3.4.3

INSTALLATION, CONFIGURATION AND MANAGEMENT OF CRM-CTT

http://www.crm-ctt.com

OCTOBER 9, 2006

BASED ON CRM-CTT VERSION 3.4.3

PREFACE

Since even the Linux Journal wrote an article about CRM-CTT, it becomes even more challenging to keep everybody happy with it. Over the last two years I've received many thousands reactions, feature requests, and bug reports. Some questions considered functionality buried so deep down in the "basement" that I too had to check what it was and how it worked again. Very nice to see that people are really using the product to the maximum of its extend. One reaction I remember very well was about the customer overview page: "I've imported around 5000 customers into CRM-CTT and the customers page becomes a little hard to work with. Can you improve this?". When I designed CRM-CTT, and we first started to use it, we had around 25 customers registered in it. :)

Regards,

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DONATIONS

If you, or even better, your company, is using CRM-CTT and is enjoying it, please consider donating. As far as we can see, businesses all over the world (records from Western Europe, Eastern Europe, USA, Asia, South America, Africa, Russia and Australia) are now using CRM-CTT to organize their day-to-day business, and a little motivation now and then would be nice. So, admins: try and convince your boss to donate a little and point him/her to the CRM-CTT donation page at: https://sourceforge.net/project/project_donations.php?group_id=61096

COMMERCIAL SUPPORT

Commercial support for CRM-CTT is available, though not through me. Several companies are offering support, of which I recommend ES Automatisering in The Netherlands, to be reached via their website at http://www.esautomatisering.com

On the project site (http://www.crm-ctt.com) you'll find a page dedicated to commercial support.

This document discribes how to install, manage and customize CRM-CTT to your needs. It is important you read this before going live with your CRM-CTT system.

Table of contents:

Before you start: please be aware of the fact that this manual covers most of the administrative tasks needed to perform when maintaining a CRM-CTT installation. This however does not mean this manual covers everything. CRM-CTT has lots of functions which are self-explanatory – these functions are mostly not in this manual.

1. INSTALLATION

1. Copy all files to a webserver-accessible directory, e.g. http://yoursite.com/crm/.

2. Linux only: For easy installation, do a "chmod 777 config.inc.php" in your installation directory.

3. Point your browser to the installation directory and follow the installation instructions.

4. Linux only: Do a "chmod 500 config.inc.php" in your installation directory, and a “chown xxxx.yyyy config.inc.php” where xxxx is your webserver’s user and yyyy is your webserver’s group.

5. Add a cron job to some machine (could be local, but also remote) to start the email-notifier agent for entities:

   An example from my cron file: (the cron user doesn't need to be root)

```
# CRM-CTT Alarm date manager
0 8 * * *       wget http://yoursite.com/CRM-CTT/duedate-notify-
cron.php?password=yourCRONpwd\&reposnr=XXX 1> /dev/null 2> /dev/null

0 15 * * *      wget http://yoursite.com/CRM-CTT/\duedate-notify-
cron.php?password=yourCRONpwd\&reposnr=XXX 1> /dev/null 2> /dev/null
```

   This will send an e-mail notification at 8 AM and 3 PM. Entities wich will be mentioned are entities which have an alarm date set to [today].

   The reposnr=XXX part resembles the repository number you'd like to send notifications for. reposnr=0 for the first, reposnr=1 for the second and so on (equal to the values in your config file). Skip the "1> /dev/null 2> /dev/null" part if you'd like reports mailed to the user under which the crond job runs.

   You can edit the cron script password using the administration interface (change system values, cronpassword). It is recommended you change this password regularly for it is transmitted in plain text. Try the wget (or lynx --source) command first from the command line! It'll give nice output so you'll see if it all works.

   If you are using Windows, you probably don’t have cron. A good alternative is WinCron, to be found at http://www.wincron.com/.

6. Use the 'Change system values' option to set a global admin password (admpassword)

7. Done. All settings can be modified using the 'administration' page.

2. GENERAL SYSTEM CONFIGURATION

There are a few things which you should absolutely configure as soon as you have CRM-CTT installed.

Go to "Administration" -> "Global system values"

You can configure several things here. The most important are:

ADMPASSWORD:

The global administration password (will be prompted for when a user *without* administrative rights clicks on "Administration" on the main page). Even an administrator **can not use the advanced administration features** until a global administration password is set!

MIPASSWORD:

Management information password. When set, only people who know this password can access the management information section.

LANGOVERRIDE:

If you want your users to be able to select their own language, set this to No. If you don't want your users to choose (e.g. when you use masks) set it to Yes.

MANAGEMENTINTERFACE:

When set to 'on', users authenticated as limited users will only see the restricted managementinterface with very limited privileges. When set to 'off' limited users will not be able to log in.

ENABLECUSTINSERT:

When set to ‘Yes’, customers which have an account are able to add entities by themselves. See also chapter “User types”.

CRONPASSWORD:

The password used by the cron script to collect due dates (duedate-notify-cron). Always set a password, even if you do not use this functionality.

Main language:

The system-wide default language

SHOWEMAILBUTTON:

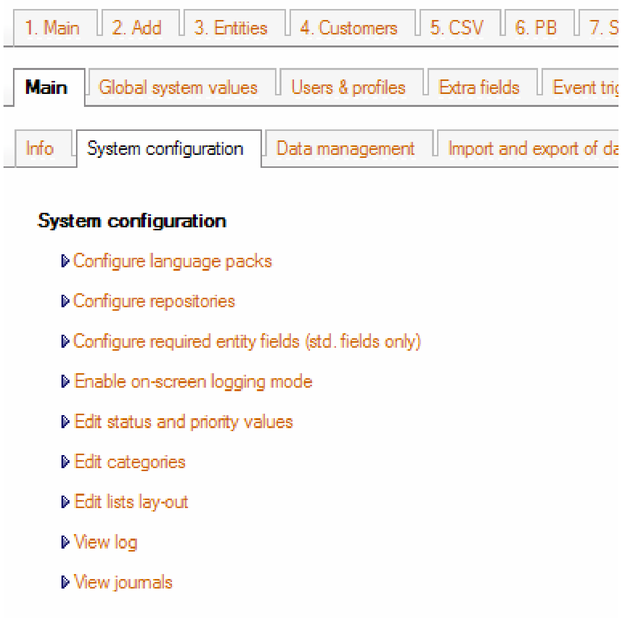
Yes to show an extra button to send an e-mail to the assignee when an entity is added or edited, no to disable this option.

There is a great number of things you can change, though these are the most important. Make sure you've set al above variables correctly. For more explanation on the remaining directives, see appendix I.

3. LANGUAGE CONFIGURATION

CRM-CTT standard comes with only one language: English. At this moment however CRM-CTT is available in Dutch, German, French, Brazilian-Portuguese, Danish, Slovenian, Italian, Slovene, Slovak, Polish and Spanish too. You can download language packs at the CRM-CTT website at http://www.crm-ctt.com.

To deploy a new language, go to the administration section, tab “System configuration”. Next, choose "Configure language packs".



To import a pack file, choose “import a pack file” and on the next screen click "Browse" to upload the pack file. The language is now deployed and ready for use.

You can also use the “Install pack file from the CRM-CTT project page” option to automatically download and install language packs by selecting the “Install a pack file from the project page” link. Be sure your web server has web-access if you want to use this function.

4. LANGUAGE MASKS

A more complicated matter - but this is what makes CRM-CTT so versatile. When you use a mask instead of a complete language pack you can only adjust the terms, sentences or words which you want to have adjusted without the effort of copying a complete language with some alterations.

4A. CREATING A LANGUAGE MASK

To create a language mask, go to the "Manage language packs" (Administration, System Configuration, Configure Lange Packs) section and click "Add new language or language mask:" and give your language a name (e.g. NEWMASK) and click "Submit". You will see something similar to this:

Language NEWMASK is missing 290 entries! export delete add an entry language id list edit complete

Now, collect the "tag-names" of the words or phrases you want to be replaced in your CRM-CTT. The best way to do this is by using the "tag-display-mode". After you know these tags, click [add an entry] and enter the tag names along with the values you think they should have. When done, apply your language mask in the "Change system values" section.

You can import and export masks like they where language packs.

CHARACTER-ENCODING

Since version 2.6.2, CRM-CTT supports the use of different types of character encoding in your language pack. The default is still ISO-8859-1, but if you add a language tag to your language pack called “CHARACTER-ENCODING” (in capitals, without the quotes) containing the correct value, CRM-CTT will use this to override the default encoding.

4B. LANGUAGE AND LANGUAGE MASK HIERARCHY

3. Mask layer	Language mask, overrules all
2. User preference layer	If not overruled in the "Change system values" section
1. Base layer	System-wide Language default
0. Just-to-be-sure layer	English (hard-coded)

0. JUST-TO-BE-SURE LAYER

This layer is always loaded first. This way a tag will never be empty. When your system-wide pack misses a tag, it will still be displayed in English.

1. BASE LAYER

The base layer is loaded directly after the just-to-be-sure layer, filling the language array which tag contents of your language of choice, and when everything goes ok, overwriting all tags filled by the just-to-be-sure layer.

2. USER PREFERENCE LAYER

After that, when a user has selected another language, this language will be loaded on top the base language. This only happens if this option is not overruled with the langoverride directive in the administration section.

3. MASK LAYER

When a mask is selected, this will be loaded on top of all layers before, thus overwriting some entries causing CRM-CTT to display some tags differently.

It is advisable to override the users' language preference to prevent confusion when using language masks.

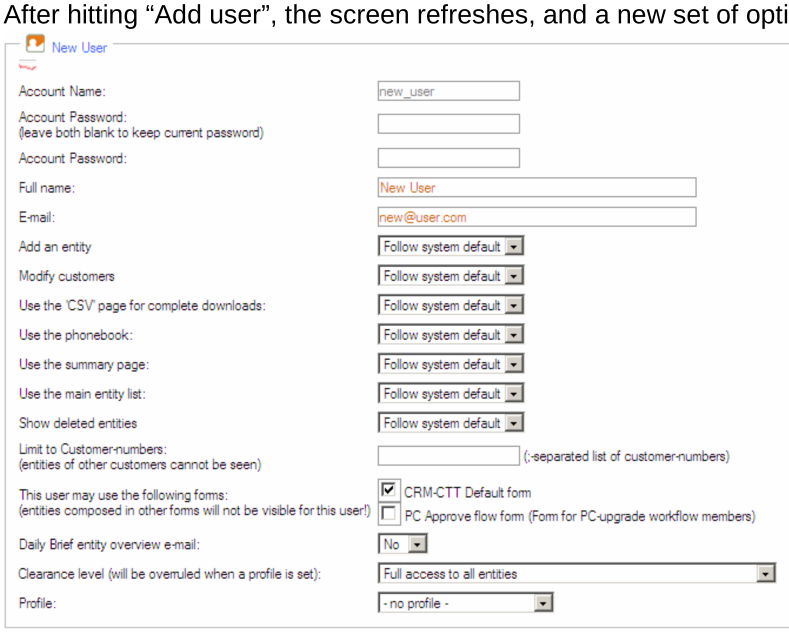
5. USERS AND PROFILES

Before digging deeper into the way CRM-CTT handles access to data, here's how to create new users. Next to that, this chapter also tells you how to create user profiles.
For both users and profiles, you first have to navigate to the user management section, to be reached in the administration section, tab "Users & profiles". You can also press ALT-U on your keyboard for fast access to this section.

5A. ADDING AND EDITING USERS

To add a new user, just fill in the form:

After hitting "Add user", the screen refreshes, and a new set of options is shown:



All "Use the…" options can restrict users from access a specific page.

A user can be limited to use only a specific set of customers by setting the appropriate customers-numbers in a semicolon-separated list.

The clearance levels are described in chapter 6.

5B. USER-PROFILES

Profiles look the same as normal users. The advantage is, that you can couple a group of users to a profile. This has two advantages:

1. You don't have to enter all specific allows and denies for each user
2. You can the rights of a large number of users by just adjusting the profile, instead of altering all users

6. USER HIERARCHY AND SECURITY

6A. USER TYPES

CRM-CTT Uses three different types of users:

1. THE "NORMAL" USER TYPE

A normal user is a user with clearance level "Full access to all entities" set to their user profile. When a user has no specific credentials he/she will be able to add *any* entity, view reports, etc. When this user knows the global admin password, he/she could also enter the admin section, though, within the admin section, he/she will not be able to access the "Manage language packs" and "Repository management" sections. He/she will be able to manage user accounts, but in turn will NOT be able to grand administrative privileges to him/herself or others.

2. THE "LIMITED" USER TYPE

A limited user is a user with clearance level "Read-only own entities" or "Insert Only – [Customer]-user" set to their user profile. This user can view its own (assigned) entities (and update them) respectively only add new entities.

2A. THE "READ-ONLY OWN" AND "READ-ONLY ALL" ENTITIES USER TYPES

When a user with a limited account logs on, he/she can only see entities assigned to him/her **or**, when using clearance level "read-only-all", can view all entities. When opened, he/she can only add text and attachments. He/she cannot reassign, delete, close etc. It is safe to open this to the public.

2B. The "Insert Only [customer]–user" – user type

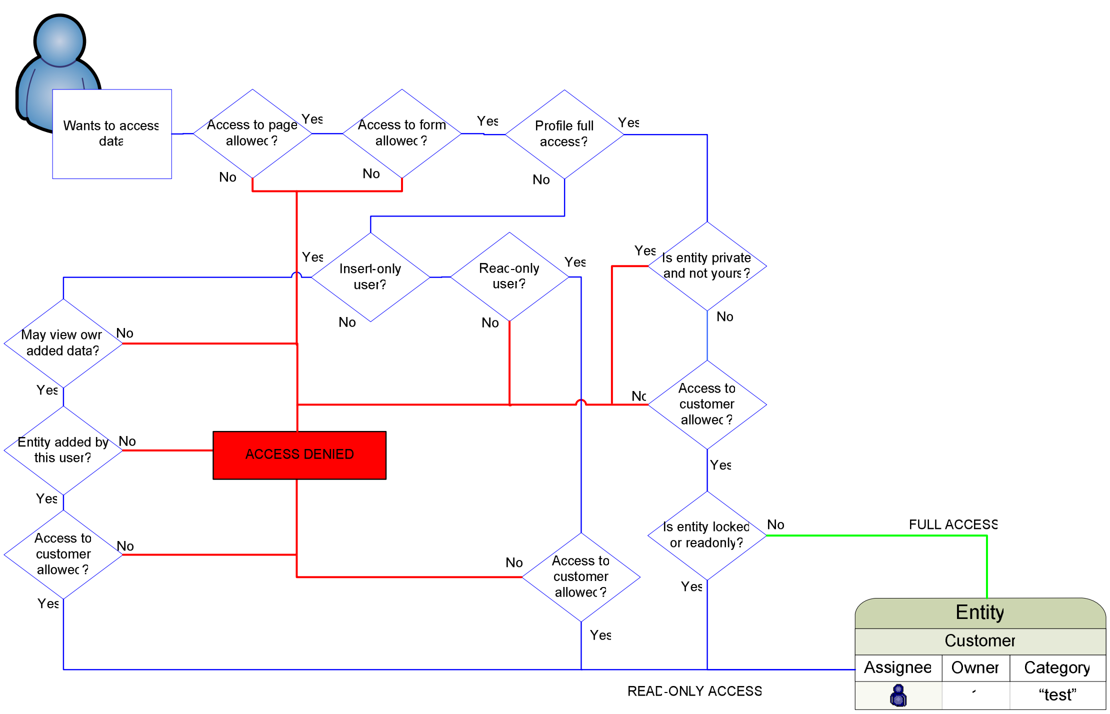
This user is coupled to a customer (of whatever you have named it) and he/she can only insert entities with attachments. CRM-CTT generates an error when a user of this type logs in when the account is not coupled with a [customer]. This user however is also able to view a brief list of all entities he/she has added.

2C. The "Full access though only edit own-assigned entities" – user type

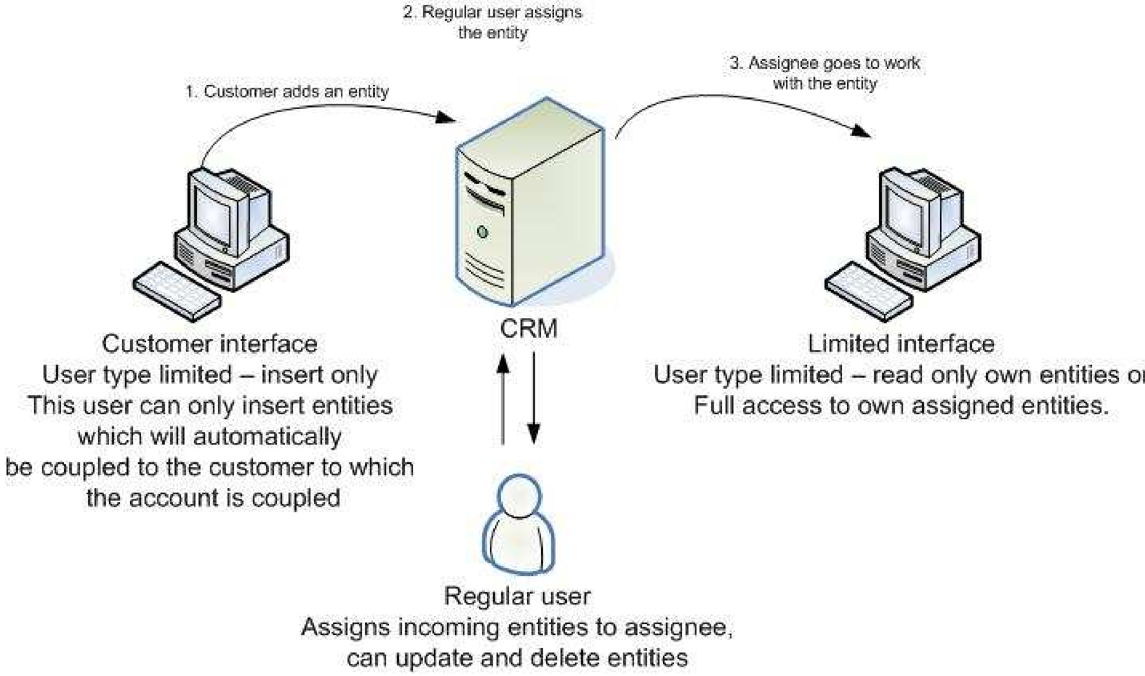
This user is able to read *everything*, though can only edit his/her own assigned entities (but cannot change the owner, assignee, or [deleted] status). He or she can view customers, though not edit or add them. He/she is also unable to add entities. This clearance level should actually be the main operating level for non-managing assignees.

2D. Decision flow

This chart shows the way CRM-CTT decides whether or not a user has access to an entity:



2E. WORKFLOW SCHEMATICS



3. THE "ADMINISTRATOR" USER

An administrator user is a user with clearance level “Administrator” set to their user profile.

This user can access all sections without entering a password except for the Management Information section. Having access to the "Repository Management" section, this user will be able to delete your entire repository. It is advisable not to have more than one or two administrators.

NOTE: An administrator can edit all entities; even the ones checked as read-only or private by another user. The administrator also has rights to all forms.

NOTE: The user you enter during install is automatically an administrative user. Disabling these privileges will leave you with a CRM-CTT you cannot manage (unless you've already created another user with administrative privileges that is)

6B. SECURITY LAYERS

LAYER 1 : LIMITED USER ACCESS LAYER

There are four types of limited users.

Type I:

Can only **add** comments and files to entities which are assigned to him/her. He/she will not be able to alter already existing comments

Type II:

The same as type I, except this user can see all entities instead of only his/hers.

Type III:

This user can only add entities to the database. This user must be coupled to an existing [customer] before it can be used. Entities added by this user will automatically be attached to the appropriate [customer] and they will be visible in the “inserted entities” list.

Type IV:

The user who has “Full access though only edit own-assigned entities” can do practically anything but editing entities not assigned to hem/her or add/modify customers.

LAYER 2 : REGULAR USER ACCESS LAYER

Can edit/modify/delete/add any entity.

LAYER 3 : SEMI-ADMIN USER ACCESS LAYER

Or: Layer 2 user who knows the global admin password. Besides all of Layer 2, this user also has the rights to physically delete entities, import phonebook records, view existing files in the database, view deleted entities, change system values, view the log, edit help topics, and manage users except for granting administrative privileges. This user cannot cause severe damage to your CRM-CTT installation.

LAYER 4 : ADMINISTRATIVE ACCESS LAYER

Can do everything of layer 3 plus repository management, language pack management, advanced queries and granting administrative privileges to users. This user is capable of totally deleting your CRM-CTT installation, and maybe also secondary repositories! This administrative user can also access other installed CRM-CTT repositories (defined in your config.inc.php) when the admin account under which the user is working is the same (username, password **and** administrative rights). He/she can obviously see the contents of these other repositories, and is able to delete them and modify existing fields. See also figure in chapter 6.

7. REPOSITORIES

CRM-CTT can use multiple repositories. A repository is a complete database with it's own settings, languages, entities, users etcetera. Important to know is that between repositories, NO data is shared whatsoever. If you have more than one repository, a drop-down box will be presented on the logon page where you choose the repository to log on to.

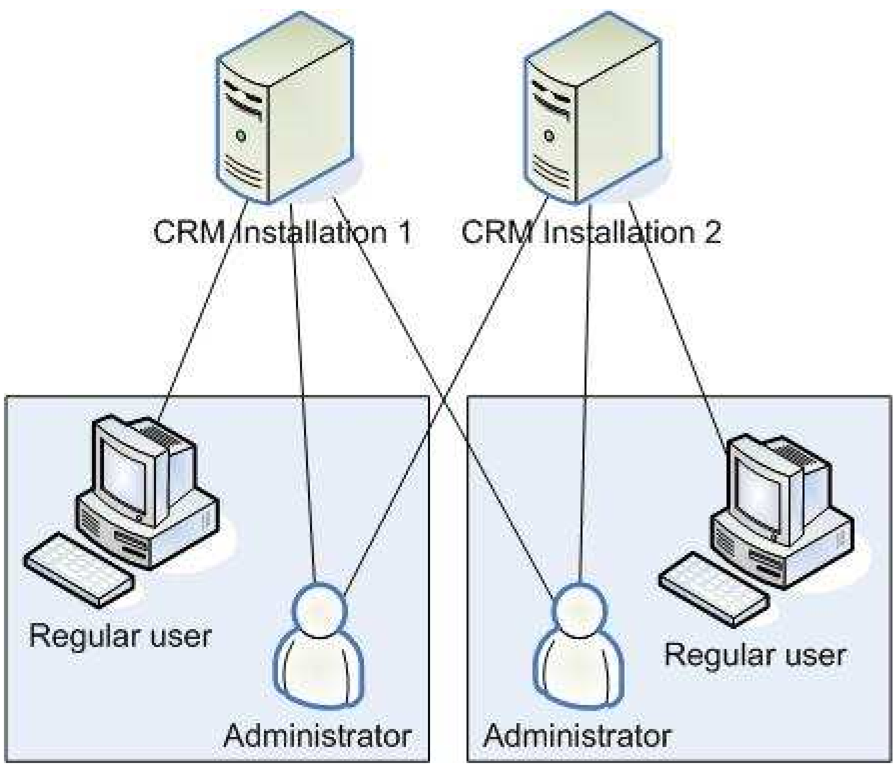
When you just installed CRM-CTT, the installer created the first repository. If you want another added to your system, go to "Manage repositories" in the administration section and click "Add a repository". This will take you to a page similar to the install procedure. When done, you will have to add some information to your configuration file (config.inc.php).

When the information in your configuration file is not correct, your new repository will not show up at the logon page.

You will need to add a cron job for every single repository if you want e-mail notification enabled. See the "installation" chapter for more information.

WARNING: You can also use the "Manage repositories" section to delete repositories. You are able to delete the repository in which you are currently working causing a complete loss of data and causing CRM-CTT to stop working immediately. Use this only when uninstalling CRM-CTT.

When an administrator has similar accounts in multiple repositories (same name/password/admin rights) he/she will be able to access other repositories then the one logged on to and edit the repository settings (Extra fields, delete repository, empty sessions table)



8. TRANSLATING CRM-CTT

CRM-CTT can be easily translated to any language using the "manage language packs" option on the administration page.

On this page, go to "Add new language or language mask:" and give your language a name (e.g. SWEDISH) and click "Submit". Your language is now added to the summary:

Language SWEDISH is missing 290 entries! export delete add an entry language id list edit complete

To start translating, click [complete]. CRM-CTT will now present all words and sentences which need to be translated:

TEXTID	English value	SWEDISH value	
customer	Customer		next

It will show you the English values so you can translate them. If you'd like to stop translating and continue later on you can just log out, and later click [complete] again.

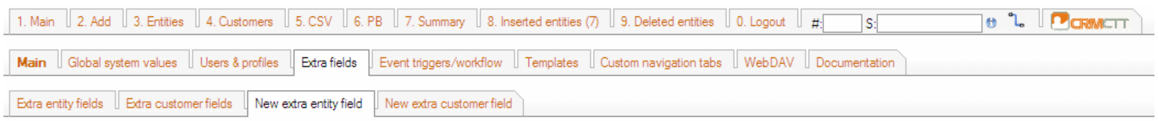
NOTE: After adding your language it will be visible (and choosable) immediately from the language selection box. To avoid this, either override the user-choosable language (admin -> system values -> langoverride) or use a separate repository for translation. You can add and delete repositories from the "Manage repositories" page in the admin section.

9. EXTRA ENTITY FIELDS

You can add so-called extra fields to an entity. This can be useful when the standard supplied fields are not enough for you. Custom fields will appear in the edit and add windows, and also in your CSV exports. They can also be used for reporting etc.

To add or modify custom fields, you can use the “Edit Extra Fields” option in the administration section.

To start adding a new field, click “New extra entity field”.



You can add the following field types:

- Single-line text box
- Multi-line text box (text area)
- Drop-down box
- Drop-down box based on customer extra field of type “List of values” (see chapter 9)
- E-mail field
- An internet-link (hyperlink)
- Invoice cost field (for invoicing only, validated for being numeric)
- Invoice cost including VAT field (for invoicing only, validated for being numeric)
- Invoice quantity (for invoicing only, validated for being numeric)
- VAT-overrule field (for overruling the global VAT setting when using invoicing)
- Comment field (for displaying text between your extra fields)
- Date field (will spawn the calendar popup select window)
- A numeric field (will be validated on submission)
- A drop-down list of CRM-CTT users (mainly for use in combination with triggers)
- A “List of values” – this field is just like a textbox, only this time not one, but multiple, preceded by the number. This can come in handy when registering multiple phone numbers, for instance.
- A button which does something based on triggers (in other words; after creating a button, you need to set triggers on the button (section triggers -> misc. triggers)

You can add some more attributes to your extra field:

The “Visible for” field can be used to limit the number of users which are able to see this field. It can be set to “everybody”, “everybody but limited users”, and “administrators only”.

The “Make this is a required field” setting causes, when set, a configurable error message when a user tries to save an entity without having given this field a value.

The location sets the place where an extra field will be displayed. There are 4 places where you can place extra fields:

Using this, you can model your own form. Be aware; you can make quite a mess of it, too! If you want to create your own form from start, check chapter 20 of this manual.

For easy configuration of these fields, use the “Inline edit mode” – all field names in the form will become direct hyperlinks to the extra field properties page of that field.

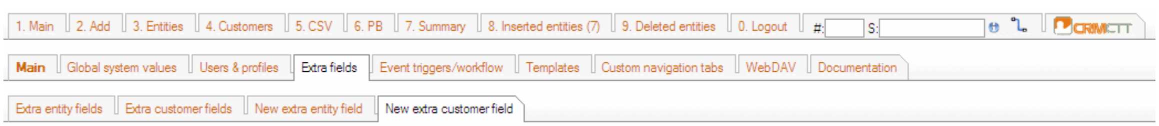
The above example show s how the fields are placed on the default edit form. You can also create your own forms so you can place extra fields anywhere your like.

10. CONFIGURING EXTRA CUSTOMER FIELDS

The standard CRM-CTT customer database consists of the following fields:

- Customer
- Contact
- Contact title
- Contact phone
- Contact e-mail
- Address
- Remarks
- Homepage

If you want to store more information in this database, use the "Edit extra customer fields" option in the administration section:



The method is equal to extra entity fields, except that the location for an extra customer field cannot be chosen.

Note: extra customer fields of type "List of values" can be used in entities to populate drop-down boxes. For instance when you have an extra customer field of type "List of values" which is named "Contact person", you can have this field appear in an entity, so when the entity is logged, the specific customer contact person can be identified.

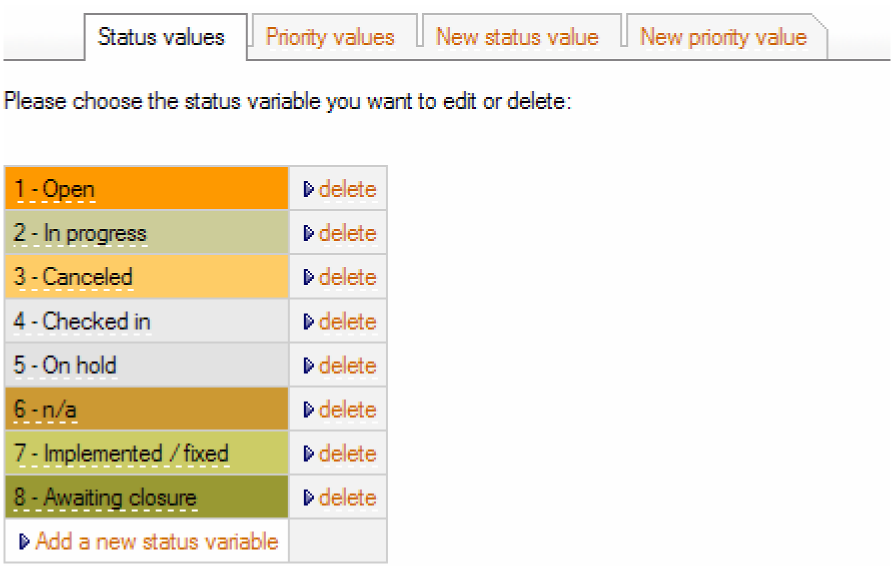
See chapter 8 for more information.

11. CONFIGURING CUSTOM STATUS AND PRIORITY VARIABLES

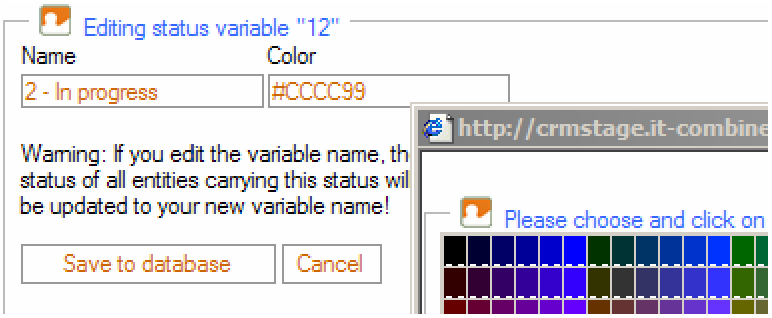
A standard CRM-CTT installation comes with the status variables “Open”, “Awaiting closure“ and “Closed”. The standard priority variables are “Low”,”Medium”,”High” and “Critical”.

These values can be adjusted. To do so, click on the “Change status and priority values” in the administration section and then click the type of variable you want to change (Status or Priority).

When you select [edit status variables] you will see something similar to this:



When you click on a variable name, you are able to adjust the name, and the color:



When you change the name, all entities (including deleted entities) will be updated to the new variable name.

When you delete a variable name, this status or priority variable can no longer be used, but all existing entities carrying that status or priority will keep the old status or priority.

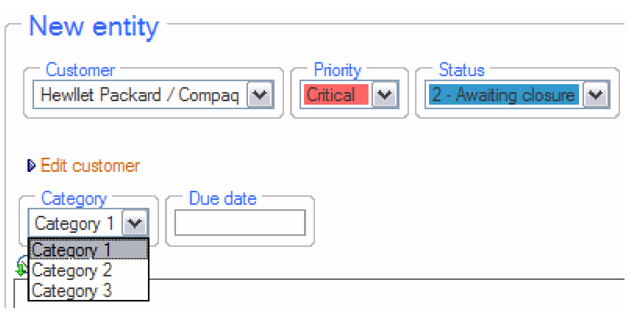
12. Custom Category Variables

CRM-CTT supports 2 types of category variables:

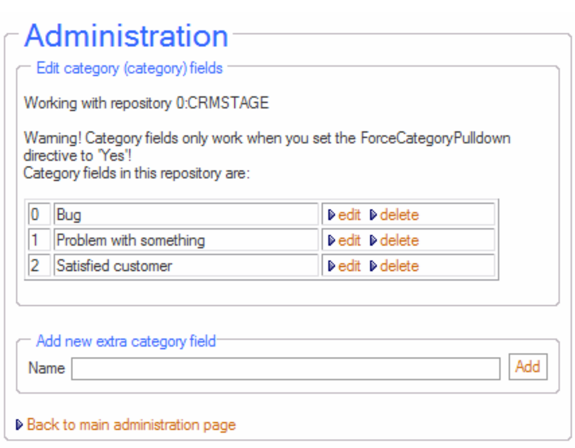
1. A plain text box
2. A drop-down menu

Normally, CRM-CTT displays the plain text box when adding or editing an entity:

When you set the directive ForceCategoryPulldown to 'yes', CRM-CTT will present a drop-down menu when adding and editing an entity, forcing the user to choose from a pre-defined list:



You have to configure a list of possible options before you can use the pull down menu. Do this using the "Edit categories" option in the administration section:



13. CONFIGURING E-MAIL NOTIFICATIONS

CRM-CTT Knows e-mail notification points. The body text of these notifications can be edited using the administration interface. When editing these variables, CRM-CTT will provide an HTML editor.

Warning – it's far better to use Event Triggers to trigger e-mails!

There is a number of variables which you can embed in your text which will be replaced by CRM-CTT when actually sending the e-mail. These variables always start and end with a '@' :

@ENTITYID@	The ID of the concering entity
@CATEGORY@	The category
@OWNER@	The owner, full-name
@ASSIGNEE@	The assignee, full-name
@CONTENTS@	The complete contents of the text body of the entity
@ADMINEMAIL@	The administrators' e-mail address
@TITLE@	The global title of your CRM-CTT installation (e.g. My Demo Company)
@CUSTOMER@	The customer, full-name
@DUEDATE@	The due-date of the concerning entity, DD-MM-YYYY
@STATUS@	The status of the concerning entity (Open, Awaiting Closure, Close)
@PRIORITY@	The priority of the concerning entity (Low, Medium, High, Critical)
@WEBHOST@	The hostname of the web server (if available on your server)

You can use these whenever you want. Here's an example:

BODY_DUEDATE: (editable using the "Change System Values" option in the admin menu)

You are too late so your boss will be mad. Hurry up and do something about entity @ENTITYID@ because it was requested by @CUSTOMER@! The status is now @STATUS@, and the priority is @PRIORITY@!

This will (could) result in:

You are too late so your boss will be mad. Hurry up and do something about entity 153 because it was requested by IBM! The status is now Awaiting Closure, and the priority is High!

The configurable e-mail fields are BODY_DUEDATE, BODY_ENTITY_ADD and BODY_ENITITY_EDIT. The first is the body of the e-mail which will be sent when an alarm date of an entity is met, the second contains the body of the e-mail which will be sent a) when a new entity is added to the repository (and the EmailNewEntities directive contains a valid e-mail address) or b) when a [customer] adds an entity and a notification e-mail address is specified in the insert-only user-profile and/or c) when, when adding a new entity, the button "Save to database + e-mail [assignee]" is used to store the entity. The third will be sent when an entity is updated, and the button "Save to database + e-mail [assignee]" is used to store the entity.

CRM-CTT provides a WYSIWYG HTML-editor for easy editing this variables, however you can also choose to edit the HTML code directly.

14. FAIL-OVER CONFIGURATION

Database fail-over support was added in version 3.4.3. It can be used to have CRM-CTT update two identical databases at the same time. If one of the databases goes down, the other will take over without any loss of data and without any user noticing it.

This can be useful for availability purposes, but also for backup use.

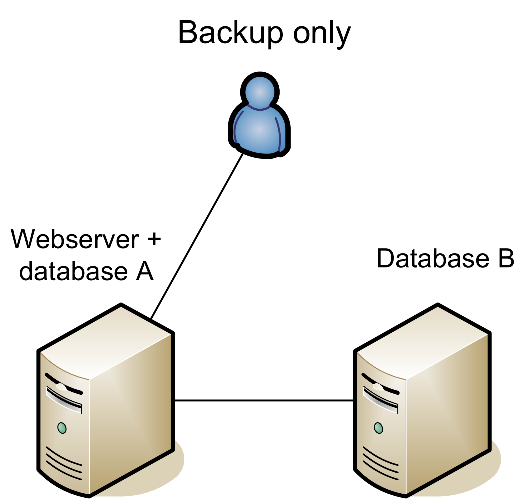
This chapter will show some possible configurations first. After that the necessary actions to achieve this are described.

We can roughly determine 4 major different ways to use this function:

1. Backup-only (2 servers)
2. Low-end redundancy (2 servers)
3. Medium-end redundancy (4 servers)
4. High-end redundancy (4 servers, network appliance)

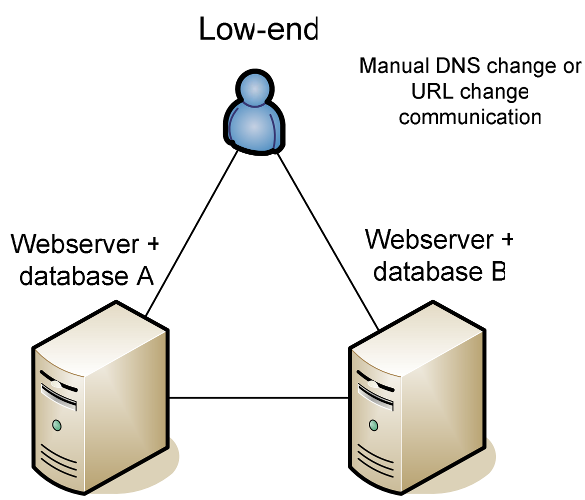
1. Backup-only.

Schematically this infrastructure would look as follows:



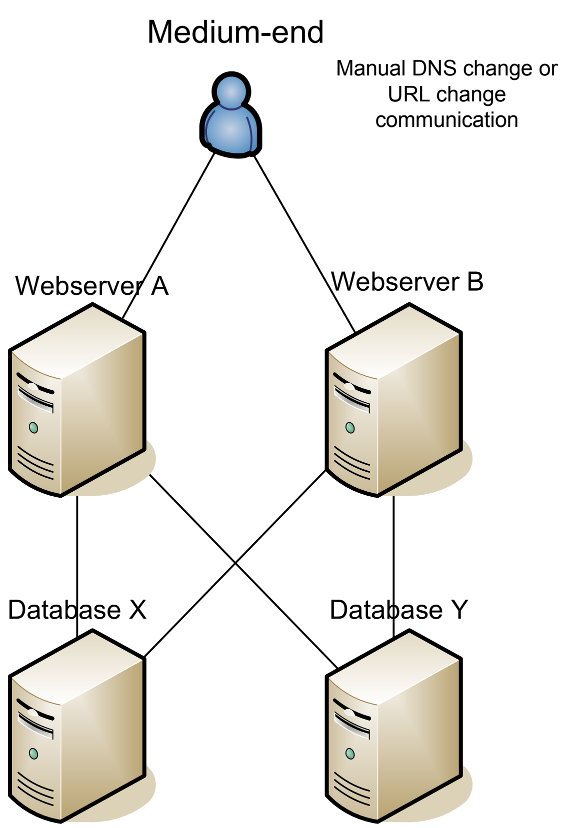
1. Low-end.

Schematically this infrastructure would look as follows:



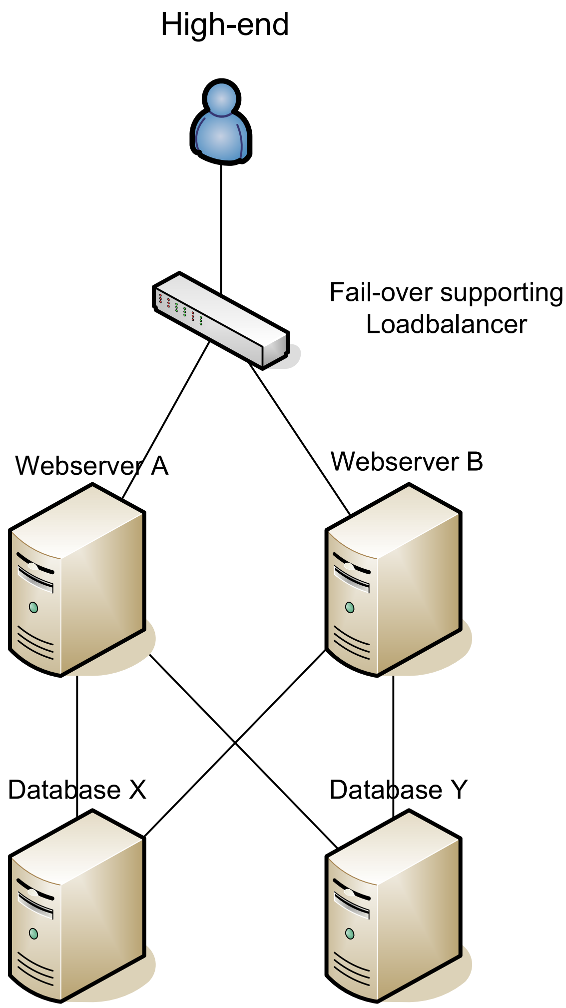
2. Medium-end.

Schematically this infrastructure would look as follows:

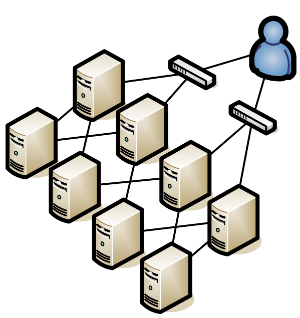


4. High-end.

Schematically this infrastructure would look as follows:



Not possible: paranoid constructions:



CRM-CTT Can only replicate 2 databases at a time, not more. However with the high-end solution a four-nines (99,99%) availability should be possible.

Configuring a fail-over database

The following instructions assume you already have a running CRM-CTT instance on 1 machine. It's not important if the database and webserver are on the same hardware.

This is fairly easy. Follow the following steps:

1. Enable maintenance mode on your current (only) node
2. Shut down your MySQL database
3. Copy your table files to node 2 and make sure they are accepted by the MySQL instance
   Leave the database name and database user intact!
4. Start MySQL instance on node 2.
5. Make sure it's possible to connect from the webserver to node 2 on port 3306.
6. On the webserver, edit the config.inc.php in your CRM-CTT installation directory. Find the configuration section for the node 1 database. It should look a lot like this:

```
$host[0] = "node1.mysqldb.yourdomain";
$user[0] = "crm";
$pass[0] = "crmpassword";
$database[0] = "CRM_DB_NAME";
$table_prefix[0] = "CRM";
```

7. Add a $slave[x] section. In this example it should look like this:

```
$slave[0] = "node2.mysqldb.yourdomain";
```

8. Start your MySQL server on node 1.
9. Open CRM-CTT in your browser and log onto the repository you just configured.
10. Go to the admin section and select tab "Fail over". It should look as follows:

Fail-over status ▶refresh

Currently running on database	10.0.0.1
Configured slave database	10.0.0.19
Slave database status	OK
Local jobs waiting for replication	0
Remote jobs waiting for replication	0
Replication status	OK
Database integrity	OK

In this screenshot other database host names were used

11. Bring down your MySQL database on node 2

12. Refresh the administration page. It should now look as follows:

Fail-over status ▹refresh

Currently running on database	10.0.0.1
Configured slave database	10.0.0.19
Slave database status	DOWN
Local jobs waiting for replication	4 ▹view ▹empty ▹unlock stalled records
Remote jobs waiting for replication	n/a
Replication status	SYNC HALTED [will continue when host is up]
Database integrity	▹Check now

13. Note that you will already see some jobs waiting. These are produced by your own browsing through the admin section.
14. Start your MySQL database on node 2 again and refresh the page twice. The result should be like the figure at bullet 10.
15. Now shut down your MySQL database on node 1 (make sure you're not shutting down any repositories on this system which are not using failover yet). After refreshing the page it will look like this:

Fail-over status ▹refresh

Currently running on database	10.0.0.19
Configured slave database	10.0.0.1
Slave database status	DOWN
Local jobs waiting for replication	3 ▹view ▹empty ▹unlock stalled records
Remote jobs waiting for replication	n/a
Replication status	SYNC HALTED [will continue when host is up]
Database integrity	▹Check now

16. Note that the current and slave database were switched.
17. Start your MySQL database on node 1 again and refresh the page twice. The result should be like the figure at bullet 10.
18. Smile and disable maintenance mode.

Configuring a fail-over webserver

If you also want to use 2 webservers (with or without a load balancer) just replicate the CRM-CTT installation directory from webserver 1. <u>Do not switch the slave/master settings. They must be exactly the same on both servers to assure data integrity.</u> When doing this, also make sure that connections from webserver 2 to both database node 1 and database node 2 are allowed to port 3306.

Important facts, possible errors & fail-over troubleshooting

Important facts to know about CRM-CTT's fail-over implementation:

- When a slave database is out-of-sync but just came up again, CRM-CTT will send cached queries to that server with 250 at a time, using user sessions. When your slave system is behind a lot (e.g. > 1000 jobs) it is wise to refresh the Fail Over admin page as an administrator with maintenance mode enabled to avoid users having very slow page loads.

- When the status page says "SYNC HALTED [empty local or remote job queue to enable synchronization]" something went wrong: both installations have jobs waiting for each other. The mechanism will not work until you empty one of the queues; either the remote or the local queue. Mostly one queue will contain just a few jobs whilst the contains a lot. Check the contents of the smallest queue using the "view" option to see which queries are waiting. Empty the table afterwards if that's ok. In any case, nobody else but you can decide which database will be the new master in this case.

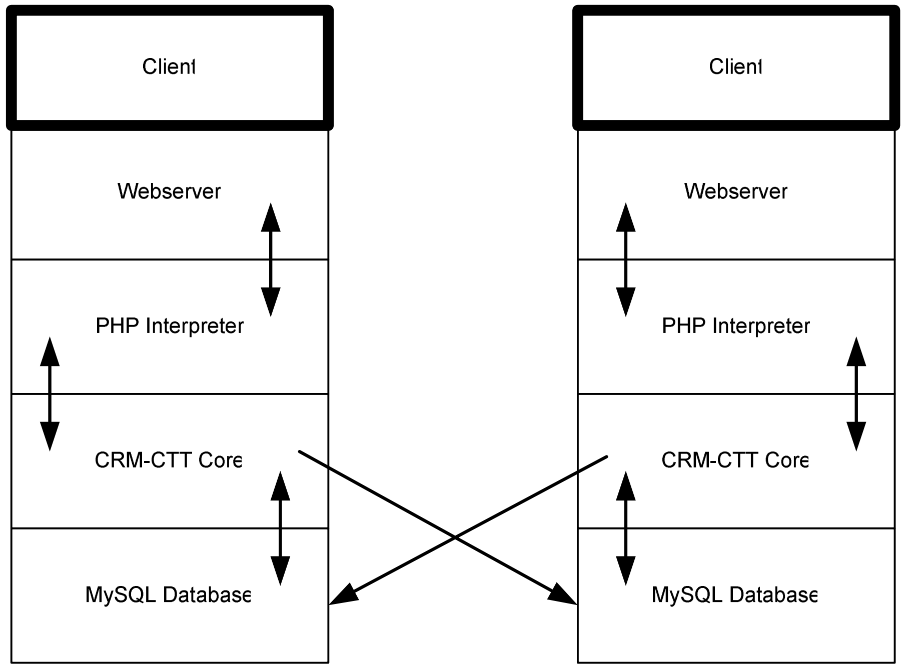
- The option "unlock stalled records" should only be used if a job queue won't empty by itself. Using this is fairly harmless; it just frees any records which were locked for use earlier (but somehow didn't replicate).

- When the database integrity check reports "Compromised" you're in a little trouble. It basically means that the databases are not in sync anymore (more specific, there's a difference in entities). Use the [trace log] function to determine what the difference is, it will show the last 20 entities in both databases. You will either have to manually delete rows from one of your databases or re-copy your tables to restore fail-over functionality in this case however replication will still work (queries will be replicated meanwhile to avoid loss of data).

- Fail-over <u>does not main</u> load balancing! Although using 2 webservers and databases at the same time (by switching the master/slave host names) will seem to work, though entities will potentially not be saved with the same EID.

Internal fail-over mechanism schematics

For the record; CRM-CTT's internal fail-over mechanism looks as follows:



15. A WORD ON ENTITY JOURNALING

CRM-CTT supports journaling. Journaling means that an update to en entity is logged. This was already done by logging, but with journaling you can see what exactly was updated.

If you set the configuration directive "EnableEntityJournaling" to "Yes" (it is enabled by default), every change to an entity is saved. Here's an example:

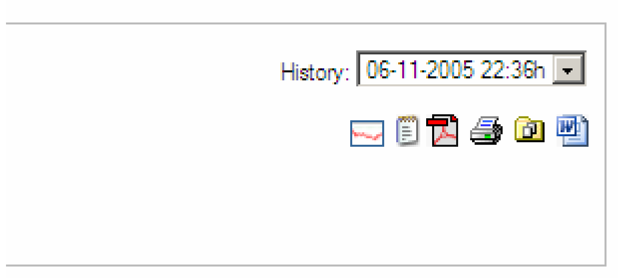
Sat November 29, 2003 20:34	Hidde Fennema	Entity updated Problem solver updated from CRM-CTT to Hidde Fennema Responsible updated from CRM-CTT to Hidde Fennema Status updated from Checked in to Cancelled Priority updated from 1 - Critical to 2 - High Release updated from Unknown to CRM-CTT Ver. 2.0.0

Using this method you can see which user updated what field to what value.

When the journaling subsystem is enabled, a "Journal" – link will automatically be added to the main Edit Entity page.

16. ENTITY CONTENTS JOURNALING

Entity journaling is a feature with which you can select a date/time in the upper-right corner of the screen on the main edit entity page.



When you select a date, the complete contents of the entity will be set to the values which they had at the date you selected.

Be careful: when you click save after selecting a date, you will roll-back the contents of your entity to the values which they had the date you selected!

Entity contents journaling is enabled by default and cannot be disabled. You can however prevent the history box from appearing by setting the EnableEntityContentsJournaling to "No" in the administration section. This will save loading time when opening an entity with much history – this is the first thing to disable when experiencing slow page loads.

17. EVENT TRIGGERS (WORKFLOW)

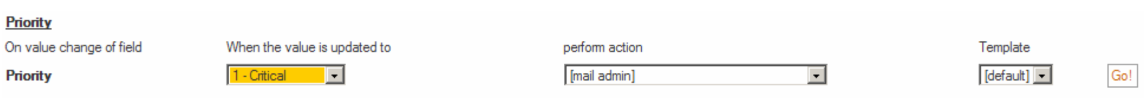
Event triggers are actions which are executed when a set of requirements is met. More to the point; if you, as administrator, want an e-mail when somebody updates the priority of an entity to priority "Critical" you can do that by adding an event trigger.

Event triggers can be added in the "Configure event triggers/workflow" section, to be found on the administration page. Event triggers can be placed on change of one of the following entity fields:

- Status
- Priority
- Customer
- Owner
- Assignee
- Every extra entity field you may have added
- Miscellaneous events
- Administrator events

To use event triggers which send an e-mail efficiently, you'll need HTML templates. You can add and edit HTML templates in the "Edit RTF and HTML templates" section. If you want CRM-CTT to also attach a report of some kind, you'll also need an installed RTF report, or you might just use the default PDF report.

The create the above mentioned event trigger, do the following:



This will result in a trigger:

Besides sending e-mails, you can also configure a trigger to execute a query when the event occurs.

The following events are defined and ready for use:

- Mail the owner of the entity (whomever it is)
- Mail the assignee of the entity (whomever it is)
- Mail the customer of the entity (whomever it is)
- Mail the administrator
- Delete/undelete an entity
- Toggle read-only/read-write
- Toggle private/public
- Set /unset close-date of entity (stop-clock/start-clock)
- Re-set create date of entity (re-set clock)
- Set status to [any status]
- Set priority to [any priority]
- Set owner to [any user] or [customer owner]
- Set owner to [the value selected in extra field xx]
- Set assignee to [any user] or [customer owner]
- Set assignee to [the value selected in extra field xx]
- Mail [any] customer
- Mail [any] user
- Extend due-date with 1/2/3/4/5/10/20/30 days
- Set the form type of an entity to a different form

Using these events, you can create workflows by adding them one at a time. Prepare your workflow on paper before adding them in the system to make sure you're not missing a step.

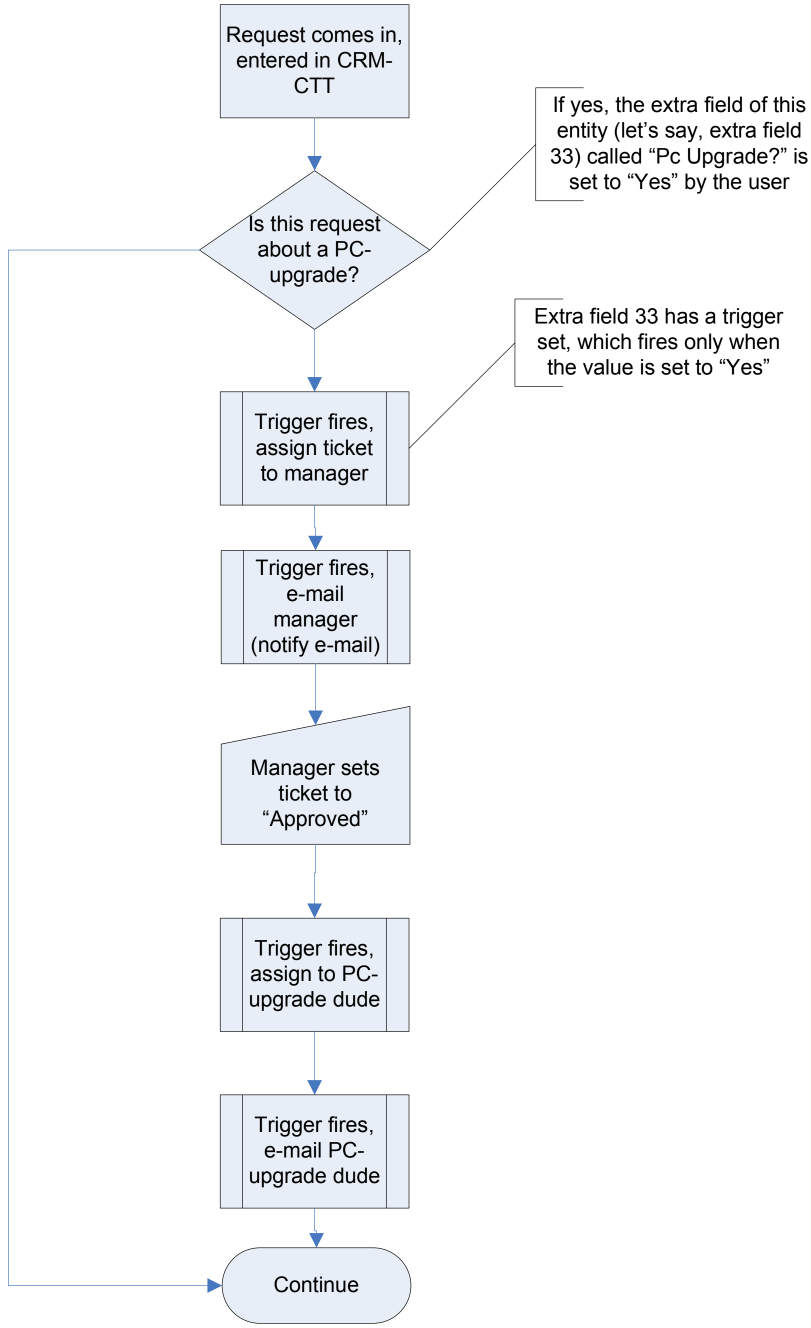
A basic workflow for an imaginary department, which handles requests for PC-upgrades would look as follows in CRM-CTT:

Current event triggers:

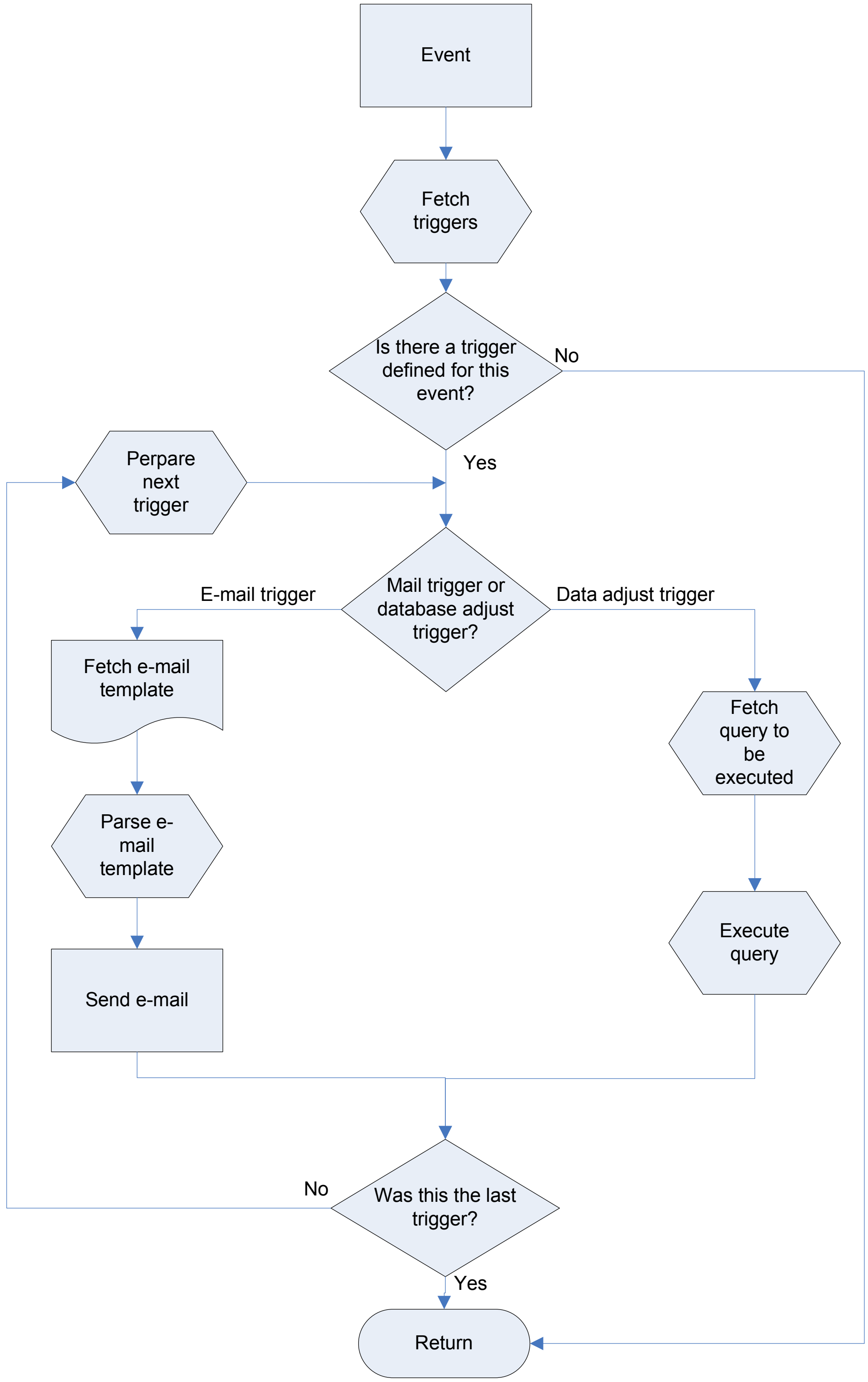
On event or value change of field	when the value is updated to	perform action	Mail template	Attach report	Attach mail to entity	Delete
Is this request about a PC-upgrade?	Yes	mail user Department Manager	Demo	Std. PDF-report	No	✗
Is this request about a PC-upgrade?	Yes	Set assignee to 30	n/a	n/a	n/a	✗
PC-Upgrade approved by Dept. Manager?	Yes	mail owner	BODY_ENTITY_EDIT	Don't attach anything	No	✗
PC-Upgrade approved by Dept. Manager?	Yes	Set assignee to 1	n/a	n/a	n/a	✗

These settings will create the basic workflow. Note that you have to add a trigger for each event you want to occur. There are no triggers like "Update owner to Dept. Manager *AND* send an e-mail to the assignee of the entity". This trigger contains 2 events; "Set owner" and "E-mail assignee" – so, 2 triggers need to be defined.

Schematically the flow in this example looks like:



CRM-CTT Event handling schematics



Note that data changes caused by a trigger **do not** trigger other events to prevent looping.

18. CRM-CTT'S WEBDAV IMPLEMENTATION

CRM-CTT Supports WebDAV, a.k.a. Webfolders. With WebDAV it's possible to access files over the HTTP protocol.

You must enable WebDAV by setting the configuration directive "ENABLEWEBDAVSUBSYSTEM" to "yes". When switched on, the main admin page will display an extra section:

WebDAV Subsystem status
WebDAV Subystem is enabled
There is/are 2 files checked out of the database ▸ List files
There is/are 1 files are locked for editing ▸ List locks
Access to http://crmstage.it-combine.com/webdav_fs/.htaccess was checked using a socket connection, received a 403 Forbidden which is OK

In this section you can check the status of the WebDAV subsystem. The procedure also checks if the webdav file system ("install_dir/webdav_fs/") is accessible from the outside. If this routine does **not** receive an "HTTP 403 Forbidden" error from the server, it **automatically disables your WebDAV subsystem** for obvious security reasons.

With WebDAV enabled, the file lists looks slightly different:

List of files currently attached to this entity

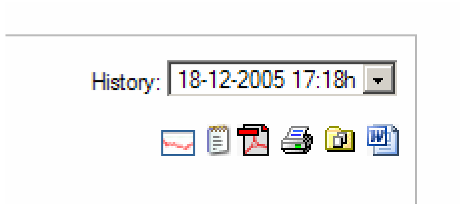
Filename	WebDAV	Filesize	Creation date	Owner	Delete
▸ CRM-CTT PDWAS Setup.exe	▸ Check out	4007K	Sun July 31, 2005 14:04	Hidde Fennema	☐
▸ CRM_adminmanual.doc	▸ Check out	166K	Thu April 15, 2004 00:15	Hidde Fennema	☐
▸ CRM_adminmanual.doc	▸ Check out	334K	Sun September 19, 2004 14:36	Hidde Fennema	☐
▸ CRM_adminmanual.doc	▸ Check out	1069K	Sun September 19, 2004 15:07	Hidde Fennema	☐

You'll see a link called "Check out". When you click this, the file is checked out from the database, and transferred to the WebDAV file system. This will be displayed clearly in the list:

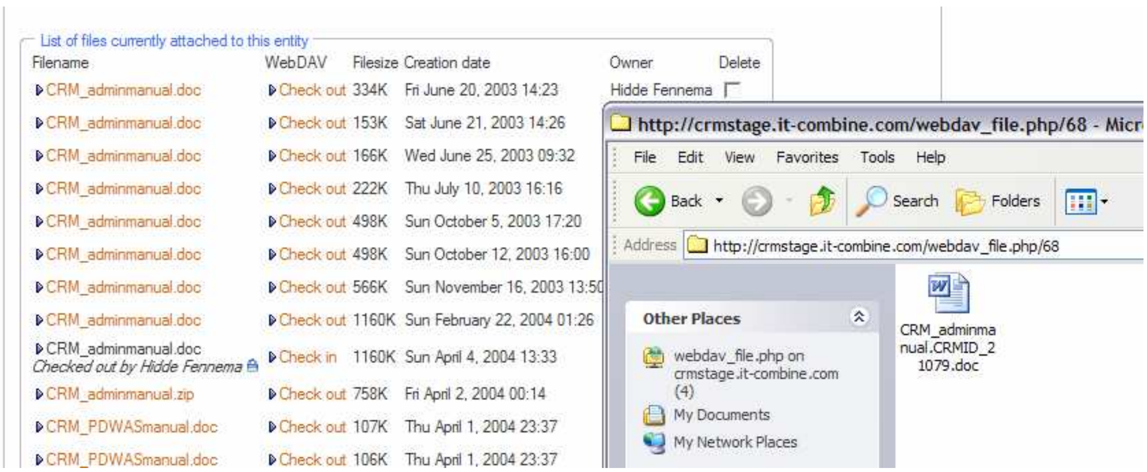
▸ CRM_adminmanual.doc *Checked out by you*	▸ Check in ▸ Force unlock	1313K	Fri December 30, 2005 13:56	Hidde Fennema	☐

The lock here indicates that the file is also locked for editing – which is correct, because the lock you see is me writing this manual page.

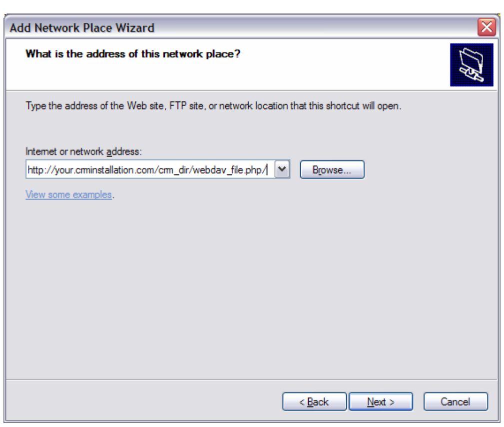
At the top of each entity page, you'll find a link to the WebDAV directory of the entity you're editing (the yellow icon):



Clicking this link brings you to your WebDAV folder in a new window. You'll have to enter your CRM-CTT username and password to access it.



Another way to access your WebDAV directory is using the "Map Network Drive" option in Windows by selecting the option to connect to a web folder. The URL you need to enter there is http://your.CRM-CTTinstallation.com/CRM-CTT_dir/webdav_file.php/ . The trailing slash is very important!



19. INVOICING WITH CRM-CTT

Since version 2.5.2, CRM-CTT supports invoicing. With this module, an administrative user is able to create invoices based on information stored in the database. This module has some prerequisites.

CONFIGURING YOUR INSTALLATION

First, make sure you have set configuration directive “ENABLEMAILMERGEANDINVOICING” to “Yes” in the administration section. Without this, the link will not appear on the main page. When enabled, the link will still only appear for administrative users.

An invoice rule is one line on your invoice, representing something your company did for a customer. Each entity (matching some given criteria) will be an invoice rule on your invoice. These entities must have values in their invoice fields. These invoice fields can be created by adding extra fields of type “Invoice cost” and “Invoice qty.” :

ID	Order	Type	Name	Occurences	Visible for	Location	Required	Delete
96	1184	invoice qty	Hours to invoice	0	Everybody but limited users	Middle box, left	No	✗
39	12	invoice cost including VAT	Invoice cost including VAT	10	Everybody but limited users	Middle box, right	Yes	✗

These fields are “regular” CRM-CTT custom fields, with the exception that they will be interpreted specially by the invoice module. Without these fields, CRM-CTT will refuse to generate invoices.

If your company is used to enter invoice costs including VAT, you can choose to use the field “Invoice cost including VAT”. The price will still be broken down on the invoice.

If you want your users to be able to overrule the default VAT percentage which you entered in the global configuration, you can also add a field of the “VAT drop-down” type. When this field contains a value, this value will override the default setting.

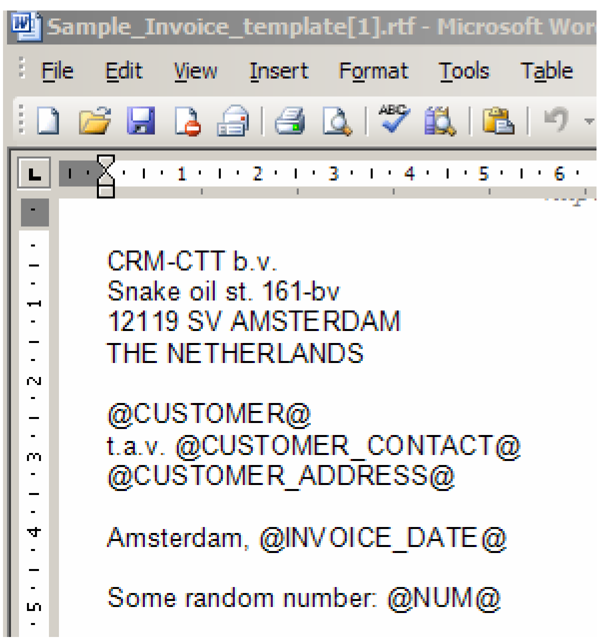
TEMPLATES

If you want to generate invoices, you need to upload an RTF-template. RTF stands for Rich Text Format – it's a document type all word processing applications like MS Word and OpenOffice support. You can upload templates in the administration section, by clicking the "Edit RTF templates" link. This will give you the list of templates currently in your database:

Existing report, mailmerge and invoice RTF Templates

File id	Filename	Document type	Uploaded by	Upload date	Delete?
4267	sample_mailmerge_template.rtf	Mailmerge	Hidde Fennema	20050123164547	Delete
4263	sample_entity_report_template.rtf	Entity report	Hidde Fennema	20050123164506	Delete
4264	sample_invoice_template.rtf	Invoice	Hidde Fennema	20050123164528	Delete
4266	sample_invoice_template_single_VAT.rtf	Invoice	Hidde Fennema	20050123164541	Delete
4265	sample_invoice_template_multiple_VAT.rtf	Invoice	Hidde Fennema	20050123164536	Delete

The templates shown above are put there by the installation (or upgrade) procedure. When you download and open them, you'll see a document with some tags enclosed by @'s:



These tags will be replaced by actual text when CRM-CTT parses a template using the invoice module.

A complete overview of the available tags:

@INVOICE_DATE@	The current date in the format configured in CRM-CTT
@DATE@	The current date in the format configured in CRM-CTT
@CUSTOMER@	The customer (main) name
@CUSTOMER_CONTACT@	The name of the customer contact
@CUSTOMER_ADDRESS@	The address of the customer
@NUM@	The invoice number, prefixed when configured
@TOTAL_COST_EX_VAT@	Summarized cost excluding VAT
@TOTAL_COST_INC_VAT@	Summarized cost including VAT
@TOTAL_COST_VAT@	Summarized VAT cost

@REPEAT@	Start tag for recurring invoice rules
@LVAT@	Local (could be overruled) VAT percentage (*)
@IHS@	Invoice quantity (*)
@IHC@	Invoice cost (*)
@RVAT@	Per entity cost ex VAT (*)
@CVAT@	Per entity cost inc VAT (*)
@VAT@	VAT percentage
@ENDREPEAT@	End tag for recurring invoice rules

The tags marked with an asterisk (*) must be enclosed by the @REPEAT@ and @ENDREPEAT@ tags.

CRM-CTT also supports extra fields in templates. Suppose you have a drop-down entity field named “Invoiced”, you can find it’s reference number under “Show list of valid template tags” on the main administration section (let’s say it’s 12). Using this reference number, you can include the corresponding field value in the template by using a tag like @EFID12@. For a full list of supported tags, click “List of valid template tags” on the main administration page.

When you’re not sure how this works, try adjusting the sample template to your needs.

20. MAIL MERGES

Since version 2.5.2, CRM-CTT supports mail-merging. With this module, an administrative user is able to create mail-merges based on information stored in the customer table. The mail merge module of CRM-CTT works similar to the invoice module, except it only parses customer addresses.

CONFIGURING YOUR INSTALLATION

First, make sure you have set configuration directive “ENABLEMAILMERGEANDINVOICING” to “Yes” in the administration section. Without this, the link will not appear on the main page. When enabled, the link will still only appear for administrative users.

Second, make sure a mail merge template exists. CRM-CTT standard comes with a sample. To create your own RTF-sample (see the chapter on “Invoicing”) use a standard word processor like MS Word or OpenOffice.

Tags in your template must be enclosed by @’s. The available tags are:

@DATE@	The current date in the format configured in CRM-CTT
@CUSTOMER@	The customer (main) name
@CUSTOMER_CONTACT@	The name of the customer contact
@CUSTOMER_ADDRESS@	The address of the customer

CRM-CTT also supports extra fields in templates. Suppose you have a drop-down entity field named “Invoiced”, you can find it’s reference number under “Show list of valid template tags” on the main administration section (let’s say it’s 12). Using this reference number, you can include the corresponding field value in the template by using a tag like @EFID12@. For a full list of supported tags, click “List of valid template tags” on the main administration page.

For a full list of supported tags, click “List of valid template tags” on the main administration page.

This should be enough to create a solid mailing for al your customers. When you’re not sure how this works, try adjusting the sample template to your needs.

21. TEMPLATED ENTITY FORMS

Hint: also read the chapter about FormFinity!

When installing CRM-CTT, the standard entity form was installed. This form has some characteristics and limitations. The most important limitation is that it a) cannot be adjusted and b) will always show all extra fields the user has access to.

The standard form is complete, and probably the best to use for day-to-day operations. But, if you have a specific group of people who need another form, you can create this yourself.

If you want to create your own forms, you need to follow these steps:

1) Determine which fields you would like to have on the form. Customer, Owner and Assignee are mandatory.
2) Create the form template
3) Assign the form to a test user
4) Test the form
5) If the form is good, create a user-profile having this form assigned
6) Assign the people to the user-profile

In form templates, tags are enclosed by #'s for creating a form element (e.g. a select box, text box, date field etc) and static information tags are enclosed by @'s just like all other templates.

EXAMPLE SCENARIO

1. Determine the fields

Let say you'd like a form containing (only) the following information:

a) The name and address of the customer

b) Extra field "Is this request about a PC-upgrade?"

c) Extra field "PC-Upgrade approved by Dept. Manager?"

d) The main comment box

e) The "download PDF report" icon

f) The possibility to upload files

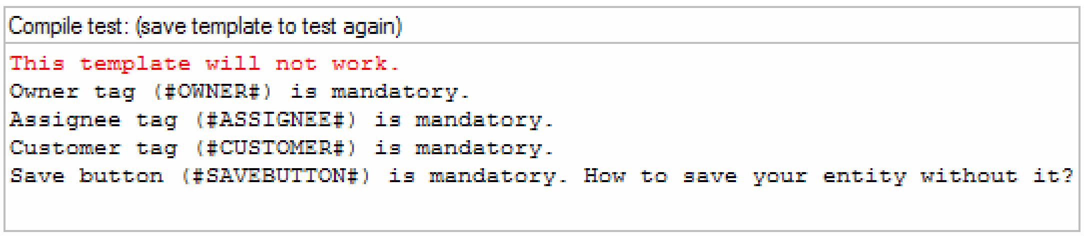
g) A "Save to database" button

2. Create the form

Go to the templates section, and create a new, empty form template:

Click “Create” and after the page refreshes, click “Edit” on the appropriate row:

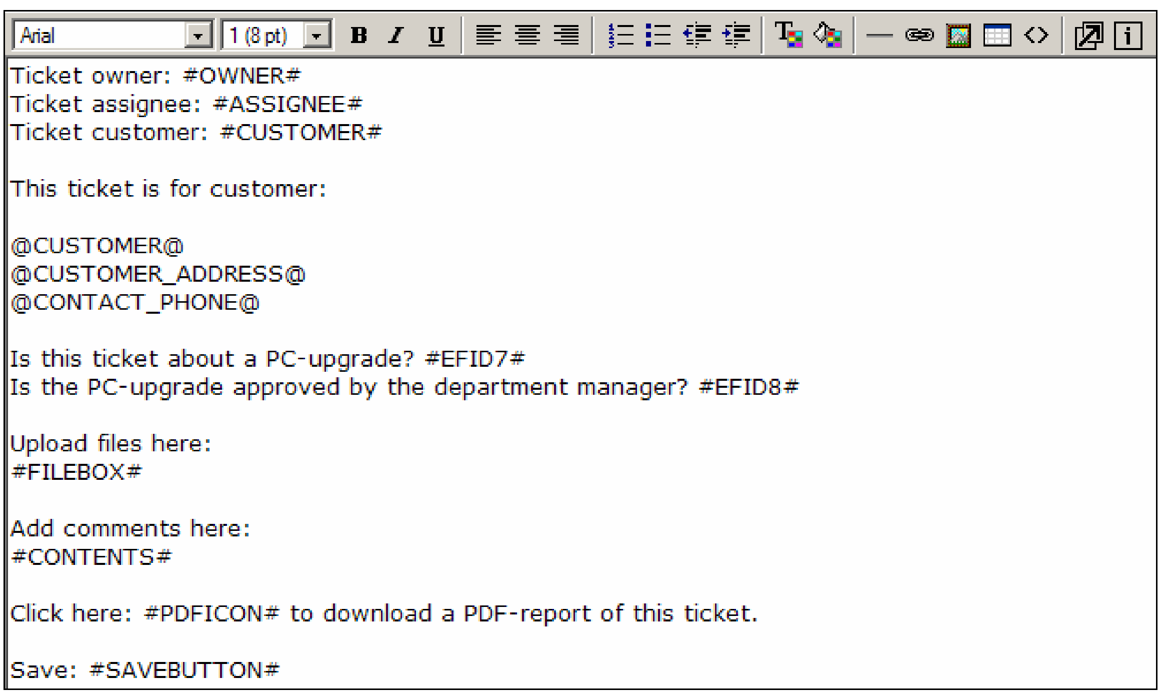
You’ll see the rich-text editor, and a form compile text box. This box contains errors already:



This is because the form is empty, so nothing to worry about.

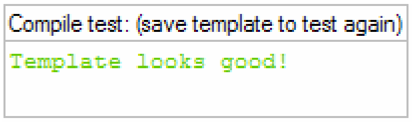
Next, give the form a subject. This subject won’t be used, though you must set it in order to be able to save the form:

Next, hit “Go!”. The template saves and we can start adding fields:



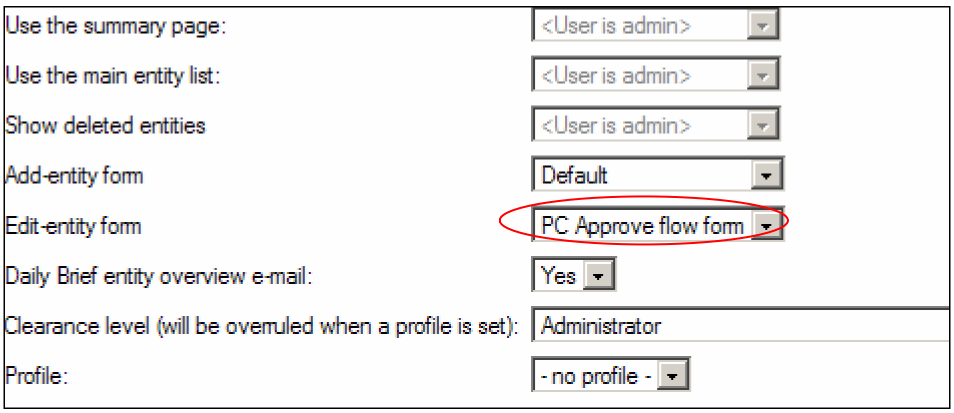
Next, click “Go!” once more.

If all went well, the compile test box at the top now says the following:



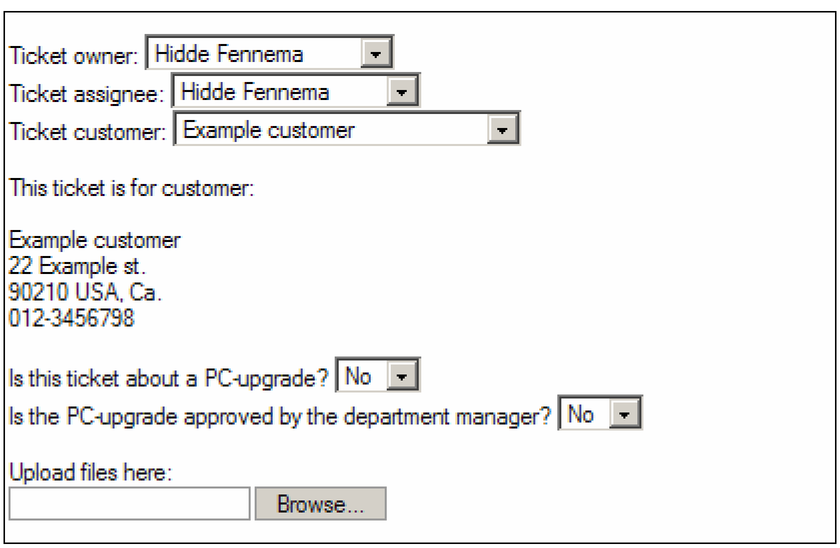
3. Assign the form to a test-user

Now let's take a look at the template. Go the the users/profiles section, and assign the form to a test user – could be yourself…



4) Test the form

Now edit an entity! You'll see your newly created form.

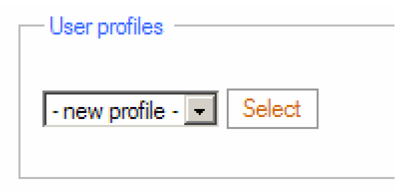


5. Creating a user profile with this form

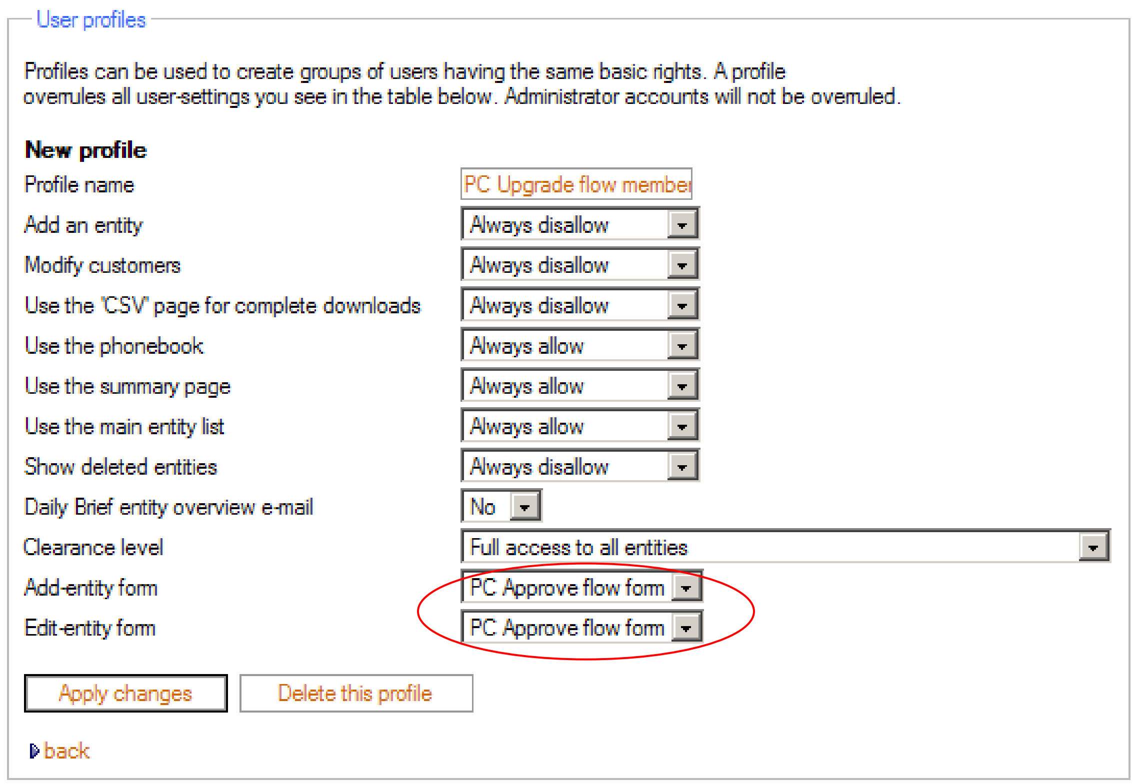
Although the lay-out of this form is, let's say, not very good, we still like it very much. There are 3 ways to enable the form for a group of users:

1) On a personal level (like the test we did)
2) On a user-profile level
3) Globally (for all users)

In this example, we'll do option 2. In the user/profiles section, create a new profile:



Press "Select". The following form appears:



6. Assign users to the profile

Now we have to assign users to this profiles. Edit a user, and select the profile:

Please mind that when setting this option, the effect is there immediately.

22. FormFinity – Multiple forms in one repository

Starting with version 3.4.0, CRM-CTT offers FormFinity. With FormFinity, an entity has it's own form, and it will always present itself in that form. Next to that, users can get access to a set of forms (in their personal profile, or by group policy) so that they will be presented with a list of forms to choose from. This also goes for limited (insert-only) users.

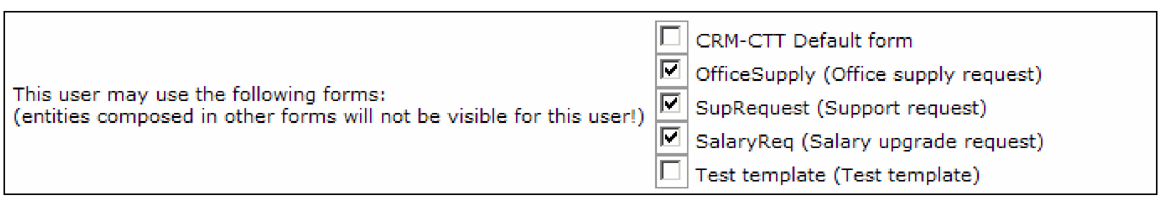
When installing CRM-CTT, FormFinity is enabled by default, and all users have the right to use the default edit-entity form. When you upgrade from a previous version, FormFinity will be disabled because it could interfere with your current settings; you will have to enable it in the Global Settings section.

If you want to use FormFinity (and multiple user forms), start with making sure FormFinity is enabled. After that, create your forms using the HTML Form editor. The subject of the form will be the text the user gets to see.

Let's say we've created four forms:

1. Support request
2. Office supply request
3. Salary upgrade request
4. Some test template

Make sure the user has the rights to use these forms (by user-profile or group policy) :



When the user now tries to add a new entity, he/she will see this:

The template will "stick" to the entity the whole way. Templates which are in use by an entity (open or deleted) cannot be removed.

Warning: in PDF and Excel exports, the user is still able to see fields which may not be in the template!

23. TEMPLATED ENTITY REPORTS

RTF REPORTS

Since version 2.6.0, CRM-CTT supports configurable RTF entity reports. These reports work the same as the invoice and mail merge functions, except that entity reports are not primarily based on the customer list, but on the entity list.

CONFIGURING YOUR INSTALLATION

Before you can use templated entity reports, you must set configuration directive EnableEntityReporting,

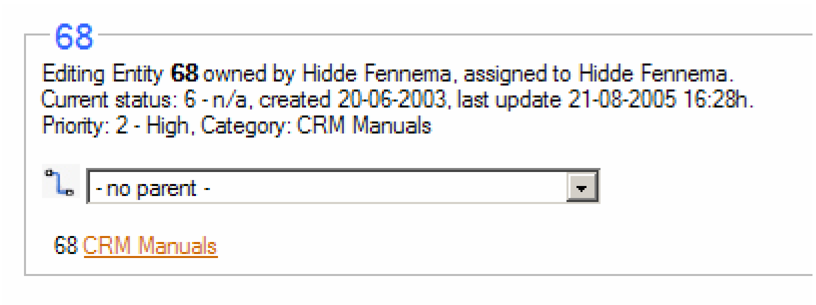
HTML REPORTS

You can also create templates in HTML for entity reports. They work the same as all other templates. Create a template of type "HTML Summary page report template" in the templates section. As soon as you've added it, it will be available for reporting. You can use it in the summary page, it will appear in the "Report method" pull-down box.

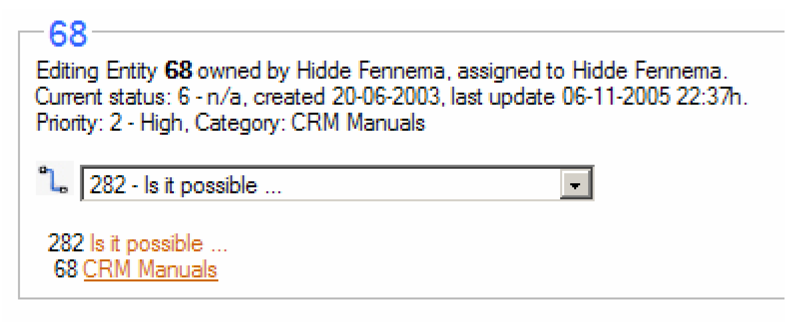
24. ENTITY RELATIONS (SUB-ENTITIES)

Since version 3.3.2, CRM-CTT supports entity relations. Entity relations can be used to relate entities to one another.

To enable entity relations, set the global setting ENABLEENTITYRELATIONS to ‘Yes’. This will enable an extra drop-down field on the main entity form:



When you select an entity here, the current entity will be regarded as “child” of the parent entity:



Now entity 68 (in this example) is related to entity 282.

However, entity 68 will now still show up in the main list. To avoid this, enable the HIDECHILDSFROMMAINLIST setting.

Note: entity relations are made to make your life easier when working with the application – CRM-CTT will regard relations for all other functions like exports, invoices, reports etcetera.

25. UPGRADING CRM-CTT

Every release of CRM-CTT comes with a script called “upgrade.php”, which can take care of all upgrade issues. You should handle upgrades as follows:

1. Backup your CRM-CTT directory and your database (really!)
2. Unpack the new CRM-CTT software to a new directory
3. Copy your old config file over the empty distributed one
4. Point your browser to http://yoursite/your/upgrade.php

You will see something similar to this:

DATABASE UPGRADE PROCEDURE

This procedure converts your CRM database which is needed when you upgrade to a new version of CRM. As this script alters your database(s), only use this script after you have made backups of your database and your web directory!

This procude will only convert repositories which have the correct DB version number.

This script will upgrade all databases (repositories) found in your config.inc.php. The following repositories will be upgraded:

id	Database	DB Version	# entities	Name
0	CRMDEMO	4.0.0	155	Demo (with WebDAV)
1	CRMBACKUP	4.0.0	1296	Backup log repository
2	CRMSTAGETEST	4.0.0	20	TESTING
3	CRMSTAGE	4.0.0	272	Development 3.0
4	DELETEME	4.0.0	2	4.0.0 Installtest
5	HIDDECRM	4.0.0	50	Private documentation
6	CRM	n/a	n/a	Couldn't select database
7	CRMROLLOUT	4.0.0	260	IB Vestigingen database
8	CRMdb	n/a	n/a	Couldn't select database
9	BLAM	n/a	n/a	Couldn't select database
10	CRMPNL	4.0.0	301	IBR PNL
11	CRMTECHNICOM	4.0.0	1	IBR Changes
12	CRMLLTTD	4.0.0	101	TTD EVE
13	CRMDTS	4.0.0	8252	DTS Mondriaan
14	CRMINFRAPROJECTS	4.0.0	825	Infra Projecten administratie
15	CRMMONDRIAANTTG	4.0.0	324	IB Vestigingen database TTG
17	CRMMONDRIAANRNL	4.0.0	504	IB Vestigingen database RNL

Any user who can log into one of your repositories as Admin can run this script so please be careful. Delete this script after use!

To upgrade from database 3.3.2 to 4.0.0 click here.

To upgrade from database 3.3.1 to 3.3.2 click here.
To upgrade from database 3.3.0 to 3.3.1 click here.
To upgrade from database 3.2.0 to 3.3.0 click here.
To upgrade from database 3.1.0 to 3.2.0 click here.
To upgrade from database 3.0.0 to 3.1.0 click here.
To upgrade from database 2.6.2 to 3.0.0 click here.
To upgrade from database 2.6.1 to 2.6.2 click here.
To upgrade from database 2.6.0 to 2.6.1 click here.

Please be <u>very careful</u> when choosing your upgrading needs! After you have run this script, your database is converted. It is advisable to delete the script called “upgrade.php” after you’re done.

To upgrade repositories more than 1 version, click all the appropriate links one at the time, starting at the oldest.

You can also upgrade from the command line. In some cases this is more safe; when you have large databases and you don't want your browser to quit loading because the time is up.

Important: whether you're running the upgrade procedure via web, or on the command line, you're still dependent of your PHP-setting "max_execution_time". If this setting is set too narrow, you can get in serious trouble. Make sure it is at least set to 60 seconds.

To upgrade from the command line, issue the following statement:

```
/path/to/php –q ./upgrade.php
```

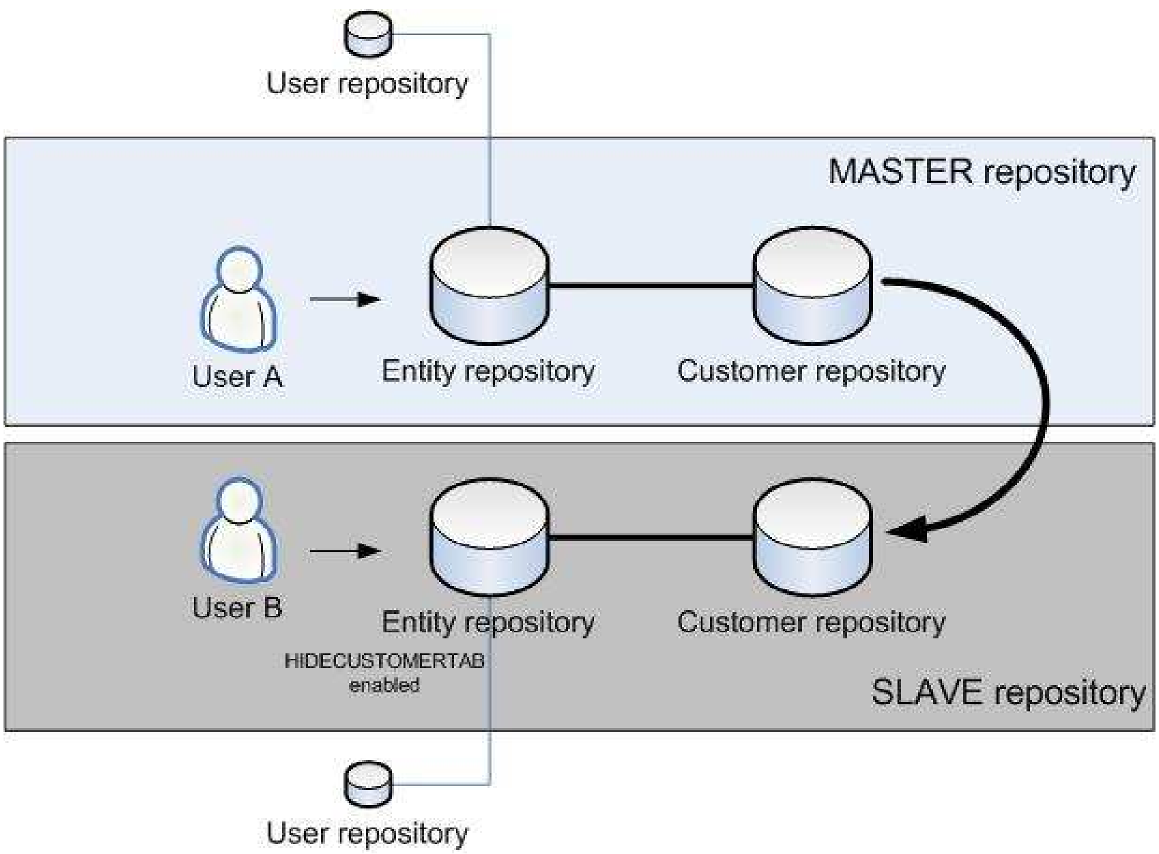
You will be asked to log on to one of your repositories as an administrator. When done so, you can choose your upgrading needs.

26. CUSTOMER DATABASE SYNCHRONIZATION

CRM-CTT offers a way of having two repositories sharing their customer database. This actually is not a synchronization method, but a plain copy. Nevertheless “synchronization” sounds better than “copying”.

By choosing the “Import [customer] database table from another repository” option in the administration section, you’ll be able to **import** a [customer] table from any other CRM-CTT repository configured in your installation.

This option will only work if the slave repository (see figure below) has the HIDECUSTOMERTAB directive set to “Yes”. Obviously users should not be able to change the data in this table for it will be overwritten the next time the administrator copies the table.



Please be aware you only copy the [customer] table. This includes:

- All customer data
- All customer-related custom fields
- The custom fields definitions for the customer table

Nothing else will be copied; users, logs, entities, calendar entries etc. remain separated.

27. TROUBLESHOOTING / FAQ

There are a few known issues which you can take a shot at:

- **I see warnings like "Notice: Undefined variable: step in ..."**

  The notices about undefined variables are there because you have a rather new version of PHP, which has a high verbosity level by default, which in your case is probably set to 'notice' instead of 'error'. If you modify your php.ini and set the notify level to 'errors only' (or something like that) this problem is gone. PHP can handle undefined variables very well, and I don't get why the latest versions they released have set the notification standard to such a verbose level.

- **I cannot upload files larger then 1 or 2 or x megabytes**

  There are 2 elements which define the maximum size of files you upload next to the CRM-CTT standard of 5 megabytes:

  - The MySQL default setting. Check you MySQL server variables. Probably your MySQL var max_allowed_packet is set to 1 MB. If this is the case, start your mysqld with this option --set-variable=max_allowed_packet=8M or adjust your safe_mysqd script.

- Your PHP default setting. Check your php.ini and look for the section “Uploading Files”. It will look similar to this:

  ;;;;;;;;;;;;;;;;
  ; File Uploads ;
  ;;;;;;;;;;;;;;;;

  ; Whether to allow HTTP file uploads.
  file_uploads = On

  ; Temporary directory for HTTP uploaded files (will use system default if not
  ; specified).
  upload_tmp_dir = C:\temp

  ; Maximum allowed size for uploaded files.
  upload_max_filesize = 2M

  Adjust this last option to increase the maximum size for uploaded files.

- **I cannot add files (attachments) and/or insert language packs**

  You probably run CRM-CTT < 1.8 on a Windows box. Upgrade to 1.8.1 or higher.

28. KNOWN ISSUES

- CRM-CTT does not work correctly when using Konquerer as your browser. Tested are IE, Opera, Mozilla Firefox and Netscape 6+. The navigation tabs skew a little when using Netscape.

- The statistic routines do not handle an empty database too well. The management information and the site statistics both need some records in the database to function properly.

- The administraton section is not multi-lingual – it's in English.

- The "Alarm Settings" dialog box is not fully multi-lingual

- CRM-CTT officially still requires the REGISTER_GLOBALS directive in your php.ini to be set to "Yes". However, routines have been added to avoid this, so 99,9% will already work with this directive disabled. When debugging, please keep in mind that your problem can be related to this matter.

- Sometimes CRM-CTT presents you with a "Your session key is invalid" message when you try to log in and it refuses to let you enter. If this is the case, please check your local computer's time settings and make sure it is not set to a date long ago.

- CRM-CTT Is not (yet) compatible with MySQL 5 in strict mode.

APPENDIX I – OTHER ADMINISTRATIVE FUNCTIONS IN A NUTSHELL

Configure systems values (ALT-S)

This is the main configuration section. In this section all global settings of CRM-CTT can be adjusted. Each variable is explaned in the application, but here's the list:

ADMEMAIL	The administrators email-address.
ADMPASSWORD	Administration password, *NONE* disables the authentication at all.
AUTOCOMPLETECATEGORY	Enter Yes if you would like type-ahead functionality in the category field on the main entity page
AUTOCOMPLETECUSTOMERNAMES	Set this value to Yes if you want a text box wich auto-completes customer names instead of a pull-down menu with all customers.
AUTOINSERTDATETIME	Enter Yes of you would like the date and time information inserted automatically when adding text to an entity.
BLOCKALLCSVDOWNLOADS	Set this value to Yes if you want to block all CSV/Excel downloads for all users except for administrators.
BODY_DUEDATE	The body of the email which will be sent to an assignee when an alarm date of a certain entity is met. Please read the manual before editing this setting.
BODY_ENTITY_ADD	The body of the email which will be sent when a new entity is added. Please read the manual before editing this setting.
BODY_ENTITY_CUSTOMER_ADD	The body of the e-mail which is send to the customer_owner when an entity (new or existing) is coupled to that customer, and the email_customer_upon_action checkbox in the customer properties is checked.
BODY_ENTITY_EDIT	The body of the email which will be sent when an entity is updated. Please read the manual before editing this setting.
BODY_TEMPLATE_CUSTOMER	The template wich is used when sending an e-mail to a customer (editable by user before sending)
CRONPASSWORD	The password used by the HTTP-GET crond job (duedate-notify-cron.php)
CUSTOMER_LIST_TRESHOLD	The number of customers listed on the main customers page. If this number of customers is exceeded, the list will not appear for bandwith reasons.
DATEFORMAT	Enter 'mm-dd-yyyy' here to display dates in US format, anything else to display dates in international format (which is dd-mm-yyyy).
DBVERSION	The current database version
DONTSHOWPOPUPWINDOW	No to show the standard javascript popup window in the entity overview, yes to disable it and make editing the entity the default action when clicking on the row.
EMAILNEWENTITIES	The e-mail address to which notifications of added entities should be mailed. Leave empty for no notification.
ENABLECUSTINSERT	Set this to yes to enable the [customer] insert functionality, no to keep customers from logging in even if they have a customer account.
ENABLEENTITYCONTENTSJOURNALING	Set this value to Yes if you want a drop-down box in the main entity window to switch to history states of an entity
ENABLEENTITYJOURNALING	Set this value to Yes if you want entity journaling enabled (a link will be added to the main edit entity page)

ENABLEREPOSITORYSWITCHER	Set this option to Yes to enable a user to dynamically switch between repositories in which the same users exist with the same password. No disables this, Admin enables it only for admins.
ENABLEWEBDAVSUBSYSTEM	Yes to enable the WebDAV subsystem, no to disable it
FORCECATEGORYPULLDOWN	Yes to show a pulldown list for the category, no to make it a text box.
HIDECUSTOMERTAB	Set this value to 'Yes' if you want the customer tab only to be visible to administrators
LANGOVERRIDE	Language override. No to let the user be able to choose his or her own language, yes to disable this feature and thereby force the use of the system-wide language choosen hereunder.
LETUSEREDITOWNPROFILE	Set this option to 'Yes' to enable user to change their passwords, edit their full name, and select wether or not they want to receive the daily entity overwiew email.
LETUSERSELECTOWNLISTLAYOUT	Wether or not to let the user select his/her own list layout
LOGO	Location of your company logo (small, GIF or JPEG). *NONE* disables the logo.
LOGON MESSAGE	This message will be displayed when a user logs in.
MANAGEMENTINTERFACE	When set to 'on', users authenticated as a limited user will only see the restricted managementinterface with very limited priviledges. Opposite to 'on' is 'off'.
MIPASSWORD	Management Information password, *NONE* disables the authentication at all.
MONTHSTOSHOW	The number of months to show in the various calendar appearances.
NAVTYPE	Navigation bar type. Use NOTABS for normal navigation, anything else for tabs
SHOWDELETEDVIEWOPTION	Wheter or not CRM should display a menu tab to view the deleted entities. Options are yes or no.
SHOWEMAILBUTTON	Yes to show an extra button to send an e-mail to the assignee when an entity is added or edited, no to disable this option.
SHOWFILTERINMAINLIST	Wheter or not to show the filter pulldowns on top of the main entity list
SHOWMAINPAGECALENDAR	Yes to show the 3-month calendar on the main page, no to disable this option.
SHOWNUMOFATTACHMENTS	Wether or not to show the number of attached documents in the main entity lists
SHOWPDWASLINK	Yes to show the PDWAS link in the file list. PDWAS is a CRM-CTT addon which enables you to edit files and directly save them to CRM-CTT without having to upload the file manually.
SHOWRECENTEDITEDENTITIES	0 for no recent list, any number under 20 to show the most recent edited entities on the main page.
SHOWSAVEASNEWENTITYBUTTON	Yes to show the Save As New Entity button, no to hide it.
SHOWSHORTKEYLEGEND	Wether or not to show the ShortKeys (ALT-1..ALT-9) legend on the tabs
SMTPSERVER	The hostname or IP-address of your SMTP (outgoing mail) server
STANDARD_TEXT	A list of standard comments which users can automatically insert as a reply in entities. Leave empty for no standard comments.
TIMEOUT	Number of minutes before a user is automatically logged off when there is no activity
TITLE	Will appear almost anywhere
Main language:	System-wide default language

CONFIGURE ACCOUNTS AND PROFILES (ALT-U)

This is where the administrator can add and edit user accounts and user profiles. All items speak for themselves, except one: the "Daily entity overview e-mail". If this option is set to Yes, the user will receive a daily e-mail containing a list of entities assigned to him or her (when the cron job is enabled). The user is able to adjust this setting, if the LETUSEREDITOWNPROFILE directive is enabled.

CONFIGURE LANGUAGE PACKS (ALT-L)

This is the link to the Configure Language Packs section as described in chapter 3, 4.

CONFIGURE REPOSITORIES (ALT-R)

This is the link to the Configure Repostories section as described in chapter 6.

CONFIGURE HELP TOPICS

This section lets the admin change the help text, and even add help topics. Adding help topics however requires quite a lot op PHP skills, because the links to the help topic will have to be made by hand, directly in the code. This is not recommended.

EDIT STATUS AND PRIORITY VALUES

In this section the admin is able to edit and add status and priority variables as described in chapter 10.

EDIT EXTRA FIELDS

In this section the admin is able to edit and add extra fields as described in chapter 8.

EDIT EXTRA CUSTOMER FIELDS

In this section the admin is able to edit and add extra customer fields as described in chapter 9.

EDIT CATEGORIES

In this section the admin is able to edit categories as described in chapter 11.

EDIT LISTS LAY-OUT

In this section, the default lay-out of the entity list and the customer list can be configured. If the LETUSERSELECTOWNLISTLAYOUT directive is enabled, the user can overrule the settings the admin makes here.

VIEW LOG & STATS
In this section the admin can view the log entries, and some user login statistics. You can also download the complete log file here (as CSV), and query the log for specific strings. There's also an option to show errors and warnings. This should be checked on a regular bases, depending on the activity in your repository.

VIEW JOURNALS
In this section the admin can view and search through all entity journals. This is quite handy when looking for a specific action made by a user.

VIEW FILES IN DATABASE
This will present a list of all files stored in the database and a check will be performed to ensure the file is referenced to an entity. You can also delete files here, as long as the referencing entity is closed and deleted. It is recommended you frequently download old files (for backup) and delete the original from the database to save disk space.

DELETE A SET OF ENTITIES
With this function you can give a given set of entities the "deleted" status which causes them not to show up anymore in the main enitity list, and even not in the Summary lists unless "include deleted entities" is checked when searching.

VIEW DELETED ENTITIES
Here you can find the complete list of deleted entities (in Brief Entity Overview-style). You can work with this entities like they were normal entities. To undelete an entity, uncheck the "this is a deleted entity" checkbox.

DELETE AN ENTITY PHYSICALLY
With this function you can really delete an entity and all its references (like files, calendar entries etc.) This function should only be used if there is an entity with data that messes up statistics. An entity must be logically deleted before it can be physically deleted.

ADVANCED DATABASE QUERY
With this function you can execute an SQL-query straight onto the database. Please use this function with care. This option comes in 2 forms; a wizard-like interface which leads you through several steps and creates a query, and an option to execute a query directy (e.g. you can type the query and execute it). The latter is potentionally dangereous. It only excludes DELETE, DROP and TRUNCATE; all other queries are allowed. (ALTER and UPDATE too!)
To disable the latter function, edit admin.php and uncomment :

```
// $Disable_direct = "1";
to
$Disable_direct = "1";
```

at the top of the file. Note: you can ONLY disable direct queries, not the wizard queries.

DATABASE INTEGRITY CHECK
This function will check your current enabled repository for errors. It will issue a MySQL "OPTIMIZE TABLE" on all tables. Furthermore, it will validate all references. This is very important – the admin should run this function once in a while – it prevents errors due to lost connections, crashed servers, databases etc. Please note: it's best to run this feature from the command-line. See appendix II for more details on this.

REPOSITORY BACKUP & RESTORE
This is the link to the Repository backup & restore section as described in chapter 13.

IMPORT PHONEBOOK RECORDS

Here you can import your phone index. If you want to, CRM-CTT can empty the phone index before inserting the new list.

IMPORT / EXPORT CUSTOMERS

In this section customers can be imported and exported using character separated files.

EXPORT EVERYTHING TO DISK

This function frankly is only useful if you or your company wants to stop using CRM-CTT. Just follow instructions. When done, you'll find a directory structure on your server which is human-readable and contains all data ever stored in CRM-CTT – perfect to continue your work using just your workstation.

SEND ENTITY LIST TO ALL USERS

This function sends an e-mail to all users who have the "Daily entity overview e-mail" set to Yes in their user profile. This can also be done by the nightly cron-script – this is just to enable the administrator to send it on request.

APPENDIX II – COMMAND-LINE (BATCH) FUNCTIONS

CRM-CTT supports some command-line functions. These functions are designed to be used by the system administrator, mostly for running jobs from the command shell for batch purposes or because these jobs would take too long to run interactively using the web interface.

CRM-CTT offers the following command-line functions:

- Add and edit entities from the command line (platform-independent)
- Add entities by e-mail
- PDF summary creation of an entire re pository (interactive and batch)
- Mass-importing files (only interactive)
- Checking and optimizing the database (interactive and batch)

ADD AND EDIT ENTITIES FROM THE COMMAND LINE (PLATFORM-INDEPENDENT)

CRM-CTT can be used as a logger for certain jobs on your system. As an example; you could let your backup scripts use CRM-CTT for logging. CRM-CTT in that case handles all e-mails, statistics etc. This way, CRM-CTT could look like this:

Brief log entry overview

ID	Transaction All	Owner All	Assignee All	Status All	Priority All	Category	Due date	last update	Creation date
11	Backup logs	Logger	Hidde Fennema	1 - Error	1 - Normal	Backup Fri, 5 Nov 2004 11:45:52 +0100	05-11-2004	05-11-2004 11:56h.	05-11-2004 11:45h.
12	Backup logs	Logger	Hidde Fennema	1 - Error	1 - Normal	Backup Fri, 5 Nov 2004 22:01:11 +0100	05-11-2004	05-11-2004 22:13h.	05-11-2004 22:01h.
13	Backup logs	Logger	Hidde Fennema	1 - Error	1 - Normal	Backup Sat, 6 Nov 2004 03:00:02 +0100	06-11-2004	06-11-2004 14:53h.	06-11-2004 03:00h.
14	Backup logs	Logger	Hidde Fennema	4 - Warning	2 - Connection timeout	Backup Sat, 6 Nov 2004 14:57:43 +0100	06-11-2004	06-11-2004 15:11h.	06-11-2004 14:57h.

There are numereous options to think of to implement this besides backup loggin. Things like file transaction logging, temperature logging, but also letting your e-mail server insert entities directly from a received e-mail into CRM-CTT.

The script handling this, is called “crmlogger.php”, to be found in your CRM-CTT installation directory. To use this script, you need the following:

- The PHP CGI-executable (std. on windows systems and most *nix systems)
- When **not** running on your primary CRM-CTT server you’ll need to copy all CRM-CTT files to your secondary server.

PREPARATIONS

Before you can use remote logging, you'll need to add a specific CRM-CTT logger user. In the "Manage accounts" section you can add a user, let's say "loguser" with password "logpass". Please make sure you set the clearance level to "External logger account":

Add an entity	Follow system default
Use the 'CSV' page for complete downloads:	Follow system default
Use the phonebook:	Follow system default
Use the summary page:	Follow system default
Use the main entity list:	Follow system default
Daily Brief log entry overview e-mail:	Yes
Clearance level:	External logger account (unable to log in)

CREATING A NEW ENTITY FROM THE COMMAND LINE

To create a new entity from another program, use the following syntax:

```
php -q ./crmlogger.php [reposnr] [user] [pass] [new] ["customer name"] ["category text"]
```

In our case:

```
php -q ./crmlogger.php 0 loguser logpass new “Customer name” "This is a test"
```

*Please note: the customer name **must** exist- and, you can **not** set owner, assignee, duedate etc with this command. It simply only creates the entity. You can set all other items by updating the entity.*

The scripts returns only 1 thing: the entity number of the entity it created. You need to catch this in your script, because you'll need it for further logging. In bash, it could be done like this:

```
#!/usr/bin/bash
CRMEID=`php -q ./crmlogger.php 0 loguser logpass new “Customer name” "This is a test"`
```

The entity number will now be stored in the CRMEID variable in your bash script.

UPDATING AN ENTITY FORM THE COMMAND LINE

As described above, you'll need the entity number of the entity you want to update. Besides that, the user which you supply to the logger script must be owner of the entity.

A basic enity update can be performed as follows:

```
php -q ./crmlogger.php [reposnr] [user] [pass] [entity nr] [action="arg"]
```

In our case:

```
php -q ./crmlogger.php 0 loguser logpass 1 setstatus='1-Open'
```

Or, from the bash script:

```
#!/usr/bin/bash
CRMEID=`php -q ./crmlogger.php 0 loguser logpass new "Customer name" "This is a test"`
php -q ./crmlogger.php 0 loguser logpass $CRMEID setstatus='1-Open'
```

The following type of actions are available:

addlog="text" (adds a common text to the entity content)
addlogfromfile="/path/to/file.log" (reads the file, adds the content to the entity)
addfile="/path/to/file.doc" (attaches the file to the entity)
setstatus="status" (sets the status field to the given value)
setpriority="priority" (sets the priority field to the given value)
setowner="owner username" (sets the owner – owner must exist!)
setassignee="assignee username" (sets the assignee – assignee must exist!)
setduedate="duedate" (sets the duedate field syntax: DD-MM-YYYY)
setalarm="alarmdate" (sets the duedate field syntax: DD-MM-YYYY, to the assignee)
setduetime="duetime" (syntax: HHMM e.g. 0930 or 1400 - only whole or half hour (00 or 30))
setdeleted="y|n" (syntax: 'y' for deleted, 'n' for not deleted)
setprivate="y|n" (syntax: 'y' for private, 'n' for not private)
setreadonly="y|n" (syntax: 'y' for read-only, 'n' for not read-only)

Use the "--help" argument for more syntax support

Hint: triggers can be very handy if you want other values than the above to be adjusted when a new entity is added.

ADD ENTITIES BY E-MAIL

CRM-CTT supports inserting entities from an e-mail. This is basically a script which accepts an MIME-encoded message on the standard input, and generates an entity which will be placed in the “Inserted entities” list (or, when you enabled AutoAssignToCustomerOwner, in the main list). Hence, configuration directive “ENABLECUSTINSERT” must be set before using this.

The basic syntax is as follows:

```
# php -q ./email_in.php
```

This will however wait until you manually type in a complete (correct) MIME-encoded e-mail message and issue a CTRL-D (Linux) or a CTRL-Z (Windows). On Linux, you could actually parse an e-mail by saving a complete e-mail (including **all** headers etc.) in a file (let’s say, /tmp/mail.txt) and cat-ting this file through the CRM-CTT parser:

```
# cat /tmp/mail.txt | php -q ./email_in.php
```

This will result in CRM-CTT creating a new entity, and sending a reply to the e-mail “from” address as it was mentioned in your e-mail.

CONFIGURING YOUR MAIL SERVER

To have CRM-CTT automatically parse e-mail messages, you will have to configure your e-mail server. This function has only been tested with Sendmail, though it should work with many other mail servers too. If you have another mail server running this function, please let us know.

In Sendmail, you’ll have to create an alias (probably in your /etc/mail/aliases file). Create this alias as follows: (this will create an alias called “crm”)

```
crm:  "|/p/t/php –q /p/t/email_in.php [reposnr] logger_user logger_pass new 'Full
customer name'"
```

e.g.

```
crm:  "|/usr/bin/php –q /var/www/html/crm/email_in.php 2 loguser logpass new 'IBM'"
```

The "new" in the line must be there. **Be sure the username and password are log users. If an error occurs in parsing the e-mail, this information could in some occasions be readable by the sender!**

BATCH GENERATE PDF REPORTS

The script “generate_total_pdf_summary.php” will create a PDF summary of all entities in the repository. It will include deleted intities. The syntax is as follows:

```
# php -q ./generate_total_pdf_summary.php
```

The interactive interface will ask you for a repository number, your username, and your password. Be aware, for your password will be displayed in plain text. This, unfortunately, is a PHP limitation.

When you want to create a report in batch (e.g. using cron or similar), you can give all arguments when starting the script from your scheduler, using the following syntax:

```
# php -q ./script.php [reposnr] [user] [pass] [images - Y or N] [path]
```

e.g:

```
# php -q ./generate_total_pdf_summary.php 0 admin adm_pwd y /tmp/
```

Use the “--help" argument for more syntax support.

MASS-IMPORT FILES

When a high number of files needs to be attached to an entity, this script can be used to attach them. The files need to be directly accessible, so they have to be placed in a directory accessible by the file system.

The syntax of this script is as follows:

```
# php -q ./import_files.php
```

The script has no batch option – it's always interactive so it has to be run manually. Some questions will be asked (username, password, target entity number, and source directory).

DATABASE INTEGRITY CHECK

CRM-CTT supports database checking using the administration section. However, it might be a good idea to do this daily or weekly to prevent data loss due to crashes, lost connections etcetera. It's advisable to run this check regularly. The syntax is:

```
# php -q ./checkdb.php
```

Or, less interactive:

```
# php -q ./checkdb.php [reposnr] [user] [pass] [y|n]
```

The last argument (y or n) stands for "automatic repair". If set to "y", unreferenced records will be deleted without confirmation. This is quite safe, though.

Use "—help" for syntax information.

APPENDIX III – SERVER SYSTEM REQUIREMENTS

You need at least the following to run CRM-CTT:

i. A server connected to an IP network
ii. An installed web server
iii. PHP 4.x.x
iv. MySQL greater than version 3.22.16
v. Preferably: GD library embedded in PHP
vi. Shell (or DOS) -access to your web server (once)

CRM-CTT has been successfully tested on Linux (Slackware and RedHat AS2.1, AS3.0), but is reported to work on most, if not all, distributions), FreeBSD, MacOS X and Windows NT/2000/XP.

Minimum hardware requirements:

i. Pentium II+
ii. 256 or more megabytes of RAM
iii. 5 megabytes free space in your web directory
iv. 30 megabytes (at least) free database space
v. Approx. 8k per user session network bandwidth available

When using CRM-CTT for your department, please do not underestimate the system characteristics CRM-CTT requires to run properly. As CRM-CTT is able to search through binary files, the search functions can get slow if your server has little memory or a slow CPU. As an example, we run CRM-CTT with 150 users on an IBM Netfinity 5500, 4 CPU's @ 1Ghz with 1024MB of RAM and SCSI discs.

APPENDIX IV – ACKNOWLEDGEMENTS

Within CRM-CTT some other open-source products were used – all used code was distributed under GPL or similar license so no copyrights were broken.

- The logo by Marcin and Lukasz
- The mail by Brent R. Matzelle, http://phpmailer.sourceforge.net
- The FPDF library for creation of PDF exorts, http://www.fpdf.org
- The Entity Contents Journaling idea, including patch: Kaveh Goudarzi
- The three icons above the main text edit box where honestly stolen from Alex King.
- The MS Excel export functionality was based on the code of Spreadsheet::WriteExcel
- HTTP_WebDAV_Server classes made by Hartmut Holzgraefe hholzgra@php.net
- The Italian translation by Giovanni Costantini, Italy
- Lots of fixes and ideas of Cheyenne Greatorex
- Lots of other people translated CRM-CTT, though I've lost track of all names. If you're one of them, don't by shy and claim your fame.

Next to that, many thanks to all people at work for their feedback, positive or negative, aware or nonaware, since 1999:

Ellen vE, Edward vH, Jeroen W, René E, Nathalie V, Niklas A, Richard L, Linda lG, Bert K, Peter V, Mart vL, Riette H, Edwin S, Herman K, Bart R, Nicole L, Roderick H, Ramon T, Hans H, Ernst G.

Next to these people, I would like to note Evert H. for adopting this product and bringing new ideas to the project : http://www.nextone.nl

Specials thanks goes out to my partners in crime: Jeroen v.d. H. and Wouter d. J. Their feedback was and is crucial to this project.

APPENDIX V – HINTS WHEN ALTERING CRM-CTT'S PHP-CODE

When you want to change things to CRM yourself, you probably have some idea to improve CRM-CTT. So, first of all, check some things (mainly by sending me an email) :

- Isn't the functionality you want already on the development list?
- Am I (Hidde) interested in putting your contribution to the main development branch?
- Didn't somebody else already write the code?

Next to this, when developing on CRM-CTT, know how. Most development aids are to be found in the getset.php file, on the top:

```
$GLOBALS['logqueries']    = false;   // logs all queries
$GLOBALS['logtext']       = false;   // logs all comments
$GLOBALS['query_timer']   = false;   // logs slowest SQL query
$GLOBALS['qlog_onscreen'] = false;   // displays pop-up containing log
$GLOBALS['ShowTraceLink'] = false;   // displays qlog trace link at end of page
```

For almost all of these nifty features, you'll need a file called "qlist.txt" in your CRM-CTT installation directory, which is writeable by the webserver. The "logtext" feature is by far the most important, it'll generate nice output about what CRM-CTT is doing when a page is parsed:

```
/index.php 06-03-2005 16:28:32s (Development 2.6)
REM: (nousr) : Extracted 2 variables to symbol table.
REM: (hidde) : LoadLanguage:: Loading language ENGLISH hard-coded (437 tags)
REM: (hidde) : LoadLanguage:: Default language from database is ENGLISH
REM: (hidde) : LoadLanguage:: Language ENGLISH not loaded - it is already in memory
REM: (hidde) : LoadLanguage:: User language selection is overridden - YES
REM: (hidde) : LoadLanguage:: User-preferred language not loaded - it is system default
REM: (hidde) : LoadLanguage:: Mask is CRM-DEV-MASK (not loaded yet)
REM: (hidde) : LoadLanguage:: Loading mask CRM-DEV-MASK (18 tags)
REM: (hidde) : GetUserName:: hit 1 CACHE GetUserName getset 1 Hidde
REM: (hidde) : GetUserName:: hit 2 CACHE GetUserName getset 1 Hidde
REM: (hidde) : IsAdminstrator:: This is an admin allright
REM: (hidde) : GetClearanceLevel:: hit 3 CACHE GetClearanceLevel 1  administrator
```

When asking programming-related questions, be sure always to include the trace like shown above.

APPENDIX VI – DONATIONS

Donations are rare. Even though I'm quite certain that more than 5,000 companies are using CRM-CTT daily, I'm not receiving much donations. To keep motivated, sometimes a donation helps, although I get the most out of (positive) personal reactions.

SourceForge provides a method for donating, using (all payment methods supported by) PayPal. This method is preferred, because a part of any donation goes to charity, and a part will be donated to the open source movement (both 5% if i'm correct). Besides that, your donation will, if you wish, show up on the CRM-CTT project page. See https://sourceforge.net/donate/index.php?group_id=61096 for the CRM donation page.