

OPC v3.0.0b OTRS PBX client module
Asterisk PBX Integration module
Administrator's Guide

Contents

Introduction	3
Preparing Asterisk PBX for integration with OTRS	4
Install the OPC package on the OTRS server	6
Configuring the OPCv3.0.0bmodule.....	7
Setting agent extensions	9
Linking agent extensions to Tracking numbers.....	9
Definition of "Tracking number"	11
Customer User identification	12
CallerID modification.....	12
CallerID category	13
CallerID blocking.....	14
Starting the service	15
Configuring client application	16
Close client application	18
Setting up with LDAP customer backend	20
Trouble shooting	23

Introduction

Add-on OTRS PBX client(OPC) is intended for helpdesk and call centers that use the OTRS system.

With the new Add-ons feature, you can immediately notify customers of the ticket number without filling fields on form.

Functions of the module:

- Informing agents about the call and the customer by CallerID
- Create a ticket with one click in the agent notification window

Functions of the module OPCv3.0.0b:

- Informing agents about the call and the customer by CallerID
- Create a ticket with one click in the agent's notification window
- Opening a new phone ticket by the agent notification window
- Using CallerID Categories
- CallerID blocking function

Features

Database type: MySQL

The OPC module uses the client-server architecture

The service runs on the OTRS server and uses TCP port 11010 to connect client applications.

Preparing Asterisk server for integration with OTRS

The AMI (Asterisk Manager Interface) interface is used to interact with Asterisk.

Connect to Asterisk server with full rights (sudo).

On the Asterisk server, create a user for connect to the AMI interface:

for general Asterisk versions:

Open the manager.conf file for editing

```
nano /etc/asterisk/manager.conf
```

Add the lines by replacing the value of "IP_address_OTRS" with the IP address of your OTRS server:

```
[otrs]
```

```
secret = SomePassword
```

```
deny=0.0.0.0/0.0.0.0
```

```
permit=IP_адрес_OTRS/255.255.255.255
```

```
read = system,call
```

```
write = system
```

```
writetimeout = 100
```

for some versions of Asterisk (13.1.x):

Create the otrs.conf file in the /etc/asterisk/manager.d/ directory:

```
nano /etc/asterisk/manager.d/otrs.conf
```

Add the lines by replacing the value of "IP_address_OTRS" with the IP address of your OTRS server:

```
[otrs]
```

```
secret = SomePassword
```

```
deny=0.0.0.0/0.0.0.0
```

```
permit=IP_адрес_OTRS/255.255.255.255
```

```
read = system,call
```

```
write = system
```

```
writetimeout = 100
```

After making the changes, restart Asterisk using the CLI:

```
asterisk -r
```

by executing the command:

```
core restart gracefully
```

After restarting, Asterisk server is ready to work with OPC module for OTRS.

For FreePBX, on the Asterisk Manager Users page, add the otrs user and connection permission for the IP address of the OTRS server, as shown in the example:

The screenshot shows the 'General' tab of the Asterisk Manager configuration for user 'otrs'. The fields are as follows:

- Manager name:** otrs
- Manager secret:** (password masked)
- Deny:** 0.0.0.0/0.0.0.0
- Permit:** 192.168.73.105/255.255.255.255
- Write Timeout:** 100 milliseconds

In the permission settings check

- In the Read column: system, call
- In the column Write: system

The screenshot shows the 'Permissions' tab of the Asterisk Manager configuration for user 'otrs'. It includes a note and a table of permissions.

For information on individual permissions please see the Asterisk Manager Documentation

Permission	Read		Write	
system	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
call	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
log	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
verbose	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
command	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
agent	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
user	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
config	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
dtmf	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
reporting	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
cdr	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
dialplan	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
originate	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Install the OPC package on the OTRS server

The OPCv3.0.0b package uses additional perl-libraries which are required to be installed:

AnyEvent

IO::Socket::Timeout

To install required perl-libraries on Ubuntu execute the command:

sudo apt-get install -y libplack-test-anyevent-perl libio-socket-timeout-perl

To install required perl-libraries on CentOS execute the command:

yum install perl-AnyEvent

yum install perl-IO-Socket-Timeout

To install required perl-libraries on FreeBSD execute the command

cpan AnyEvent

cpan IO::Socket::Timeout

The specified modules will be installed.

Next, install the `opc_v3.0.0b_otrs6.opm` package for OTRSV6 (`opc_v3.0.0b_otrs5.opm` for OTRSV5) via the OTRS web interface on the **Administration-> Package Manager** page.

After installing the package, restart the CRON service by running:

/opt/otrs/bin/Cron.sh restart otrs

The OPCv3.0.0b module is ready to use.

Configuring the OPCv3.0.0bmodule

The module is configured through the OTRS Web interface.

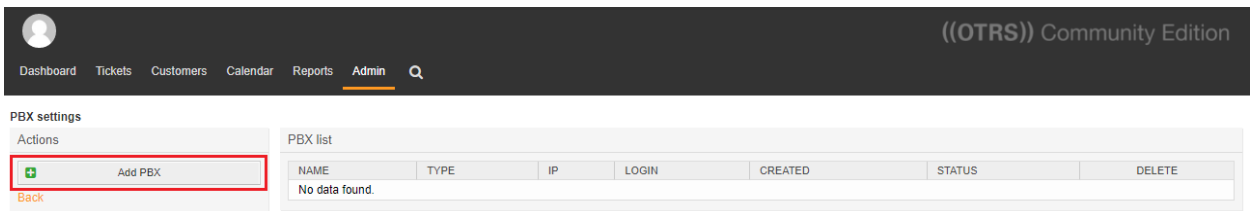
On the "Administration" page, in the " Communication & Notifications " block, click on the "Call Notification" link:

The screenshot shows the OTRS Administration interface. The top navigation bar includes 'Dashboard', 'Tickets', 'Customers', 'Calendar', 'Reports', and 'Admin'. The main content area is divided into 'Ticket Settings' and 'Communication & Notifications'. The 'Call Notification' link is highlighted with a red box in the 'Communication & Notifications' section.

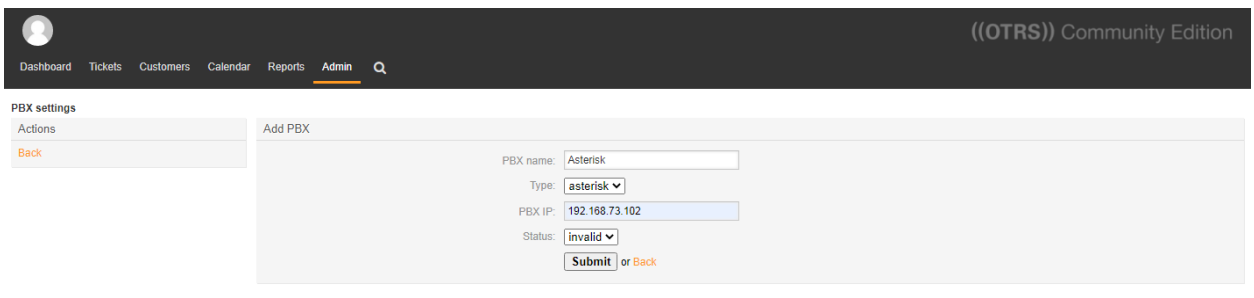
Go to the "Call notification settings" page. To add a new PBX, click the "PBX list":

The screenshot shows the 'Call notification settings' page. The 'Actions' sidebar on the left contains a search box and several links, with 'PBX list' highlighted by a red box. The main content area shows an 'Extension list' table with columns for 'EXTENSION', 'USERNAME', 'NAME', 'PBX NAME', 'CREATED', 'STATUS', and 'DELETE'. The table is currently empty, displaying 'No data found.' and 'Count: 0'.

On the PBX settings page, click the "Add PBX" button:

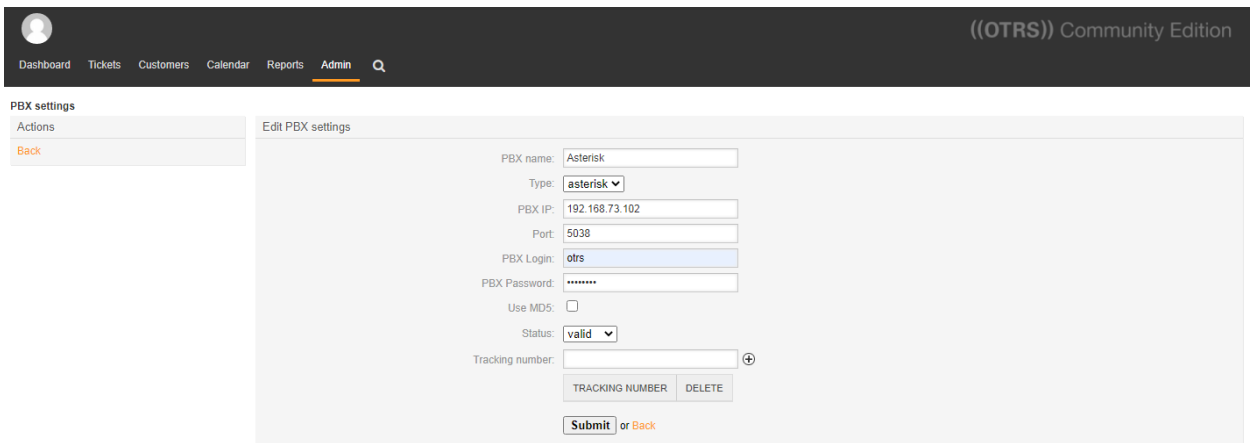


Configure the connection parameters to the PBX "Asterisk" and confirm the changes with the "Submit" button:



After adding the new PBX, you will go to the edit page.

In this section, add the PBX Login and PBX Password specified in the Asterisk AMI settings, set the status to valid:

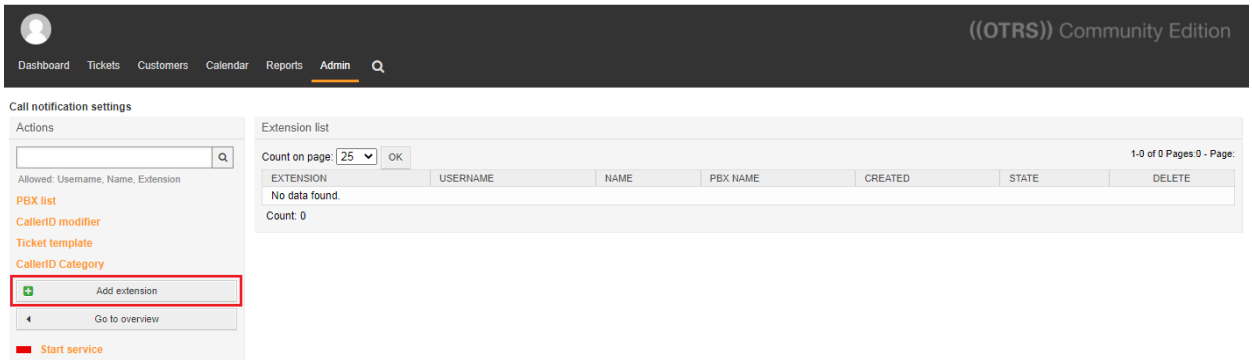


The "Use MD5" option is used for MD5 authentication with password encryption for the case where the connection to the Asterisk server is not via a trusted network.

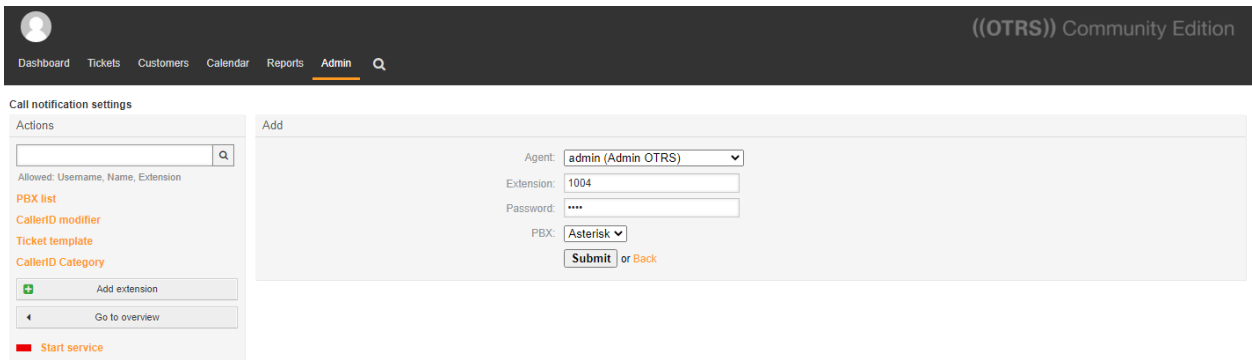
Setting agent extensions

On the "Call notification settings" page, fill in the extension numbers of agents and specify a password for connecting client applications.

To do this, click on the "Add extension" button:



On the "Add" page, fill in the fields by extension number:



Each agent can be assigned several internal numbers(extensions), which this agent uses.

Linking agent extensions to Tracking numbers

Definition: "Tracking number" is the external DID of the support service number, which receives calls from customers.

The OPC module as the "Tracking number" uses the value of the Exten field received from the Asterisk server.

This version implements the ability to form groups of agent numbers for sending selective notifications by setting the flag of binding to the Tracking number.

This option allows you to use several different groups of agents, for example: helpdesk and managers, each of which uses its own assignment number independently of the other groups.

To link agent numbers, on the “PBX settings” page, click on the link on the destination number:

The screenshot shows the "PBX settings" page in OTRS Community Edition. The page has a dark header with navigation links: Dashboard, Tickets, Customers, Calendar, Reports, Admin, and a search icon. The "Admin" link is underlined. Below the header, there's a "PBX settings" section with a "Back" link. The main content area is titled "Edit PBX settings" and contains the following fields:

- PBX name: Asterisk
- Type: asterisk (dropdown)
- PBX IP: 192.168.73.102
- Port: 5038
- PBX Login: otrs
- PBX Password: *****
- Use MD5:
- Status: valid (dropdown)
- Tracking number: [input field]

Below the tracking number field, there is a table with two columns: "TRACKING NUMBER" and "DELETE". The first row contains the value "76543210" and a trash icon. The "76543210" value is highlighted with a red box. At the bottom, there are "Submit" and "or Back" buttons.

On the next page, set the flags for the desired agent extensions, as shown in the example:

The screenshot shows the "Edit settings for Tracking Number: 76543210" page in OTRS. The page has a dark header with navigation links: Dashboard, Tickets, Customers, Calendar, Reports, Admin, and a search icon. The "Admin" link is underlined. Below the header, there's a "PBX settings" section with a "Back" link. The main content area is titled "Edit settings for Tracking Number: 76543210" and contains the following sections:

- Agent Relations: A table with columns AGENT, NAME, EXTENSION, and a checkbox. The first row has values: admin, Admin OTRS, 1004, and a checked checkbox. The checkbox is highlighted with a red box.
- Ticket template: default call notification ticket template (dropdown)
- Comment: 76543210 (incoming call) (input field)

At the bottom, there are "Submit" and "or Back" buttons.

Additional options:

The "**Ticket template**" option allows you to set an own ticket template for each tracking number.

“**Comment**” – displays the specified value in the client application window in the information field.

Definition of "Tracking number"

If you do not know the Exten DID number, to start, assign the "Tracking Number" - the symbol *

In this case, all numbers from the Exten field will be tracked.

In the PIM module, each processed call is output to the CDR file named:

pim_cdr_YYYYMM.log

File output path: /opt/otrs/var/log

From this file you can determine which external Exten needs to track.

The file pim_cdr_YYYYMM.log contains 14 fields, the fields are separated by the symbol "|" (pipe) and have the following structure:

PBX_ID|Uniqueid|UnixTimeRing|UnixTimeAnswer|UnixTimeHangUp|CallStartTime|AnsweredExtension|Exten|CID|RingTime, sec|CallDuration, sec|Cause|CustomerUserLogin|TicketNumber

Description of fields:

#	Field Value	Description
1	PBX ID	- PBX ID
2	Uniqueid	- Unique Call ID
3	UnixTimeRing	- Call ring, unixtime
4	UnixTimeAnswer	- Call answer, unixtime
5	UnixTimeHangUp	- Call end, unixtime
6	CallStartTime	- Call Start time
7	AnsweredExtension	- Answered subscriber (agent extension number)
8	Exten	- Exten field (DID number)
9	CID	- CallerID
10	RingTime, sec	- Waiting time before answer, sec.
11	CallDuration, sec	- Duration of conversation, sec.
12	Cause	- Cause for hanging Q.931
13	CustomerUserLogin	- CustomerUser login (if defined)
14	TicketNumber	- Ticket number (if created)

The file pim_cdr_YYYYMM.log is output with rotation by month.

Customer User identification

The customer identification is based on the received CallerID.

When an incoming call arrives, searches by CallerID in the customer database for the "Phone", "Mobile", "Fax" fields set on the "Customer User Management" page:

The screenshot shows the 'Edit Customer User' form with the following fields and values:

- Title or salutation: Mr.
- * Firstname: John
- * Lastname: Doe
- * Username: johndoe
- Password: (empty)
- * Email: john@ip-lab.ru
- * CustomerID: NIC Customer company
- Phone: +7(123) 456-78-90, +7(812) 123-32-23
- Fax: +7(123) 789-06-54
- Mobile: +7(987) 654-32-10
- Street: Camp Road, East Main Street, VA4210
- Zip: 123456
- City: Saint Petersburg
- Country: Russia
- Comment: Some comments
- * Valid: valid
- Interface language: English (United States)

You can specify several numbers separated by commas or space in each phone number field.

CallerID modification

If your ISP does not send CallerID in E.164 format (international number format), identification may be difficult or impossible.

This happens, for example, when the provider adds a national or international prefix to the CallerID.

To fix this issue, use the CallerID modification mode through the "CallerID modifier" page.

In this example, the prefix "0" is removed from CallerID. The modifier rule will be applied for CallerID starting with the prefix "0" and the length from 7 to 11 characters:

The screenshot shows the 'CallerID modifier settings' page with the following fields and values:

- Name: National
- Template: 0
- Replace: (empty)
- Length from: 7
- Length to: 11
- Comment: Remove national prefix
- Status: valid
- Show modified CID:
- Buttons: Submit or Back


The "Show modified CID" option sets the modified CallerID for displaying the current rule in the client application.


CallerID category

For each CallerID you can add a category and a comment.

Adding is possible through the web interface or from the client application window.

CallerIDs can be assigned four status categories with the icon displayed in the client application window:

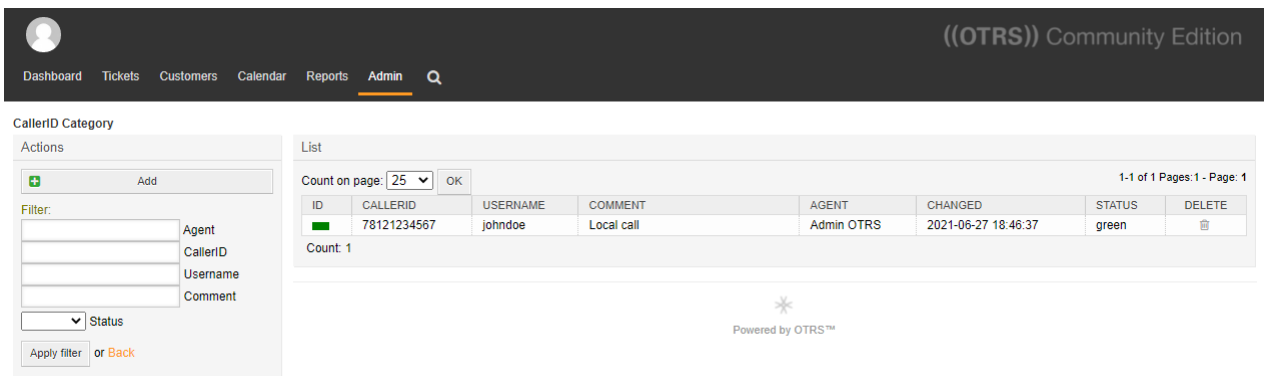
 - Neutral

 - Green

 - Yellow

 - Red

Web interface allows adding, editing and deleting the CallerID category:



Dashboard Tickets Customers Calendar Reports **Admin** Q

((OTRS)) Community Edition

CallerID Category

Actions

+ Add

Filter:



Agent
CallerID
Username
Comment

Status

Apply filter or Back

List

Count on page: 25 OK 1-1 of 1 Pages:1 - Page: 1

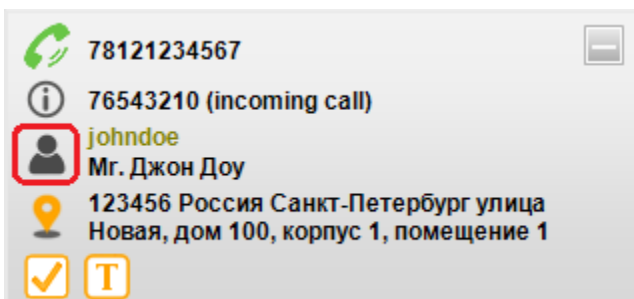
ID	CALLERID	USERNAME	COMMENT	AGENT	CHANGED	STATUS	DELETE
	78121234567	johndoe	Local call	Admin OTRS	2021-06-27 18:46:37	green	


Count: 1


Powered by OTRS™


From the client application window you can add and edit categories.

To open the category window, click on the user icon in the client window:






 78121234567

 76543210 (incoming call)

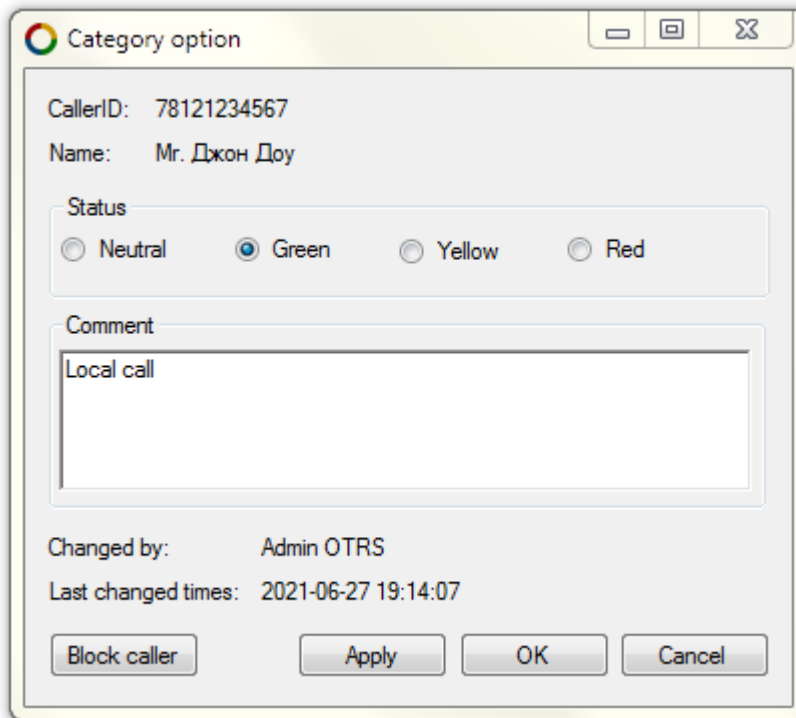
 johndoe

Mr. Джон Доу

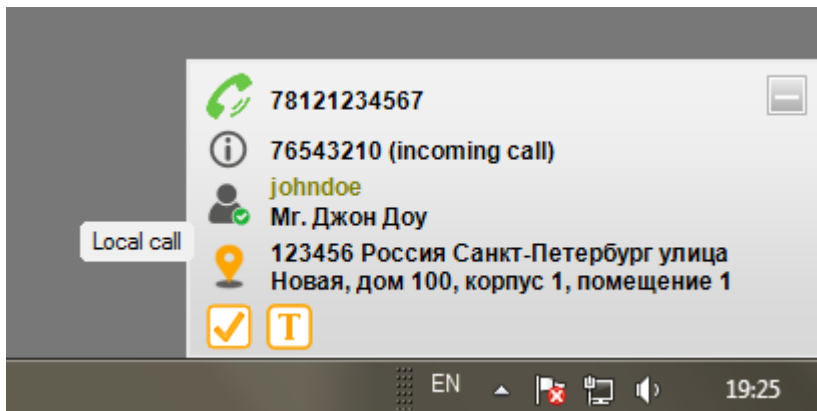
 123456 Россия Санкт-Петербург улица
Новая, дом 100, корпус 1, помещение 1

Add category status and comment:



The client window will display this icon and comment on hover:



CallerID blocking

From the client category window, you can block the caller's number in case such calls are undesirable.

Locking is performed by pressing the button:

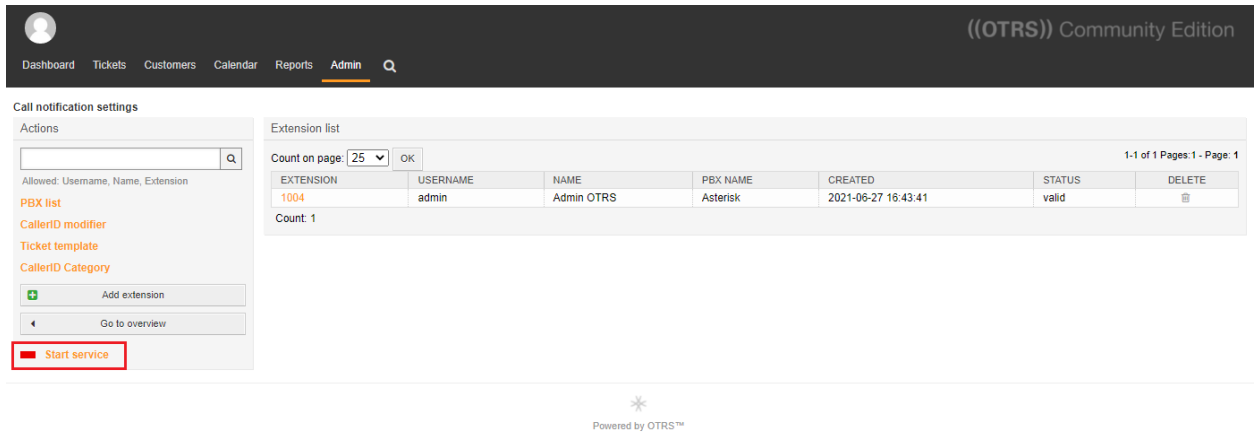
"Block caller"

The operation will add CallerID to the Asterisk database - blacklist

Removing CallerID numbers is possible through the Admin-Blacklist web page if you are using FreePBX, or through the Asterisk CLI: `database del blacklist blocked_CallerID`

Starting the service

Start the PIM service by clicking on the "Call notification settings" link "**Start service**":






The screenshot shows the OTRS Admin interface. The top navigation bar includes links for Dashboard, Tickets, Customers, Calendar, Reports, and Admin. The main content area is titled "Call notification settings" and contains an "Actions" sidebar with a search box and buttons for "Add extension" and "Go to overview". The "Start service" button is highlighted with a red box. To the right, the "Extension list" table displays the following data:

EXTENSION	USERNAME	NAME	PBX NAME	CREATED	STATUS	DELETE
1004	admin	Admin OTRS	Asterisk	2021-06-27 16:43:41	valid	

Count: 1

Powered by OTRS™

The indicator on the left shows 3 states:

-  - Service is stopped
-  - Service starts, waiting
-  - Service started

Note:

The service starts on CRON and runs for up to 1 minute.

After a successful start, the service will go into the "running" state.

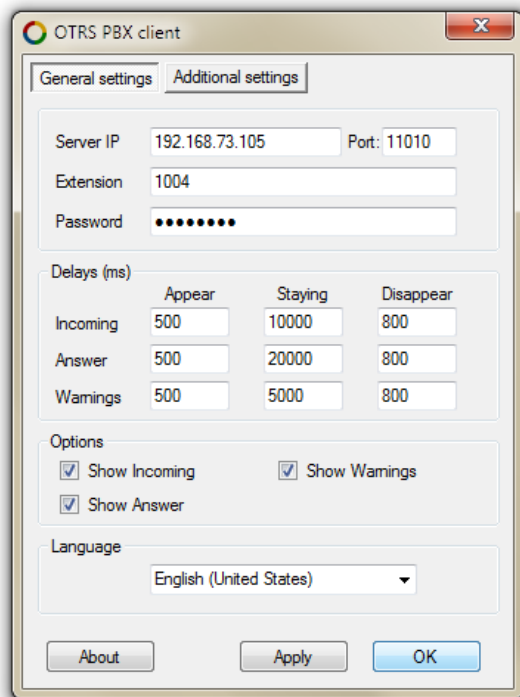
To update the status of the indicator, click on the indicator icon.

Configuring client application

Client applications are installed on workstations with Windows.

The minimum requirements are the installed package of Microsoft: NET Framework 4 and higher.

In the application settings window, fill in the settings fields as shown in the example:



Description of fields:

Server IP – IP address of the OTRS server; **Port** – Server TCP port, default: 11010

Extension – Agent extension

Password – Password of the agent on the OTRS page "Call notification settings"

Delays (ms) block

You can change the time of appearance, display and disappearance of the notification window for events:

Incoming – notification of an incoming call

Answer – notification of answering a call

Warnings – warning notices

Delays time is set in milliseconds.

Options block

In this block, you can turn off notifications in message classes by removing the desired flag.

Language – Selecting the language of the user interface.

On the **Additional settings** tab, specify the address of the OTRS server in the **Web path and T-Link** field.

In the **CID-Link** field, specify the preferred Search Engine.

The CallerID info in the **CID-Link** and **T-Link** field sets via the tag: <PIM_CID>

For Google search engine, use CID-Link:

https://www.google.com/search?q=<PIM_CID>

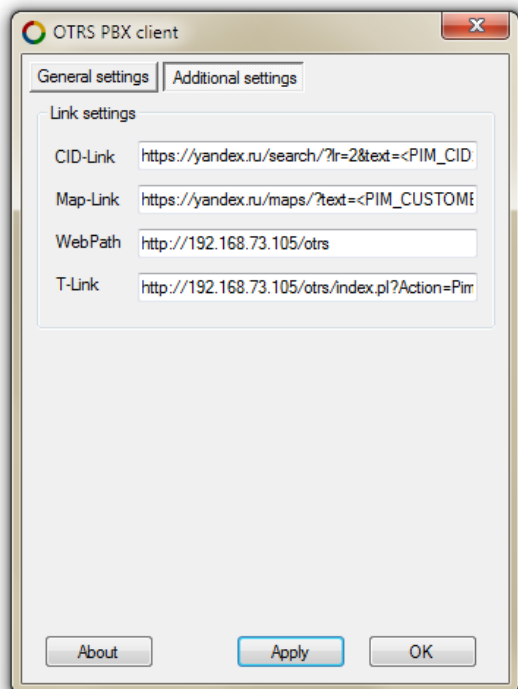
For Yandex search engine, use CID-Link:

https://www.yandex.ru/search/?lr=2&text=<PIM_CID>

Map-Link – link to a geolocation search engine.

The location is sets via the tag: <PIM_CUSTOMER_UserLocation>

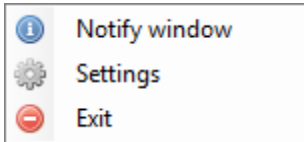
Example of the **Additional settings** tab:



Close client application

When you click the OK button  or close button , application is minimized to the system tray and continues to work.

To end the application, right-click the application icon  in the tray and click Exit:

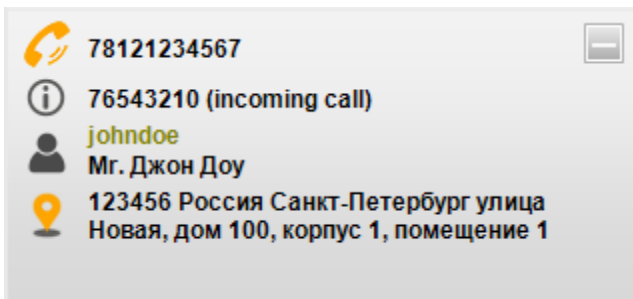


Sample notifications:

Warnings:

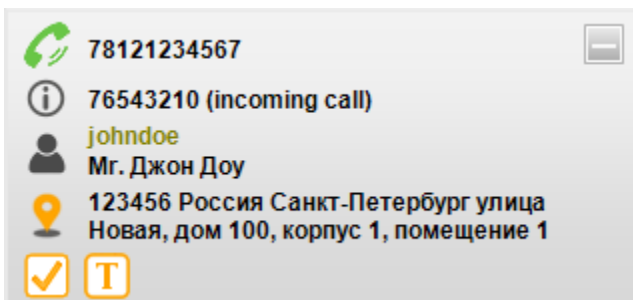


Incoming call information:




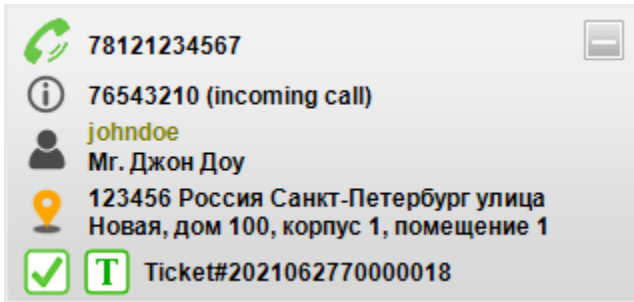
Note: Clicking on the CallerID link (**CID-Link**) will open a search result in a new browser window

Answer:




Answer options:

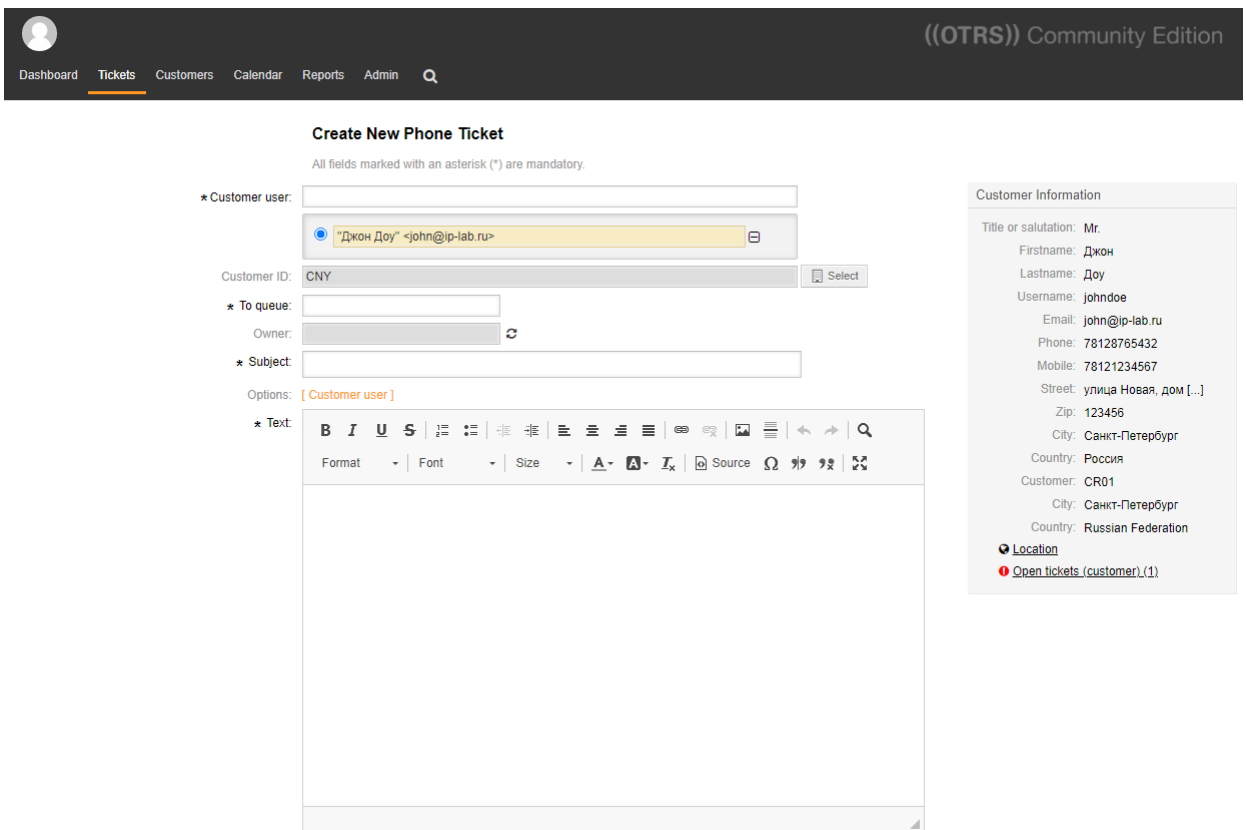
Clicking on the “OK” button  will create a ticket, with its number in the notification window:



Notification window showing call details and ticket information:

- Phone icon: 78121234567
- Info icon: 76543210 (incoming call)
- User icon: johndoe
- Person icon: Mr. Джон Доу
- Location pin icon: 123456 Россия Санкт-Петербург улица Новая, дом 100, корпус 1, помещение 1
- Checkmark icon: Ticket#2021062770000018

By click the button “T-Link”  a new phone ticket window will open:



Screenshot of the ((OTRS)) Community Edition interface showing the "Create New Phone Ticket" form. The form includes fields for Customer user, Customer ID, To queue, Owner, Subject, and Text. A "Customer Information" sidebar is visible on the right, displaying details for the selected customer (John Doe).

Customer Information:

- Title or salutation: Mr.
- Firstname: Джон
- Lastname: Доу
- Username: johndoe
- Email: john@ip-lab.ru
- Phone: 78128765432
- Mobile: 78121234567
- Street: улица Новая, дом [...]
- Zip: 123456
- City: Санкт-Петербург
- Country: Россия
- Customer: CR01
- City: Санкт-Петербург
- Country: Russian Federation

If there is a match for the CallerID in the customer user DB, the customer field will be filled in automatically.

Setting up with LDAP customer backend

The PIM module also supports LDAP customer directories.

The standard OTRS interface is used to connect to the LDAP database in the Kernel/Config.pm file.

In general, you do not need to change it.

For proper operation, it is required to place customers in the Windows AD security group, for example, "OTRS_Customers" and apply the filter in Config.pm.

For example, for the otrsdc.inc domain, the filter entry will be as follows:

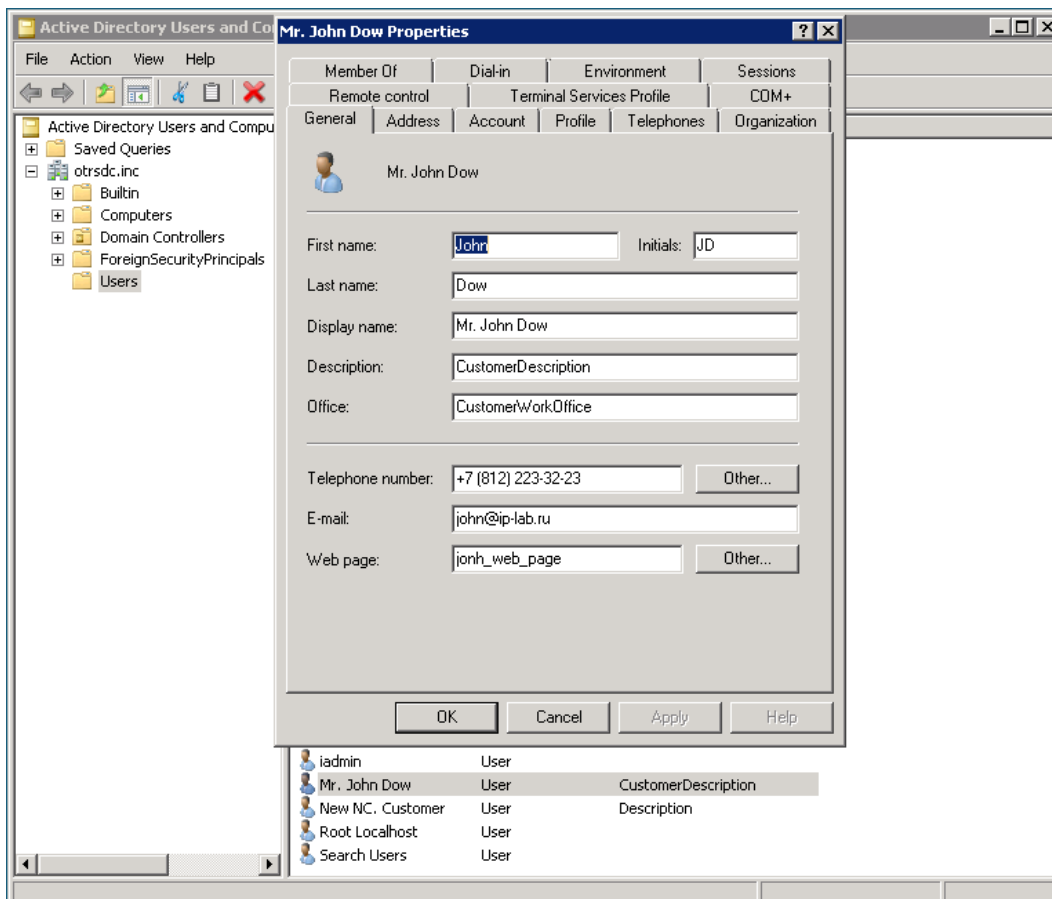
```
AlwaysFilter => '(&(objectclass=user)(memberof=CN=OTRS_Customers,CN=Users,DC=otrsdc,DC=inc))'
```

The customer search in the PIM module is performed by the fields 'UserPhone', 'UserHomePhone', 'UserFax', 'UserMobile'. To identify the customer, at least one of these fields must be filled.

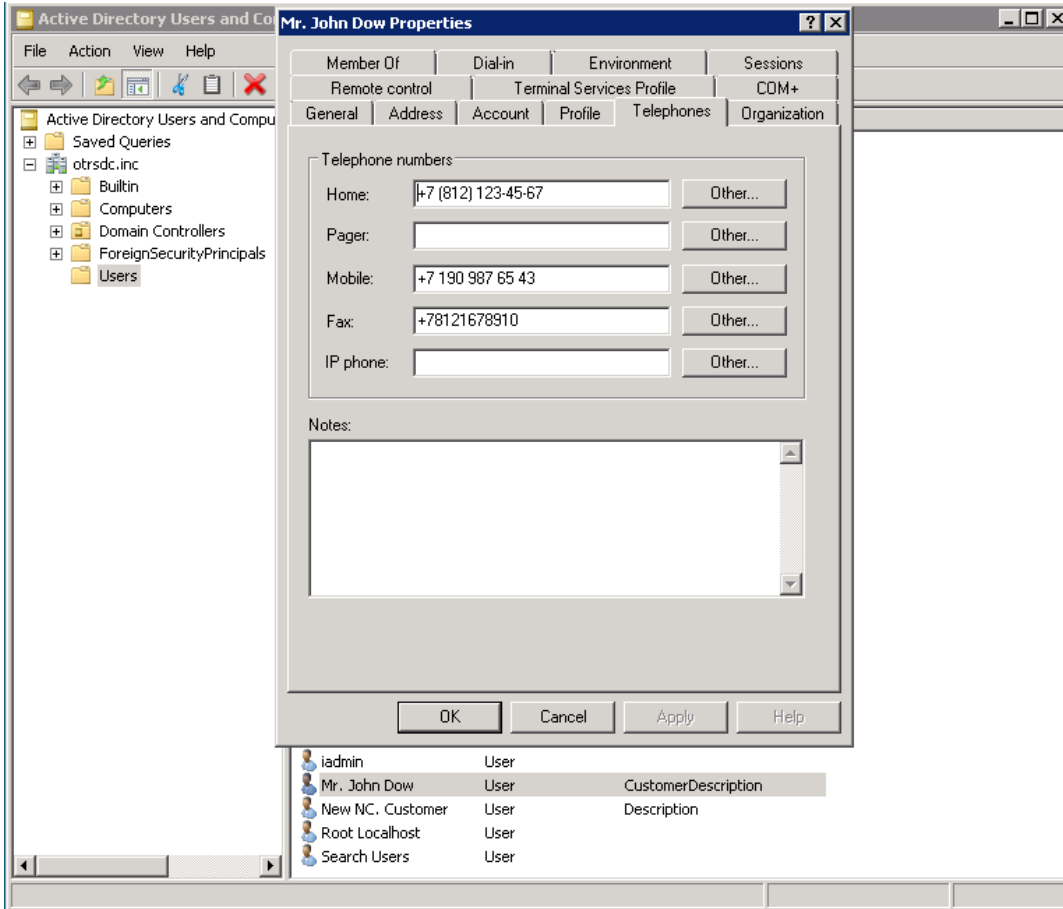
Updating LDAP data for customers occurs every 60 minutes. To immediately get LDAP changes, you need restart the PIM service.

Example of user fields in AD:

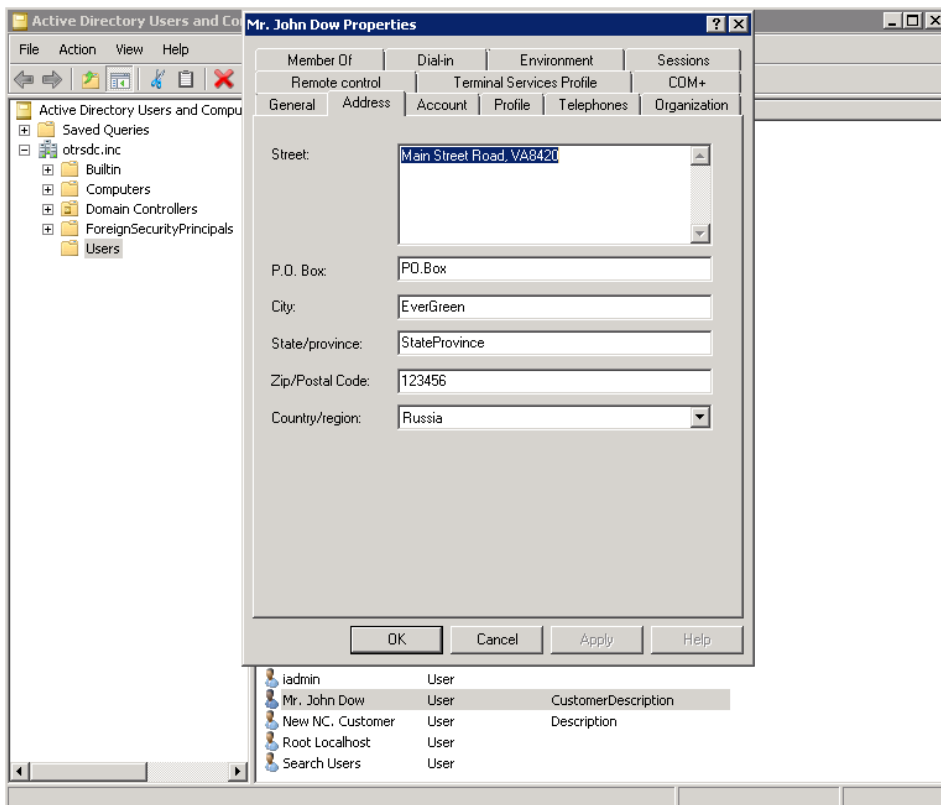
The "General" tab:



The "Phones" tab:



The "Address" tab:



Example of part of the Config.pm file of LDAP data for customers:

```
$Self->{CustomerUser} = {
    Module => 'Kernel::System::CustomerUser::LDAP',
    Params => {
        Host => '10.10.12.11',
        BaseDN => 'dc=otrsdc,dc=inc',
        SSCOPE => 'sub',
        UserDN => 'root@otrsdc.inc',
        UserPw => 'SomePassword',
        AlwaysFilter => '(&(objectclass=user)(memberof=CN=OTRS_Customers,CN=Users,DC=otrsdc,DC=inc))',
        SourceCharset => 'utf-8',
        DestCharset => 'utf-8',
    },

    CustomerKey => 'sAMAccountName',
    CustomerID => 'mail',
    CustomerUserListFields => ['sAMAccountName', 'givenName', 'sn', 'mail'],
    CustomerUserSearchFields => ['sAMAccountName', 'givenName', 'sn', 'mail'],
    CustomerUserSearchPrefix => "",
    CustomerUserSearchSuffix => '*',
    CustomerUserSearchListLimit => 250,
    CustomerUserPostMasterSearchFields => ['mail'],
    CustomerUserNameFields => ['givenname', 'sn'],

    Map => [
        [ 'UserInitials', 'Initials', 'initials', 1, 0, 'var' ],
        [ 'UserFullname', 'Full name', 'cn', 1, 0, 'var' ],
        [ 'UserFirstname', 'Firstname', 'givenName', 1, 1, 'var' ],
        [ 'UserLastname', 'Lastname', 'sn', 1, 1, 'var' ],
        [ 'UserLogin', 'Login', 'sAMAccountName', 1, 1, 'var' ],
        [ 'UserEmail', 'Email', 'mail', 1, 1, 'var' ],
        [ 'UserCustomerID', 'CustomerID', 'mail', 0, 1, 'var' ],
        [ 'UserPhone', 'Phone', 'telephonenumber', 1, 0, 'var' ],
        [ 'UserFax', 'Fax', 'facsimiletelephonenumber', 1, 0, 'var' ],
        [ 'UserHomePhone', 'Home phone', 'homephone', 1, 0, 'var' ],
        [ 'UserMobile', 'Mobile', 'mobile', 1, 0, 'var' ],
        [ 'UserZip', 'Zip', 'postalcode', 1, 0, 'var' ],
        [ 'UserCountry', 'Country', 'co', 1, 0, 'var' ],
        [ 'UserCity', 'City', 'l', 1, 0, 'var' ],
        [ 'UserStreet', 'Street', 'streetAddress', 1, 0, 'var' ],
        [ 'UserOffice', 'Office', 'physicalDeliveryOfficeName', 1, 0, 'var' ],
        [ 'UserDepartment', 'Department', 'department', 1, 1, 'var', "", 0 ],
        [ 'UserDescription', 'Description', 'description', 1, 0, 'var', "", 0 ],
    ],
};
```

Trouble shooting

The server part of the module is executed on the scripts `pim_chat.pl` and `pim_asterisk.pl`, scripts are located in the path `/opt/otrs/var`.

The scripts are started by CRON and are checked once a minute.

In case of startup problems, check that the scripts are in the CRON job by running the command:

`crontab -l -u otrs`

There should be these lines:

```
*/* * * * * $HOME/var/pim_chat.pl >> /dev/null
```

```
*/* * * * * $HOME/var/pim_asterisk.pl >> /dev/null
```

Additional information about errors and events is output to the following log files:

`pim_chat_log_YYYYMM.log` – PIM server module messages

`pim_ast_log_YYYYMM.log` – Asterisk connector messages

`pim_cdr_YYYYMM.log` – CDR information output

`pim_set_bl_YYYYMM.log` – CallerID Blocking Module messages

Log files output path: `/opt/otrs/var/log`

The log files are rotated by the month.

Feedback

If you need additional information or have any suggestions, comments on the modules or you find a bug in the package OPCv3.0.0b, write to us to the email address on the website <http://ip-lab.ru/> on the "Contact Us" page.