good chance of receiving some form of response to your questions within twenty-four hours or so.

- **The wiki** http://openerp.org/wiki

The wiki contains a large amount of information about the software, some current and some historical. You'll find the documentation necessary for installation there, as well as user documentation, and a technical manual for developing your own modules.

- **Database of Open ERP modules** http://openerp.org/component/option,com_mtree/Itemid,111/

A database of all the modules available for use gives you free access to most of the known Open ERP extensions.

- **Launchpad** https://code.launchpad.net/~openerp/

The most recent communication tool is the launchpad system, which now hosts all of Open ERP's source code (using the *bzr* source code control system) and is used for reporting faults. It's become the central location for Open ERP technology.

26.2.2 Open ERP partners

If you need contract-backed guarantees for implementing and maintaining Open ERP you can contact an official Open ERP partner. Open ERP partners offer various services such as user training, prototype installations, and change management services. The complete list of partners by country and by type can be found on the official Open ERP site: http://openerp.com/partners.html.

26.2.3 The main developer, Tiny

Finally you can call the main project developers, Tiny, who can help you in your Open ERP project. Tiny offers various services such as free demonstration days for the software, user training and technical training, support contracts, maintenance contracts and developments as required. Depending on the demand, they can also put you in contact with partners most aligned to your requirements.

- **The mailing list** To keep up to date with all Open ERP's news you can subscribe to the mailing list using http://tiny.be/mailman/listinfo/tinyerp-announce.

To conclude, don't forget that Open ERP has more than two hundred modules available and that many of them haven't been covered in this book. So if you haven't found a solution to your problems here, look amongst those modules, talk to other Open ERP users on the forum, and don't hesitate to contact a partner.

Wishing you the greatest of success in your ERP project,

— Geoff Gardiner and Fabien Pinckaers.

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