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# **Modoboa Documentation**

***Release 1.5.3***

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May 11, 2016



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## Getting started

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### 1.1 Installation

#### 1.1.1 For the lazy ones

If you are in a hurry, you will love the [modoboa installer](#)! It's a set of Python scripts to install a fully functional email server on one machine (modoboa, postfix, dovecot, amavis and more).

To use it, just run the following commands in your terminal:

```
$ git clone https://github.com/modoboa/modoboa-installer
$ cd modoboa-installer
$ sudo ./run.py <mail server hostname>
```

Wait a few minutes and you're done o/

If you have more time or if you are just curious, you can install Modoboa *the old way* by going to the next section.

#### 1.1.2 Requirements

- Python version 2.7+
- Django version 1.7+
- lxml python module
- pycrypto python module
- rrdtool python binding
- sievelib python module
- chardet python module
- argparse python module
- reversion python module

#### 1.1.3 Get Modoboa

You can choose between two options:

- Use the Python package available on the [PyPI](#)

- Download the sources tarball

The easiest one is to install it from PyPI. Just run the following command and you're done:

```
$ pip install modoboa
```

If you prefer to use the tarball, download the latest one and run the following procedure:

```
$ tar xzf modoboa-<version>.tar.gz
$ cd modoboa-<version>
$ python setup.py install
```

All dependencies will be installed regardless the way you chose. The only exception concerns the RRDtool binding because there isn't any python package available, it is directly provided with the official tarball.

Fortunately, all major distributions include a ready-to-use package. On Debian/Ubuntu:

```
$ apt-get install libcairo2-dev libpango1.0-dev librrd-dev
$ apt-get install python-rrdtool
```

### virtualenv users

When you deploy an application using virtualenv, you may have to compile some dependencies. For example, modoboa relies on lxml, which is a C python module. In order to install it, you will need to install the following requirements:

- python development files
- libxslt development files
- libxml2 development files
- libz development files

On a Debian like system, just run the following command:

```
$ apt-get install python-dev libxml2-dev libxslt-dev zlib1g-dev
```

### 1.1.4 Database

Thanks to Django, Modoboa supports several databases. Depending on the one you will use, you must install the appropriate python package:

- `mysqldb` for MySQL
- `psycopg2` for PostgreSQL

Then, create a user and a database that will be used by Modoboa. Make sure your database is using UTF8 as a default charset.

### 1.1.5 Deployment

`modoboa-admin.py`, a command line tool, lets you deploy a *ready-to-use* Modoboa site using only one instruction:

```
$ modoboa-admin.py deploy modoboa_example --collectstatic [--dburl default:database-url] [--extension
```

**Note:** By default, the core application of Modoboa and some necessary plugins (admin, relaydomains and limits) are installed. To install extensions, use the `--extensions` option which accepts a list of extension names as argument (`--extensions ext1 ext2 ...`). If you want to install all extensions, just use the `all` shortcut like this `--extensions all`.

If you choose to install extensions one at a time, you will have to add their names in `settings.py` to `MODOBOA_APPS`. Also ensure that you have the line `from modoboa_amavis.settings import *` at the end of this file.

The list of available plugins can be found on the [index page](#). Instructions to install them are available on each plugin page.

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**Note:** You can specify more than one database connection using the `--dburl` option. Multiple connections are differentiated by a prefix. The primary connection must use the `default:` prefix (as shown in the example above). For the [amavis extension](#), use the `amavis:` prefix. An example two connections: `--dburl default:<database url> amavis:<database url>`.

Your database url should meet the following syntax `scheme://[user:pass@][host:port]/dbname` **OR** `sqlite:////full/path/to/your/database/file.sqlite`.

Available schemes are:

- postgres
  - postgresql
  - postgis
  - mysql
  - mysql2
  - sqlite
- 

The command will ask you a few questions, answer them and you're done. You can now go to the [First use](#) section.

In case you need a **silent installation** (e.g. if you're using Salt-Stack, Ansible or whatever), it's possible to supply the database credentials as commandline arguments.

You can see the complete option list by running the following command:

```
$ modoboa-admin.py help deploy
```

---

**Note:** If you plan to serve Modoboa using a URL prefix, you must change the value of the `LOGIN_URL` parameter to `LOGIN_URL = '/<prefix>/accounts/login/'`.

---

## 1.1.6 First use

Your installation should now have a default super administrator:

- Username: `admin`
- Password: `password`

It is **strongly** recommended to change this password the first time you log into Modoboa.

To check if your installation works, just launch the embedded HTTP server:

```
$ python manage.py runserver
```

You should be able to access Modoboa at <http://localhost:8000/>.

For a fully working interface using the embedded HTTP server, you need to set the `DEBUG` parameter in `settings.py` to `True`.

For a production environment, we recommend using a stable webserver like *Apache2* or *Nginx*. Don't forget to set `DEBUG` back to `False`.

## 1.2 Upgrading an existing installation

This section contains all the upgrade procedures required to use newest versions of Modoboa.

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**Note:** Before running a migration, we recommend that you make a copy of your existing database.

---

### 1.2.1 Latest version

Fetch the latest version (see *Get Modoboa*) and install it. `pip` users, just run the following command:

```
$ pip install modoboa==<VERSION>
```

Replace `<VERSION>` by the appropriate value.

As for a fresh installation, `modoboa-admin.py` can be used to upgrade your local configuration. To do so, remove the directory where your instance was first deployed:

```
$ rm -rf <modoboa_instance_dir>
```

**Warning:** If you customized your configuration file (`settings.py`) with non-standard settings, you'll have to re-apply them.

Finally, run the `deploy` command. Make sure to consult the *Deployment* section to know more about the available options.

If you prefer the manual way, check if *Specific upgrade instructions* are required according to the version you're installing.

To finish, restart the web server process according to the environment you did choose. See *Web servers* for more details.

### 1.2.2 Specific upgrade instructions

#### 1.5.0

The API has been greatly improved and a documentation is now available. To enable it, add `'rest_framework_swagger'` to the `INSTALLED_APPS` variable in `settings.py` as follows:

```
INSTALLED_APPS = (  
    'django.contrib.auth',  
    'django.contrib.contenttypes',  
    'django.contrib.sessions',  
    'rest_framework_swagger',  
    ...  
)
```



```
'django.contrib.messages',
'django.contrib.sites',
'django.contrib.staticfiles',
'reversion',
'rest_framework.authtoken',
'rest_framework_swagger',
)
```

Then, add the following content into `settings.py`, just after the `REST_FRAMEWORK` variable:

```
SWAGGER_SETTINGS = {
    "is_authenticated": False,
    "api_version": "1.0",
    "exclude_namespaces": [],
    "info": {
        "contact": "contact@modoboa.com",
        "description": ("Modoboa API, requires a valid token."),
        "title": "Modoboa API",
    }
}
```

You're done. The documentation is now available at the following address:

<http://<your instance address>/docs/api/>

Finally, if you find a `TEMPLATE_CONTEXT_PROCESSORS` variable in your `settings.py` file, make sure it looks like this:

```
TEMPLATE_CONTEXT_PROCESSORS = global_settings.TEMPLATE_CONTEXT_PROCESSORS + [
    'modoboa.core.context_processors.top_notifications',
]
```

## 1.4.0

**Warning:** Please make sure to use Modoboa 1.3.5 with an up-to-date database before an upgrade to 1.4.0.

**Warning:** Do not follow the regular upgrade procedure for this version.

Some extension have been moved back into the main repository. The main reason for that is that using Modoboa without them doesn't make sense.

First of all, you must rename the following applications listed inside the `MODOBQA_APPS` variable:

Old name	New name
<code>modoboa_admin</code>	<code>modoboa.admin</code>
<code>modoboa_admin_limits</code>	<code>modoboa.limits</code>
<code>modoboa_admin_relaydomains</code>	<code>modoboa.relaydomains</code>

Then, apply the following steps:

1. Uninstall old extensions:

```
$ pip uninstall modoboa-admin modoboa-admin-limits modoboa-admin-relaydomains
```

2. Install all extension updates using pip (check the *Modoboa > Information* page)
3. Manually migrate database:

```
$ cd <instance_dir>
$ python manage.py migrate auth
$ python manage.py migrate admin 0001 --fake
$ python manage.py migrate admin
$ python manage.py migrate limits 0001 --fake
$ python manage.py migrate relaydomains 0001 --fake
$ python manage.py migrate
```

4. Finally, update static files:

```
$ python manage.py collectstatic
```

This version also introduces a REST API. To enable it:

1. Add 'rest\_framework.authtoken' to the INSTALLED\_APPS variable
2. Add the following configuration inside settings.py:

```
# Rest framework settings

REST_FRAMEWORK = {
    'DEFAULT_AUTHENTICATION_CLASSES': (
        'rest_framework.authentication.TokenAuthentication',
    ),
    'DEFAULT_PERMISSION_CLASSES': (
        'rest_framework.permissions.IsAuthenticated',
    )
}
```

3. Run the following command:

```
$ python manage.py migrate
```

### 1.3.5

To enhance security, Modoboa now checks the *strength of user passwords* <<https://github.com/dstuffi/django-passwords>>\_.

To use this feature, add the following configuration into the settings.py file:

```
# django-passwords

PASSWORD_MIN_LENGTH = 8

PASSWORD_COMPLEXITY = {
    "UPPER": 1,
    "LOWER": 1,
    "DIGITS": 1
}
```

### 1.3.2

Modoboa now uses the *atomic requests* mode to preserve database consistency ([reference](#)).

To enable it, update the DATABASES variable in settings.py as follows:

```
DATABASES = {
    "default": {
        # stuff before...
        "ATOMIC_REQUESTS": True
    },
    "amavis": {
        # stuff before...
        "ATOMIC_REQUESTS": True
    }
}
```

### 1.3.0

This release does not bring awesome new features but it is a necessary bridge to the future of Modoboa. All extensions now have their own git repository and the deploy process has been updated to reflect this change.

Another important update is the use of Django 1.7. Besides its new features, the migration system has been reworked and is now more robust than before.

Before we begin with the procedure, here is a table showing old extension names and their new name:

Old name	New package name	New module name
modoboa.extensions.admin	modoboa-admin	modoboa_admin
modoboa.extensions.limits	modoboa-admin-limits	modoboa_admin_limits
modoboa.extensions.postfix_autoreply	modoboa-postfix-autoreply	modoboa_postfix_autoreply
modoboa.extensions.postfix_relay_domains	modoboa-admin-relaydomains	modoboa_admin_relaydomains
modoboa.extensions.radicale	modoboa-radicale	modoboa_radicale
modoboa.extensions.sievefilters	modoboa-sievefilters	modoboa_sievefilters
modoboa.extensions.stats	modoboa-stats	modoboa_stats
modoboa.extensions.webmail	modoboa-webmail	modoboa_webmail

Here are the required steps:

1. Install the extensions using pip (look at the second column in the table above):

```
$ pip install <the extensions you want>
```

2. Remove south from INSTALLED\_APPS
3. Rename old extension names inside MODOBOA\_APPS (look at the third column in the table above)
4. Remove modoboa.lib.middleware.ExtControlMiddleware from MIDDLEWARE\_CLASSES
5. Change DATABASE\_ROUTERS to:

```
DATABASE_ROUTERS = ["modoboa_amavis.dbrouter.AmavisRouter"]
```

6. Run the following commands:

```
$ cd <modoboa_instance_dir>
$ python manage.py migrate
```

7. Reply yes to the question
8. Run the following commands:

```
$ python manage.py load_initial_data
$ python manage.py collectstatic
```

9. The cleanup job has been renamed in Django, so you have to modify your crontab entry:

```
- 0 0 * * * <modoboa_site>/manage.py cleanup
```

- 0 0 \* \* \* <modoboa\_site>/manage.py clearsessions

### 1.2.0

A new notification service let administrators know about new Modoboa versions. To activate it, you need to update the `TEMPLATE_CONTEXT_PROCESSORS` variable like this:

```
from django.conf import global_settings

TEMPLATE_CONTEXT_PROCESSORS = global_settings.TEMPLATE_CONTEXT_PROCESSORS + (
    'modoboa.core.context_processors.top_notifications',
)
```

and to define the new `MODOBOA_API_URL` variable:

```
MODOBOA_API_URL = 'http://api.modoboa.org/1/'
```

The location of external static files has changed. To use them, add a new path to the `STATICFILES_DIRS`:

```
# Additional locations of static files
STATICFILES_DIRS = (
    # Put strings here, like "/home/html/static" or "C:/www/django/static".
    # Always use forward slashes, even on Windows.
    # Don't forget to use absolute paths, not relative paths.
    "<path/to/modoboa/install/dir>/bower_components",
)
```

Run the following commands to define the hostname of your instance:

```
$ cd <modoboa_instance_dir>
$ python manage.py set_default_site <hostname>
```

If you plan to use the Radicale extension:

1. Add `'modoboa.extensions.radicale'` to the `MODOBOA_APPS` variable
2. Run the following commands:

```
$ cd <modoboa_instance_dir>
$ python manage.py syncdb
```

**Warning:** You also have to note that the `sitestatic` directory has moved from `<path to your site's dir>` to `<modoboa's root url>` (it's probably the parent directory). You have to adapt your web server configuration to reflect this change.

### 1.1.7: manual learning for SpamAssassin

A new feature allows administrators and users to manually train SpamAssassin in order to customize its behaviour. Check [Manual SpamAssassin learning](#) to know more about this feature.

### 1.1.6: Few bugfixes

Catchall aliases were not really functional until this version as they were eating all domain traffic.

To fix them, a postfix map file (`sql-mailboxes-self-aliases.cf`) has been re-introduced and must be listed into the `virtual_alias_maps` setting. See [Configuration](#) for the order.

### 1.1.2: Audit trail issues

Update the `settings.py` file as follows:

1. Remove the `'reversion.middleware.RevisionMiddleware'` middleware from the `MIDDLEWARE_CLASSES` variable
2. Add the new `'modoboa.lib.middleware.RequestCatcherMiddleware'` middleware at the end of the `MIDDLEWARE_CLASSES` variable

### 1.1.1: Few bugfixes

For those who installed Dovecot in a non-standard location, it is now possible to tell Modoboa where to find it. Just define a variable named `DOVECOT_LOOKUP_PATH` in the `settings.py` file and include the appropriate lookup path inside:

```
DOVECOT_LOOKUP_PATH = ("/usr/sbin/dovecot", "/usr/local/sbin/dovecot")
```

### 1.1.0: relay domains and better passwords encryption

Due to code refactoring, some modifications need to be done into `settings.py`:

1. `MODOBQA_APPS` must contain the following applications:

```
MODOBQA_APPS = (
    'modoboa',
    'modoboa.core',
    'modoboa.lib',

    'modoboa.extensions.admin',
    'modoboa.extensions.limits',
    'modoboa.extensions.postfix_autoreply',
    'modoboa.extensions.webmail',
    'modoboa.extensions.stats',
    'modoboa.extensions.amavis',
    'modoboa.extensions.sievefilters',
)
```

2. Add `'modoboa.extensions.postfix_relay_domains'` to `MODOBQA_APPS`, just before `'modoboa.extensions.limits'`
3. `AUTH_USER_MODEL` must be set to `core.User`
4. Into `LOGGING`, replace `modoboa.lib.logutils.SQLHandler` by `modoboa.core.loggers.SQLHandler`

Then, run the following commands to migrate your installation:

```
$ python manage.py syncdb
$ python manage.py migrate core 0001 --fake
$ python manage.py migrate
$ python manage.py collectstatic
```

Finally, update both [Dovecot](#) and [Postfix](#) queries.

### 1.0.1: operations on mailboxes

The way Modoboa handles **rename** and **delete** operations on mailboxes has been improved. Make sure to consult *Operations on the file system* and *Postfix configuration*. Look at the `smtpd_recipient_restrictions` setting.

Run `modoboa-admin.py postfix_maps --dbtype <mysql|postgres|sqlite> <tempdir>` and compare the files with those that postfix currently use. Make necessary updates in light of the differences

### 1.0.0: production ready, at last

#### Configuration file update

Several modifications need to be done into `settings.py`.

1. Add the following import statement:

```
from logging.handlers import SysLogHandler
```

2. Set the `ALLOWER_HOSTS` variable:

```
ALLOWED_HOSTS = [  
    '<your server fqdn>',  
]
```

3. Activate the `django.middleware.csrf.CsrfViewMiddleware` middleware and add the `reversion.middleware.RevisionMiddleware` middleware to `MIDDLEWARE_CLASSES` like this:

```
MIDDLEWARE_CLASSES = (  
    'django.middleware.common.CommonMiddleware',  
    'django.contrib.sessions.middleware.SessionMiddleware',  
    'django.middleware.csrf.CsrfViewMiddleware',  
    'django.contrib.auth.middleware.AuthenticationMiddleware',  
    'django.contrib.messages.middleware.MessageMiddleware',  
    'django.middleware.locale.LocaleMiddleware',  
    # Uncomment the next line for simple clickjacking protection:  
    # 'django.middleware.clickjacking.XFrameOptionsMiddleware',  
    'reversion.middleware.RevisionMiddleware',  
  
    'modoboa.lib.middleware.AjaxLoginRedirect',  
    'modoboa.lib.middleware.CommonExceptionCatcher',  
    'modoboa.lib.middleware.ExtControlMiddleware',  
)
```

4. Add the `reversion` application to `INSTALLED_APPS`
5. Remove all modoboa's application from `INSTALLED_APPS` and put them into the new `MODOBQA_APPS` variable like this:

```
INSTALLED_APPS = (  
    'django.contrib.auth',  
    'django.contrib.contenttypes',  
    'django.contrib.sessions',  
    'django.contrib.sites',  
    'django.contrib.messages',  
    'django.contrib.staticfiles',  
    'south',  
    'reversion',  
)
```

```

)

# A dedicated place to register Modoboa applications
# Do not delete it.
# Do not change the order.
MODOBOA_APPS = (
    'modoboa',
    'modoboa.auth',
    'modoboa.admin',
    'modoboa.lib',
    'modoboa.userprefs',

    'modoboa.extensions.limits',
    'modoboa.extensions.postfix_autoreply',
    'modoboa.extensions.webmail',
    'modoboa.extensions.stats',
    'modoboa.extensions.amavis',
    'modoboa.extensions.sievefilters',
)

INSTALLED_APPS += MODOBOA_APPS

```

6. Set the AUTH\_USER\_MODEL variable like this:

```
AUTH_USER_MODEL = 'admin.User'
```

7. Modify the logging configuration as follows:

```

LOGGING = {
    'version': 1,
    'disable_existing_loggers': False,
    'filters': {
        'require_debug_false': {
            '()': 'django.utils.log.RequireDebugFalse'
        }
    },
    'formatters': {
        'syslog': {
            'format': '%(name)s: %(levelname)s %(message)s'
        },
    },
    'handlers': {
        'mail_admins': {
            'level': 'ERROR',
            'filters': ['require_debug_false'],
            'class': 'django.utils.log.AdminEmailHandler'
        },
        'console': {
            # logging handler that outputs log messages to terminal
            'class': 'logging.StreamHandler',
            # 'level': 'DEBUG', # message level to be written to console
        },
        'syslog-auth': {
            'class': 'logging.handlers.SysLogHandler',
            'facility': SysLogHandler.LOG_AUTH,
            'formatter': 'syslog'
        },
        'modoboa': {
            'class': 'modoboa.lib.logutils.SQLiteHandler',

```

```
    }
  },
  'loggers': {
    'django.request': {
      'handlers': ['mail_admins'],
      'level': 'ERROR',
      'propagate': True,
    },
    'modoboa.auth': {
      'handlers': ['syslog-auth', 'modoboa'],
      'level': 'INFO',
      'propagate': False
    },
    'modoboa.admin': {
      'handlers': ['modoboa'],
      'level': 'INFO',
      'propagate': False
    }
  }
}
```

### Postfix and Dovecot configuration update

It is necessary to update the queries used to retrieve users and mailboxes:

1. Run `modoboa-admin.py postfix_maps --dbtype <mysql|postgres> <tempdir>` and compare the files with those that postfix currently use. Make necessary updates in light of the differences
2. Into `dovecot-sql.conf`, update the `user_query` query, refer to *MySQL users* or *PostgreSQL users*
3. Update dovecot's configuration to activate the new *quota related features*

### Migration issues

When running the `python manage.py syncdb --migrate` command, you may encounter the following issues:

1. Remove useless content types

If the script asks you this question, just reply **no**.

2. South fails to migrate reversion

Due to the admin user model change, the script `0001_initial.py` may fail. Just deactivate `reversion` from `INSTALLED_APPS` and run the command again. Once done, reactivate `reversion` and run the command one last time.

## 1.3 Configuration

### 1.3.1 Online parameters

Modoboa provides online panels to modify internal parameters. There are two available levels:

- Application level: global parameters, define how the application behaves. Available at *Modoboa > Parameters*
- User level: per user customization. Available at *User > Settings > Preferences*



Regardless level, parameters are displayed using tabs, each tab corresponding to one application.

## General parameters

The *admin* application exposes several parameters, they are presented below:

Name	Description	Default value
Authentication type	The backend used for authentication	Local
Default password scheme	Scheme used to crypt mailbox passwords	crypt
Secret key	A key used to encrypt users' password in sessions	random value
Handle mailboxes on filesystem	Rename or remove mailboxes on the filesystem when they get renamed or removed within Modoboa	no
Mailboxes owner	The UNIX account who owns mailboxes on the filesystem	vmail
Automatic account removal	When a mailbox is removed, also remove the associated account	no
Maximum log record age	The maximum age in days of a log record	365
Items per page	Number of displayed items per page	30
Default top redirection	The default redirection used when no application is specified	userprefs

**Note:** If you are not familiar with virtual domain hosting, you should take a look at [postfix's documentation](#). This [How to](#) also contains useful information.

**Note:** A random secret key will be generated each time the *Parameters* page is refreshed and until you save parameters at least once.

**Note:** Specific LDAP parameters are also available, see [LDAP authentication](#).

## 1.3.2 Media files

Modoboa uses a specific directory to upload files (ie. when the webmail is in use) or to create ones (ex: graphical statistics). This directory is named `media` and is located inside modoboa's installation directory (called `modoboa_site` in this documentation).

To work properly, the system user which runs modoboa (`www-data`, `apache`, whatever) must have write access to this directory.

## 1.3.3 Customization

### Custom logo

You have the possibility to use a custom logo instead of the default one on the login page.

To do so, open the `settings.py` file and add a `MODOBOA_CUSTOM_LOGO` variable. This variable must contain the relative URL of your logo under `MEDIA_URL`. For example:

```
MODOBOA_CUSTOM_LOGO = os.path.join(MEDIA_URL, "custom_logo.png")
```

Then copy your logo file into the directory indicated by `MEDIA_ROOT`.

### 1.3.4 Host configuration

---

**Note:** This section is only relevant when Modoboa handles mailboxes renaming and removal from the filesystem.

---

To manipulate mailboxes on the filesystem, you must allow the user who runs Modoboa to execute commands as the user who owns mailboxes.

To do so, edit the `/etc/sudoers` file and add the following inside:

```
<user_that_runs_modoboa> ALL=(<mailboxes owner>) NOPASSWD: ALL
```

Replace values between `<>` by the ones you use.

### 1.3.5 Time zone and language

Modoboa is available in many languages.

To specify the default language to use, edit the `settings.py` file and modify the `LANGUAGE_CODE` variable:

```
LANGUAGE_CODE = 'fr' # or 'en' for english, etc.
```

---

**Note:** Each user has the possibility to define the language he prefers.

---

In the same configuration file, specify the timezone to use by modifying the `TIME_ZONE` variable. For example:

```
TIME_ZONE = 'Europe/Paris'
```

### 1.3.6 Sessions management

Modoboa uses Django's [session framework](#) to store per-user information.

Few parameters need to be set in the `settings.py` configuration file to make Modoboa behave as expected:

```
SESSION_EXPIRE_AT_BROWSER_CLOSE = False # Default value
```

This parameter is optional but you must ensure it is set to `False` (the default value).

The default configuration file provided by the `modoboa-admin.py` command is properly configured.

### 1.3.7 LDAP

#### Authentication

Modoboa supports external LDAP authentication using the following extra components:

- [Python LDAP client](#)
- [Django LDAP authentication backend](#)

If you want to use this feature, you must first install those components:

```
$ pip install python-ldap django-auth-ldap
```

Then, all you have to do is to modify the `settings.py` file. Add a new authentication backend to the `AUTHENTICATION_BACKENDS` variable, like this:

```
AUTHENTICATION_BACKENDS = (
    'modoboa.lib.authbackends.LDAPBackend',
    'modoboa.lib.authbackends.SimpleBackend',
)
```

Finally, go to *Modoboa > Parameters > General* and set *Authentication type* to LDAP.

From there, new parameters will appear to let you configure the way Modoboa should connect to your LDAP server. They are described just below:

Name	Description	Default value
Server address	The IP address of the DNS name of the LDAP server	local-host
Server port	The TCP port number used by the LDAP server	389
Use a secure connection	Use an SSL/TLS connection to access the LDAP server	no
Authentication method	Choose the authentication method to use	Direct bind
User DN template (direct bind mode)	The template used to construct a user's DN. It should contain one placeholder (ie. <code>%(user)s</code> )	
Bind BN	The distinguished name to use when binding to the LDAP server. Leave empty for an anonymous bind	
Bind password	The password to use when binding to the LDAP server (with 'Bind DN')	
Search base	The distinguished name of the search base	
Search filter	An optional filter string (e.g. <code>'(objectClass=person)'</code> ). In order to be valid, it must be enclosed in parentheses.	<code>(mail=%(user)s)</code>
Password attribute	The attribute used to store user passwords	user-Password
Active Directory	Tell if the LDAP server is an Active Directory one	no
Administrator groups	Members of those LDAP Posix groups will be created as domain administrators. Use ';' characters to separate groups.	
Group type	The type of group used by your LDAP directory.	Posix-Group
Groups search base	The distinguished name of the search base used to find groups	
Domain/mailbox creation	Automatically create a domain and a mailbox when a new user is created just after the first successful authentication. You will generally want to disable this feature when the relay domains extension is in use	yes

If you need additional parameters, you will find a detailed documentation [here](#).

Once the authentication is properly configured, the users defined in your LDAP directory will be able to connect to Modoboa, the associated domain and mailboxes will be automatically created if needed.

The first time a user connects to Modoboa, a local account is created if the LDAP username is a valid email address. By default, this account belongs to the *SimpleUsers* group and it has a mailbox.

To automatically create domain administrators, you can use the **Administrator groups** setting. If a LDAP user belongs to one the listed groups, its local account will belong to the *DomainAdmins* group. In this case, the username is not necessarily an email address.

Users will also be able to update their LDAP password directly from Modoboa.

---

**Note:** Modoboa doesn't provide any synchronization mechanism once a user is registered into the database. Any modification done from the directory to a user account will not be reported to Modoboa (an email address change for example). Currently, the only solution is to manually delete the Modoboa record, it will be recreated on the next user login.

---

### 1.3.8 Database maintenance

#### Cleaning the logs table

Modoboa logs administrator specific actions into the database. A clean-up script is provided to automatically remove oldest records. The maximum log record age can be configured through the online panel.

To use it, you can setup a cron job to run every night:

```
0 0 * * * <modoboa_site>/manage.py cleanlogs
#
# Or like this if you use a virtual environment:
# 0 0 * * * <virtualenv path/bin/python> <modoboa_site>/manage.py cleanlogs
```

#### Cleaning the session table

Django does not provide automatic purging. Therefore, it's your job to purge expired sessions on a regular basis.

Django provides a sample clean-up script: `django-admin.py clearsessions`. That script deletes any session in the session table whose `expire_date` is in the past.

For example, you could setup a cron job to run this script every night:

```
0 0 * * * <modoboa_site>/manage.py clearsessions
#
# Or like this if you use a virtual environment:
# 0 0 * * * <virtualenv path/bin/python> <modoboa_site>/manage.py clearsessions
```

## **2.1 Amavisd-new frontend**

[Official documentation.](#)

## **2.2 Graphical statistics**

[Official documentation.](#)

## **2.3 Radicale frontend**

[Official documentation.](#)

## **2.4 Postfix auto-reply messages**

[Official documentation.](#)

## **2.5 Sieve filters**

[Official documentation.](#)

## **2.6 Webmail**

[Official documentation.](#)



---

## Integration with other softwares

---

### 3.1 Dovecot and Postfix

#### 3.1.1 Dovecot

Modoboa works better with Dovecot 2.0 so the following documentation is suitable for this combination.

In this section, we assume dovecot's configuration resides in `/etc/dovecot`, all pathes will be relative to this directory.

#### Mailboxes

First, edit the `conf.d/10-mail.conf` and set the `mail_location` variable:

```
# maildir
mail_location = maildir:~/.maildir
```

Then, edit the `inbox` namespace and add the following lines:

```
inbox = yes

mailbox Drafts {
    auto = subscribe
    special_use = \Drafts
}
mailbox Junk {
    auto = subscribe
    special_use = \Junk
}
mailbox Sent {
    auto = subscribe
    special_use = \Sent
}
mailbox Trash {
    auto = subscribe
    special_use = \Trash
}
```

With dovecot 2.1+, it ensures all the special mailboxes will be automatically created for new accounts.

For dovecot 2.0 and older, use the [autocreate](#) plugin.

### Operations on the file system

**Warning:** Modoboa needs to access the dovecot binary to check its version. To find the binary path, we use the `which` command first and then try known locations (`/usr/sbin/dovecot` and `/usr/local/sbin/dovecot`). If you installed dovecot in a custom location, please tell us where the binary is by using the `DOVECOT_LOOKUP_PATH` setting (see `settings.py`).

Three operation types are considered:

1. Mailbox creation
2. Mailbox renaming
3. Mailbox deletion

The first one is managed by Dovecot. The last two ones may be managed by Modoboa if it can access the file system where the mailboxes are stored (see *General parameters* to activate this feature).

Those operations are treated asynchronously by a cron script. For example, when you rename an e-mail address through the web UI, the associated mailbox on the file system is not modified directly. Instead of that, a *rename* order is created for this mailbox. The mailbox will be considered unavailable until the order is not executed (see *Postfix configuration*).

Edit the crontab of the user who owns the mailboxes on the file system:

```
$ crontab -u <user> -e
```

And add the following line inside:

```
* * * * * python <modoboa_site>/manage.py handle_mailbox_operations
```

**Warning:** The cron script must be executed by the system user owning the mailboxes.

**Warning:** The user running the cron script must have access to the `settings.py` file of the modoboa instance.

The result of each order is recorded into Modoboa's log. Go to *Modoboa > Logs* to consult them.

### Authentication

To make the authentication work, edit the `conf.d/10-auth.conf` and uncomment the following line at the end:

```
#!/include auth-system.conf.ext
!include auth-sql.conf.ext
#!/include auth-ldap.conf.ext
#!/include auth-passwdfile.conf.ext
#!/include auth-checkpassword.conf.ext
#!/include auth-vpopmail.conf.ext
#!/include auth-static.conf.ext
```

Then, edit the `conf.d/auth-sql.conf.ext` file and add the following content inside:

```
passdb sql {
    driver = sql
    # Path for SQL configuration file, see example-config/dovecot-sql.conf.ext
    args = /etc/dovecot/dovecot-sql.conf.ext
}
```



```

userdb sql {
    driver = sql
    args = /etc/dovecot/dovecot-sql.conf.ext
}

```

Make sure to activate only one backend (per type) inside your configuration (just comment the other ones).

Edit the `dovecot-sql.conf.ext` and modify the configuration according to your database engine.

### MySQL users

```

driver = mysql

connect = host=<mysqld socket> dbname=<database> user=<user> password=<password>

default_pass_scheme = CRYPT

password_query = SELECT email AS user, password FROM core_user WHERE email='%u' and is_active=1

user_query = SELECT '<mailboxes storage directory>/%Ld/%Ln' AS home, <uid> as uid, <gid> as gid, con

iterate_query = SELECT email AS username FROM core_user WHERE email<>'

```

### PostgreSQL users

```

driver = pgsq

connect = host=<postgres socket> dbname=<database> user=<user> password=<password>

default_pass_scheme = CRYPT

password_query = SELECT email AS user, password FROM core_user WHERE email='%u' and is_active

user_query = SELECT '<mailboxes storage directory>/%Ld/%Ln' AS home, <uid> as uid, <gid> as gid, '*:

iterate_query = SELECT email AS username FROM core_user WHERE email<>'

```

### SQLite users

```

driver = sq

connect = <path to the sqlite db file>

default_pass_scheme = CRYPT

password_query = SELECT email AS user, password FROM core_user WHERE email='%u' and is_active=1

user_query = SELECT '<mailboxes storage directory>/%Ld/%Ln' AS home, <uid> as uid, <gid> as gid, ('*

iterate_query = SELECT email AS username FROM core_user WHERE email<>'

```

---

**Note:** Replace values between `<>` with yours.

---

## LMTP

**Local Mail Transport Protocol** is used to let Postfix deliver messages to Dovecot.

First, make sure the protocol is activated by looking at the `protocols` setting (generally inside `dovecot.conf`). It should be similar to the following example:

```
protocols = imap pop3 lmtp
```

Then, open the `conf.d/10-master.conf`, look for `lmtp` service definition and add the following content inside:

```
service lmtp {
  # stuff before
  unix_listener /var/spool/postfix/private/dovecot-lmtp {
    mode = 0600
    user = postfix
    group = postfix
  }
  # stuff after
}
```

We assume here that Postfix is *chrooted* within `/var/spool/postfix`.

Finally, open the `conf.d/20-lmtp.conf` and modify it as follows:

```
protocol lmtp {
  postmaster_address = postmaster@<domain>
  mail_plugins = $mail_plugins quota sieve
}
```

Replace `<domain>` by the appropriate value.

---

**Note:** If you don't plan to apply quota or to use filters, just adapt the content of the `mail_plugins` setting.

---

## Quota

Modoboa lets administrators define per-domain and/or per-account limits (quota). It also lists the current quota usage of each account. Those features require Dovecot to be configured in a specific way.

Inside `conf.d/10-mail.conf`, add the `quota` plugin to the default activated ones:

```
mail_plugins = quota
```

Inside `conf.d/10-master.conf`, update the `dict` service to set proper permissions:

```
service dict {
  # If dict proxy is used, mail processes should have access to its socket.
  # For example: mode=0660, group=vmail and global mail_access_groups=vmail
  unix_listener dict {
    mode = 0600
    user = <user owning mailboxes>
    #group =
  }
}
```

Inside `conf.d/20-imap.conf`, activate the `imap_quota` plugin:

```
protocol imap {
    # ...

    mail_plugins = $mail_plugins imap_quota

    # ...
}
```

Inside `dovecot.conf`, activate the quota SQL dictionary backend:

```
dict {
    quota = <driver>:/etc/dovecot/dovecot-dict-sql.conf.ext
}
```

Inside `conf.d/90-quota.conf`, activate the *quota dictionary* backend:

```
plugin {
    quota = dict:User quota::proxy::quota
}
```

It will tell Dovecot to keep quota usage in the SQL dictionary.

Finally, edit the `dovecot-dict-sql.conf.ext` file and put the following content inside:

```
connect = host=<db host> dbname=<db name> user=<db user> password=<password>
# SQLite users
# connect = /path/to/the/database.db

map {
    pattern = priv/quota/storage
    table = admin_quota
    username_field = username
    value_field = bytes
}
map {
    pattern = priv/quota/messages
    table = admin_quota
    username_field = username
    value_field = messages
}
```

### PostgreSQL users

**Database schema update** The `admin_quota` table is created by Django but unfortunately it doesn't support `DEFAULT` constraints (it only simulates them when the ORM is used). As PostgreSQL is a bit strict about constraint violations, you must execute the following query manually:

```
db=> ALTER TABLE admin_quota ALTER COLUMN bytes SET DEFAULT 0;
db=> ALTER TABLE admin_quota ALTER COLUMN messages SET DEFAULT 0;
```

**Trigger** As indicated on [Dovecot's wiki](#), you need a trigger to properly update the quota.

A working copy of this trigger is available on [Modoboa's website](#).

Download this file and copy it on the server running postgres. Then, execute the following commands:

```
$ su - postgres
$ psql [modoboa database] < /path/to/modoboa_postgres_trigger.sql
$ exit
```

Replace [modoboa database] by the appropriate value.

### Forcing recalculation

For existing installations, *Dovecot* (> 2) offers a command to recalculate the current quota usages. For example, if you want to update all usages, run the following command:

```
$ doveadm quota recalc -A
```

Be carefull, it can take a while to execute.

### ManageSieve/Sieve

Modoboa lets users define filtering rules from the web interface. To do so, it requires *ManageSieve* to be activated on your server.

Inside `conf.d/20-managesieve.conf`, make sure the following lines are uncommented:

```
protocols = $protocols sieve

service managesieve-login {
    # ...
}

service managesieve {
    # ...
}

protocol sieve {
    # ...
}
```

Messages filtering using Sieve is done by the LDA.

Inside `conf.d/15-lda.conf`, activate the sieve plugin like this:

```
protocol lda {
    # Space separated list of plugins to load (default is global mail_plugins).
    mail_plugins = $mail_plugins sieve
}
```

Finally, configure the sieve plugin by editing the `conf.d/90-sieve.conf` file. Put the follwing caontent inside:

```
plugin {
    # Location of the active script. When ManageSieve is used this is actually
    # a symlink pointing to the active script in the sieve storage directory.
    sieve = ~/.dovecot.sieve

    #
    # The path to the directory where the personal Sieve scripts are stored. For
    # ManageSieve this is where the uploaded scripts are stored.
    sieve_dir = ~/sieve
}
```

Restart Dovecot.

### 3.1.2 Postfix

This section gives an example about building a simple virtual hosting configuration with *Postfix*. Refer to the [official documentation](#) for more explanation.

#### Map files

You first need to create configuration files (or map files) that will be used by Postfix to lookup into Modoboa tables.

To automatically generate the requested map files and store them in a directory, run the following command:

```
$ modoboa-admin.py postfix_maps --dbtype <mysql|postgres|sqlite> <directory>
```

<directory> is the directory where the files will be stored. Answer the few questions and you're done.

#### Configuration

Use the following configuration in the `/etc/postfix/main.cf` file (this is just one possible configuration):

```
# Stuff before
virtual_transport = lmtp:unix:private/dovecot-lmtp

relay_domains =
virtual_mailbox_domains = <driver>:/etc/postfix/sql-domains.cf
virtual_alias_domains = <driver>:/etc/postfix/sql-domain-aliases.cf
virtual_alias_maps = <driver>:/etc/postfix/sql-aliases.cf

relay_domains = <driver>:/etc/postfix/sql-relaydomains.cf
transport_maps =
    <driver>:/etc/postfix/sql-spliteddomains-transport.cf
    <driver>:/etc/postfix/sql-relaydomains-transport.cf

smtpd_recipient_restrictions =
    # ...
    check_recipient_access
        <driver>:/etc/postfix/sql-maintain.cf
        <driver>:/etc/postfix/sql-relay-recipient-verification.cf
    permit_mynetworks
    reject_unauth_destination
    reject_unverified_recipient
    # ...

smtpd_sender_login_maps =
    <driver>:/etc/postfix/sql-sender-login-mailboxes.cf
    <driver>:/etc/postfix/sql-sender-login-aliases.cf

smtpd_sender_restrictions =
    reject_sender_login_mismatch

# Stuff after
```

Replace <driver> by the name of the database you use.

Restart Postfix.

## 3.2 Web servers

### 3.2.1 Apache2

---

**Note:** The following instructions are meant to help you get your site up and running quickly. However it is not possible for the people contributing documentation to Modoboa to test every single combination of web server, wsgi server, distribution, etc. So it is possible that **your** installation of uwsgi or nginx or Apache or what-have-you works differently. Keep this in mind.

---

#### mod\_wsgi

First, make sure that mod\_wsgi is installed on your server.

Create a new virtualhost in your Apache configuration and put the following content inside:

```
<VirtualHost *:80>
  ServerName <your value>
  DocumentRoot <path to your site's dir>

  Alias /media/ <path to your site's dir>/media/
  <Directory <path to your site's dir>/media>
    Order deny,allow
    Allow from all
  </Directory>

  Alias /sitestatic/ <path to your site's dir>/sitestatic/
  <Directory <path to your site's dir>/sitestatic>
    Order deny,allow
    Allow from all
  </Directory>

  WSGIScriptAlias / <path to your site's dir>/wsgi.py
</VirtualHost>
```

This is just one possible configuration.

To use mod\_wsgi daemon mode, add the two following directives just under WSGIScriptAlias:

```
WSGIDaemonProcess example.com python-path=<path to your site's dir>:<virtualenv path>/lib/python2.7/site-packages
WSGIProcessGroup example.com
```

Replace values between <> with yours. If you don't use a [virtualenv](#), just remove the last part of the WSGIDaemonProcess directive.

---

**Note:** You will certainly need more configuration in order to launch Apache.

---

### 3.2.2 Nginx

---

**Note:** The following instructions are meant to help you get your site up and running quickly. However it is not possible for the people contributing documentation to Modoboa to test every single combination of web server, wsgi

server, distribution, etc. So it is possible that **your** installation of uwsgi or nginx or Apache or what-have-you works differently. Keep this in mind.

This section covers two different ways of running Modoboa behind [Nginx](#) using a WSGI application server. Choose the one you prefer between [Green Unicorn](#) or [uWSGI](#).

In both cases, you'll need to download and [install nginx](#).

## Green Unicorn

Firstly, [Download and install gunicorn](#). Then, use the following sample gunicorn configuration (create a new file named `gunicorn.conf.py` inside Modoboa's root dir):

```
backlog = 2048
bind = "unix:/var/run/gunicorn/modoboa.sock"
pidfile = "/var/run/gunicorn/modoboa.pid"
daemon = True
debug = False
workers = 2
logfile = "/var/log/gunicorn/modoboa.log"
loglevel = "info"
```

To start gunicorn, execute the following commands:

```
$ cd <modoboa dir>
$ gunicorn -c gunicorn.conf.py <modoboa dir>.wsgi:application
```

Now the nginx part. Just create a new virtual host and use the following configuration:

```
upstream modoboa {
    server      unix:/var/run/gunicorn/modoboa.sock fail_timeout=0;
}

server {
    listen 443 ssl;
    ssl on;
    keepalive_timeout 70;

    server_name <host fqdn>;
    root <modoboa's root dir>;

    access_log /var/log/nginx/<host fqdn>.access.log;
    error_log /var/log/nginx/<host fqdn>.error.log;

    ssl_certificate      <ssl certificate for your site>;
    ssl_certificate_key  <ssl certificate key for your site>;

    location /sitestatic/ {
        autoindex on;
    }

    location /media/ {
        autoindex on;
    }

    location / {
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_set_header Host $http_host;
```

```
        proxy_redirect off;
        proxy_set_header X-Forwarded-Protocol ssl;
        proxy_pass http://modoboa;
    }
}
```

If you do not plan to use SSL then change the listen directive to `listen 80;` and delete each of the following directives:

```
ssl on;
keepalive_timeout 70;
ssl_certificate <ssl certificate for your site>;
ssl_certificate_key <ssl certificate key for your site>;
proxy_set_header X-Forwarded-Protocol ssl;
```

If you do plan to use SSL, you'll have to generate a certificate and a key. [This article](#) contains information about how to do it.

Paste this content to your configuration (replace values between <> with yours), restart nginx and enjoy a really fast application!

## uWSGI

The following setup is meant to get you started quickly. You should read the documentation of both nginx and uwsgi to understand how to optimize their configuration for your site.

The Django documentation includes the following warning regarding uwsgi:

**Warning:** Some distributions, including Debian and Ubuntu, ship an outdated version of uWSGI that does not conform to the WSGI specification. Versions prior to 1.2.6 do not call close on the response object after handling a request. In those cases the request\_finished signal isn't sent. This can result in idle connections to database and memcache servers.

Use uwsgi 1.2.6 or newer. If you do not, you *will* run into problems. Modoboa will fail in obscure ways.

To use this setup, first [download and install uwsgi](#).

Here is a sample nginx configuration:

```
server {
    listen 443 ssl;
    ssl on;
    keepalive_timeout 70;

    server_name <host fqdn>;
    root <modoboa's settings dir>;

    ssl_certificate <ssl certificate for your site>;
    ssl_certificate_key <ssl certificate key for your site>;

    access_log /var/log/nginx/<host fqdn>.access.log;
    error_log /var/log/nginx/<host fqdn>.error.log;

    location <modoboa's root url>/sitestatic/ {
        autoindex on;
        alias <location of sitestatic on your file system>;
    }
}
```



```
# Whether or not Modoboa uses a media directory depends on how
# you configured Modoboa. It does not hurt to have this.
location <modoboa's root url>/media/ {
    autoindex on;
    alias <location of media on your file system>;
}

# This denies access to any file that begins with
# ".ht". Apache's .htaccess and .htpasswd are such files. A
# Modoboa installed from scratch would not contain any such
# files, but you never know what the future holds.
location ~ /\.ht {
    deny all;
}

location <modoba's root url>/ {
    include uwsgi_params;
    uwsgi_pass <uwsgi port>;
    uwsgi_param UWSGI_SCRIPT <modoboa instance name>.wsgi:application;
    uwsgi_param UWSGI_SCHEME https;
}
}
```

<modoboa instance name> must be replaced by the value you used when *you deployed your instance*.

If you do not plan to use SSL then change the listen directive to listen 80; and delete each of the following directives:

```
ssl on;
keepalive_timeout 70;
ssl_certificate <ssl certificate for your site>;
ssl_certificate_key <ssl certificate key for your site>;
uwsgi_param UWSGI_SCHEME https;
```

If you do plan to use SSL, you'll have to generate a certificate and a key. [This article](#) contains information about how to do it.

Make sure to replace the <...> in the sample configuration with appropriate values. Here are some explanations for the cases that may not be completely self-explanatory:

**<modoboa's settings dir>** Where Modoboa's settings.py resides. This is also where the sitestatic and media directories reside.

**<modoboa's root url>** This is the URL which will be the root of your Modoboa site at your domain. For instance, if your Modoboa installation is reachable at `https://foo/modoboa` then <modoboa's root url> is `/modoboa`. In this case you probably also have to set the alias directives to point to where Modoboa's sitestatic and media directories are because otherwise nginx won't be able to find them.

If Modoboa is at the root of your domain, then <modoboa root url> is an empty string and can be deleted from the configuration above. In this case, you probably do not need the alias directives.

**<uwsgi port>** The location where uwsgi is listening. It could be a unix domain socket or an address:port combination. Ubuntu configures uwsgi so that the port is:

```
unix:/run/uwsgi/app/<app name>/socket
```

where <app name> is the name of the application.

Your uwsgi configuration should be:

```
[uwsgi]
# Not needed when using uwsgi from pip
# plugins = python
chdir = <modoboa's top dir>
module = <name>.wsgi:application
master = true
harakiri = 60
processes = 4
vhost = true
no-default-app = true
```

The plugins directive should be turned on if you use a uwsgi installation that requires it. If uwsgi was installed from pip, it does not require it. In the configuration above:

**<modoboa's top dir>** The directory where `manage.py` resides. This directory is the parent of `<modoboa's settings dir>`

**<name>** The name that you passed to `modoboa-admin.py deploy` when you created your Modoboa instance.

---

## Extending Modoboa

---

### 4.1 Development recipes for Modoboa

You would like to work on Modoboa but you don't know where to start? You're at the right place! Browse this page to learn useful tips.

#### 4.1.1 Prepare a virtual environment

A [virtual environment](#) is a good way to setup a development environment on your machine.

---

**Note:** `virtualenv` is available on all major distributions, just install it using your favorite packages manager.

---

To do so, run the following commands:

```
$ virtualenv <path>
$ source <path>/bin/activate
$ git clone https://github.com/tonioo/modoboa.git
$ cd modoboa
$ python setup.py develop
```

The `develop` command creates a symbolic link to your local copy so any modification you make will be automatically available in your environment, no need to copy them.

#### 4.1.2 Deploy an instance for development

**Warning:** Make sure to [create a database](#) before running this step.

Now that you have a [running environment](#), you're ready to deploy a test instance:

```
$ modoboa-admin.py deploy --devel --dburl <database url> <path>
$ cd <path>
$ python manage.py runserver
```

You're ready to go!

### 4.1.3 Manage static files

Modoboa uses `bower` (thanks to `django-bower`) to manage its CSS and javascript dependencies.

Those dependencies are listed in a file called `dev_settings.py` located inside the `<path_to_local_copy>/modoboa/core` directory.

If you want to add a new dependency, just complete the `BOWER_INSTALLED_APPS` parameter and run the following command:

```
$ python manage.py bower install
```

It will download and store the required files into the `<path_to_local_copy>/modoboa/bower_components` directory.

### 4.1.4 FAQ

#### **bower command is missing in manage.py**

`bower` command is missing in `manage.py` if you don't use the `--devel` option of the `modoboa-admin.py` deploy command.

To fix it, regenerate your instance or update your `settings.py` file manually. Look at `devmode` in <https://github.com/tonioo/modoboa/blob/master/modoboa/core/commands/templates/settings.py.tpl>

## 4.2 Adding a new plugin

### 4.2.1 Introduction

Modoboa offers a plugin API to expand its capabilities. The current implementation provides the following possibilities:

- Expand navigation by adding entry points to your plugin inside the GUI
- Access and modify administrative objects (domains, mailboxes, etc.)
- Register callback actions for specific events

Plugins are nothing more than Django applications with an extra piece of code that integrates them into Modoboa. The `modo_extension.py` file will contain a complete description of the plugin:

- Admin and user parameters
- Observed events
- Custom menu entries

The communication between both applications is provided by *Available events*. Modoboa offers some kind of hooks to let plugin add custom actions.

The following subsections describe plugin architecture and explain how you can create your own plugin.

### 4.2.2 The required glue

To create a new plugin, just start a new django application like this (into Modoboa's directory):

```
$ python manage.py startapp
```

Then, you need to register this application using the provided API. Just copy/paste the following example into the `modo_extension.py` file of the future extension:

```
from modoboa.core.extensions import ModoExtension, exts_pool

class MyExtension(ModoExtension):

    """My custom Modoboa extension."""

    name = "myext"
    label = "My Extension"
    version = "0.1"
    description = "A description"
    url = "myext_root_location" # optional, name is used if not defined

    def load(self):
        """This method is called when Modoboa loads available and activated plugins.

        Declare parameters and register events here.
        """
        pass

    def load_initial_data(self):
        """Optional: provide initial data for your extension here."""
        pass

exts_pool.register_extension(MyExtension)
```

Once done, simply add your extension's module name to the `MODOBOA_APPS` variable located inside `settings.py`. Finally, run the following commands:

```
$ python manage.py migrate
$ python manage.py load_initial_data
$ python manage.py collectstatic
```

### 4.2.3 Parameters

A plugin can declare its own parameters. There are two levels available:

- ‘Administration’ parameters : used to configure the plugin, editable inside the *Admin > Settings > Parameters* page,
- ‘User’ parameters : per-user parameters (or preferences), editable inside the *Options > Preferences* page.

#### Playing with parameters

To declare a new administration parameter, use the following function:

```
from modoboa.lib import parameters

parameters.register_admin(name, **kwargs)
```

To declare a new user parameter, use the following function:

```
parameter.register_user(name, **kwargs)
```

Both functions accept extra arguments listed here:

- `type`: parameter's type, possible values are: `int`, `string`, `list`, `list_yneno`,
- `default`: default value,
- `help`: help text,
- `values`: list of possible values if `type` is `list`.

## 4.2.4 Custom administrative roles

Modoboa uses Django's internal permission system. Administrative roles are nothing more than groups (Group instances).

If an extension needs to add new roles, the following steps are required:

1. Listen to the *GetExtraRoles* event that will return the group's name
2. Listen to the *GetExtraRolePermissions* event that will return the new group's permissions

The group will automatically be created the next time you run the `load_initial_data` command.

## 4.2.5 Extending admin forms

the forms used to edit objects (account, domain, etc.) through the admin panel are composed of tabs. You can extend those forms (ie. add new tabs) in a pretty easy way by defining events.

### Account

To add a new tab to the account edition form, define new listeners (handlers) for the following events:

- *ExtraAccountForm*
- *FillAccountInstances*
- *CheckExtraAccountForm* (optional)

Example:

```
from modoboa.lib import events

@events.observe("ExtraAccountForm")
def extra_account_form(user, account=None):
    return [
        {"id": "tabid", "title": "Title", "cls": MyFormClass}
    ]

@events.observe("FillAccountInstances")
def fill_my_tab(user, account, instances):
    instances["id"] = my_instance
```

## Domain

To add a new tab to the domain edition form, define new listeners (handlers) for the following events:

- *ExtraDomainForm*
- *FillDomainInstances*

Example:

```
from modoboa.lib import events

@events.observe("ExtraDomainForm")
def extra_domain_form(user, domain):
    return [
        {"id": "tabid", "title": "Title", "cls": MyFormClass}
    ]

@events.observe("FillDomainInstances")
def fill_my_tab(user, domain, instances):
    instances["id"] = my_instance
```

## 4.3 Available events

### 4.3.1 Introduction

Modoboa provides a simple API to interact with events. It understands two kinds of events:

- Those returning a value
- Those returning nothing

Listening to a specific event is achieved as follows:

```
from modoboa.lib import events

def callback(*args):
    pass

events.register('event', callback)
```

You can also use the custom decorator `events.observe`:

```
@events.observe('event')
def callback(*args):
    pass
```

`event` is the event's name you want to listen to, `callback` is the function that will be called each time this event is raised. Each event impose to callbacks a specific prototype to respect. See below for a detailed list.

To stop listening to a specific event, you must use the `unregister` function:

```
events.unregister('event', callback)
```

The parameters are the same than those used with `register`.

To unregister all events declared by a specific extension, use the `unregister_extension` function:

```
events.unregister_extension([name])
```

name is the extension's name but it is optional. Leave it empty to let the function guess the name.

Read further to get a complete list and description of all available events.

## 4.3.2 Supported events

### AccountAutoCreated

Raised when a new account is automatically created (example: LDAP synchronization).

*Callback prototype:*

```
def callback(account): pass
```

- account is the newly created account (User instance)

### AccountCreated

Raised when a new account is created.

*Callback prototype:*

```
def callback(account): pass
```

- account is the newly created account (User instance)

### AccountDeleted

Raised when an existing account is deleted.

*Callback prototype:*

```
def callback(account, byuser, **options): pass
```

- account is the account that is going to be deleted
- byuser is the administrator deleting account

### AccountExported

Raised when an account is exported to CSV.

*Callback prototype:*

```
def callback(account): pass
```

- account is the account being exported

Must return a list of values to include in the export.



## AccountImported

Raised when an account is imported from CSV.

*Callback prototype:*

```
def callback(user, account, row): pass
```

- `user` is the user importing the account
- `account` is the account being imported
- `row` is a list containing what remains from the CSV definition

## AccountModified

Raised when an existing account is modified.

*Callback prototype:*

```
def callback(oldaccount, newaccount): pass
```

- `oldaccount` is the account before it is modified
- `newaccount` is the account after the modification

## AdminMenuDisplay

Raised when an admin menu is about to be displayed.

*Callback prototype:*

```
def callback(target, user): pass
```

The `target` argument indicates which menu is being displayed. Possible values are:

- `admin_menu_box` : corresponds to the menu bar available inside administration pages
- `top_menu` : corresponds to the top black bar

See [UserMenuDisplay](#) for a description of what callbacks that listen to this event must return.

## CheckDomainName

Raised before the unicity of a domain name is checked. By default, modoboa prevents duplicate names between domains and domain aliases but extensions have the possibility to extend this rule using this event.

*Callback prototype:*

```
def callback(): pass
```

Must return a list of 2uple, each one containing a model class and an associated label.

## CheckExtraAccountForm

When an account is being modified, this event lets extensions check if this account is concerned by a specific form.

*Callback prototype:*

```
def callback(account, form): pass
```

- `account` is the `User` instance beeing modified
- `form` is a dictionary (same content as for `ExtraAccountForm`)

Callbacks listening to this event must return a list containing one Boolean.

### DomainAliasCreated

Raised when a new domain alias is created.

*Callback prototype:*

```
def callback(user, domain_alias): pass
```

- `user` is the new domain alias owner (`User` instance)
- `domain_alias` is the new domain alias (`DomainAlias` instance)

### DomainAliasDeleted

Raised when an existing domain alias is about to be deleted.

*Callback prototype:*

```
def callback(domain_alias): pass
```

- `domain_alias` is a `DomainAlias` instance

### DomainCreated

Raised when a new domain is created.

*Callback prototype:*

```
def callback(user, domain): pass
```

- `user` corresponds to the `User` object creating the domain (its owner)
- `domain` is a `Domain` instance

### DomainDeleted

Raised when an existing domain is about to be deleted.

*Callback prototype:*

```
def callback(domain): pass
```

- `domain` is a `Domain` instance

## DomainModified

Raised when a domain has been modified.

*Callback prototype:*

```
def callback(domain): pass
```

- `domain` is the modified `Domain` instance, it contains an extra `oldname` field which contains the old name

## DomainOwnershipRemoved

Raised before the ownership of a domain is removed from its original creator.

*Callback prototype:*

```
def callback(owner, domain): pass
```

- `owner` is the original creator
- `domain` is the `Domain` instance being modified

## ExtraAccountActions

Raised when the account list is displayed. Let developers define new actions to act on a specific user.

*Callback prototype:*

```
def callback(account): pass
```

- `account` is the account being listed

## ExtraAccountForm

Let extensions add new forms to the account edition form (the one with tabs).

*Callback prototype:*

```
def callback(user, account): pass
```

- `user` is a `User` instance corresponding to the currently logged in user
- `account` is the account being modified (`User` instance)

Callbacks listening to the event must return a list of dictionnaries, each one must contain at least three keys:

```
{ "id" : "<the form's id>",
  "title" : "<the title used to present the form>",
  "cls" : TheFormClassName }
```

## ExtraAdminContent

Let extensions add extra content into the admin panel.

*Callback prototype:*

```
def callback(user, target, currentpage): pass
```

- `user` is a `User` instance corresponding to the currently logged in user
- `target` is a string indicating the place where the content will be displayed. Possible values are : `leftcol`
- `currentpage` is a string indicating which page (or section) is displayed. Possible values are : `domains`, `identities`

Callbacks listening to this event must return a list of string.

### ExtraDomainEntries

Raised to request extra entries to display inside the *domains* listing.

*Callback prototype:*

```
def callback(user, domfilter, searchquery, **extrafilters): pass
```

- `user` is the `User` instance corresponding to the currently logged in user
- `domfilter` is a string indicating which domain type the user needs
- `searchquery` is a string containing a search query
- `extrafilters` is a set of keyword arguments that may contain additional filters

Must return a valid `QuerySet`.

### ExtraDomainFilters

Raised to request extra filters for the *domains* listing page. For example, the *postfix\_relay\_domains* extension let users filter entries based on service types.

*Callback prototype:*

```
def callback(): pass
```

Must return a list of valid filter names (string).

### ExtraDomainForm

Let extensions add new forms to the domain edition form (the one with tabs).

*Callback prototype:*

```
def callback(user, domain): pass
```

- `user` is a `User` instance corresponding to the currently logged in user
- `domain` is the domain beeing modified (`Domain` instance)

Callbacks listening to the event must return a list of dictionnaires, each one must contain at least three keys:

```
{"id" : "<the form's id>",  
 "title" : "<the title used to present the form>",  
 "cls" : TheFormClassName}
```

### ExtraDomainImportHelp

Raised to request extra help text to display inside the domain import form.

*Callback prototype:*

```
def callback(): pass
```

Must return a list a string.

### ExtraDomainMenuEntries

Raised to request extra entries to include in the left menu of the *domains* listing page.

*Callback prototype:*

```
def callback(user): pass
```

- `user` is the `User` instance corresponding to the currently logged in user

Must return a list of dictionaries. Each dictionary must contain at least three keys:

```
{ "name": "<menu name>",
  "label": "<menu label>",
  "url": "<menu url>" }
```

### ExtraFormFields

Raised to request extra fields to include in a django form.

*Callback prototype:*

```
def callback(form_name, instance=None): pass
```

- `form_name` is a string used to distinguish a specific form
- `instance` is a django model instance related to `form_name`

Must return a list of 2uple, each one containing the following information:

```
('field name', <Django form field instance>)
```

### ExtraRelayDomainForm

Let extensions add new forms to the relay domain edition form (the one with tabs).

*Callback prototype:*

```
def callback(user, rdomain): pass
```

- `user` is the `User` instance corresponding to the currently logged in user
- `rdomain` is the relay domain being modified (`RelayDomain` instance)

Callbacks listening to the event must return a list of dictionaries, each one must contain at least three keys:

```
{ "id" : "<the form's id>",
  "title" : "<the title used to present the form>",
  "cls" : TheFormClassName }
```

## FillAccountInstances

When an account is beeing modified, this event is raised to fill extra forms.

*Callback prototype:*

```
def callback(user, account, instances): pass
```

- `user` is a `User` instance corresponding to the currently logged in user
- `account` is the `User` instance beeing modified
- `instances` is a dictionary where the callback will add information needed to fill a specific form

## FillDomainInstances

When a domain is beeing modified, this event is raised to fill extra forms.

*Callback prototype:*

```
def callback(user, domain, instances): pass
```

- `user` is a `User` instance corresponding to the currently logged in user
- `domain` is the `Domain` instance beeing modified
- `instances` is a dictionary where the callback will add information needed to fill a specific form

## FillRelayDomainInstances

When a relay domain is being modified, this event is raised to fill extra forms.

*Callback prototype:*

```
def callback(user, rdomain, instances): pass
```

- `user` is the `User` instance corresponding to the currently logged in user
- `rdomain` is the `RelayDomain` instance being modified
- `instances` is a dictionary where the callback will add information needed to fill a specific form

## GetAnnouncement

Some places in the interface let plugins add their own announcement (ie. message).

*Callback prototype:*

```
def callback(target): pass
```

- `target` is a string indicating the place where the announcement will appear:
- `loginpage` : corresponds to the login page

Callbacks listening to this event must return a list of string.

## GetDomainActions

Raised to request the list of actions available for the *domains* listing entry being displayed.

*Callback prototype:*

```
def callback(user, rdomain): pass
```

- `user` is the `User` instance corresponding to the currently logged in user
- `rdomain` is the `RelayDomain` instance being displayed

Must return a list of dictionaries, each dictionary containing at least the following entries:

```
{ "name": "<action name>",
  "url": "<action url>",
  "title": "<action title>",
  "img": "<action icon>" }
```

## GetDomainModifyLink

Raised to request the modification url of the *domains* listing entry being displayed.

*Callback prototype:*

```
def callback(domain): pass
```

- `domain` is a model instance (`RelayDomain` for example)

Must return a dictionary containing at least the following entry:

```
{ 'url': '<modification url>' }
```

## GetExtraLimitTemplates

Raised to request extra limit templates. For example, the *postfix\_relay\_domains* extension define a template to limit the number of relay domains an administrator can create.

*Callback prototype:*

```
def callback(): pass
```

Must return a list of set. Each set must contain at least three entries:

```
[ ('<limit_name>', '<limit label>', '<limit help text>') ]
```

## GetExtraParameters

Raised to request extra parameters for a given parameters form.

*Callback prototype:*

```
def callback(application, level): pass
```

- `application` is the name of the form's application (ie. admin, amavis, etc.)
- `level` is the form's level: A for admin or U for user

Must return a dictionary. Each entry must be a valid Django form field.

## GetExtraRolePermissions

Let extensions define new permissions for a given role.

*Callback prototype:*

```
def callback(rolename): pass
```

- rolename is the role's name (str)

Callbacks listening to this event must return a list of list. The second list level must contain exactly 3 strings: the application name, the model name and the permission name. Example:

```
[
    ["core", "user", "add_user"],
    ["core", "user", "change_user"],
    ["core", "user", "delete_user"],
]
```

## GetExtraRoles

Let extensions define new administrative roles (will be used to create or modify an account).

*Callback prototype:*

```
def callback(user, account): pass
```

- user is a `User` instance corresponding to the currently logged in user
- account is the account being modified (`None` on creation)

Callbacks listening to this event must return a list of 2uple (two strings) which respect the following format: (value, label).

## GetStaticContent

Let extensions add static content (ie. CSS or javascript) to default pages. It is pretty useful for functionalities that don't need a template but need javascript stuff.

*Callback prototype:*

```
def callback(caller, st_type, user): pass
```

- caller is name of the application (or the location) responsible for the call
- st\_type is the expected static content type (css or js)
- user is a `User` instance corresponding to the currently logged in user

Callbacks listening to this event must return a list of string.

## ImportObject

Raised to request the function handling an object being imported from CSV.

*Callback prototype:*

```
def callback(objtype): pass
```



`objtype` is the type of object being imported

Must return a list of function. A valid import function must respect the following prototype:

```
def import_function(user, row, formopts): pass
```

- `user` is the `User` instance corresponding to the currently logged in user
- `row` is a string containing the object's definition (CSV format)
- `formopts` is a dictionary that may contain options

### InitialDataLoaded

Raised a initial data has been loaded for a given extension.

*Callback prototype:*

```
def callback(extname): pass

``extname`` is the extension name (str)
```

### MailboxAliasCreated

Raised when a new mailbox alias is created.

*Callback prototype:*

```
def callback(user, mailbox_alias): pass
```

- `user` is the new domain alias owner (`User` instance)
- `mailbox_alias` is the new mailbox alias (`Alias` instance)

### MailboxAliasDeleted

Raised when an existing mailbox alias is about to be deleted.

*Callback prototype:*

```
def callback(mailbox_alias): pass
```

- `mailbox_alias` is an `Alias` instance

### MailboxCreated

Raised when a new mailbox is created.

*Callback prototype:*

```
def callback(user, mailbox): pass
```

- `user` is the new mailbox's owner (`User` instance)
- `mailbox` is the new mailbox (`Mailbox` instance)

### MailboxDeleted

Raised when an existing mailbox is about to be deleted.

*Callback prototype:*

```
def callback(mailbox): pass
```

- mailbox is a Mailbox instance

### MailboxModified

Raised when an existing mailbox is modified.

*Callback prototype:*

```
def callback(mailbox): pass
```

- mailbox is the Mailbox modified instance. It contains a `old_full_address` extra field to check if the address was modified.

### PasswordChange

Raised just before a *password change* action.

*Callback prototype:*

```
def callback(user): pass
```

- user is a User instance

Callbacks listening to this event must return a list containing either `True` or `False`. If at least one `True` is returned, the *password change* will be cancelled (ie. changing the password for this user is disabled).

### TopNotifications

Lets extensions subscribe to the global notification service (located inside the top bar).

*Callback prototype:*

```
def callback(user, include_all): pass
```

- request is a Request instance
- include\_all is a boolean indicating if empty notifications must be included into the result or not

Callbacks listening to this event must return a list of dictionary, each dictionary containing at least the following entries:

```
{ "id": "<notification entry ID>",  
  "url": "<associated URL>",  
  "text": "<text to display>" }
```

If your notification needs a counter, you can specify it by adding the two following entries in the dictionary:

```
{ "counter": <associated counter>, "level": "<info|success|warning|error>" }
```

## UserLogin

Raised when a user logs in.

*Callback prototype:*

```
def callback(request, username, password): pass
```

## UserLogout

Raised when a user logs out.

*Callback prototype:*

```
def callback(request): pass
```

## UserMenuDisplay

Raised when a user menu is about to be displayed.

*Callback prototype:*

```
def callback(target, user): pass
```

The `target` argument indicates which menu is being displayed. Possible values are:

- `options_menu`: corresponds to the top-right user menu
- `uprefs_menu`: corresponds to the menu bar available inside the *User preferences* page
- `top_menu`: corresponds to the top black bar

All the callbacks that listen to this event must return a list of dictionaries (corresponding to menu entries). Each dictionary must contain at least the following keys:

```
{ "name" : "a_name_without_spaces",
  "label" : _("The menu label"),
  "url" : reverse("your_view") }
```

## RelayDomainAliasCreated

Raised when a new relay domain alias is created.

*Callback prototype:*

```
def callback(user, rdomain_alias): pass
```

- `user` is the new relay domain alias owner (User instance)
- `rdomain_alias` is the new relay domain alias (DomainAlias instance)

## RelayDomainAliasDeleted

Raised when an existing relay domain alias is about to be deleted.

*Callback prototype:*

```
def callback(rdomain_alias): pass
```

- `rdomain_alias` is a `RelayDomainAlias` instance

## RelayDomainCreated

Raised when a new relay domain is created.

*Callback prototype:*

```
def callback(user, rdomain): pass
```

- `user` corresponds to the `User` object creating the relay domain (its owner)
- `rdomain` is a `RelayDomain` instance

## RelayDomainDeleted

Raised when an existing relay domain is about to be deleted.

*Callback prototype:*

```
def callback(rdomain): pass
```

- `rdomain` is a `RelayDomain` instance

## RelayDomainModified

Raised when a relay domain has been modified.

*Callback prototype:*

```
def callback(rdomain): pass
```

- **`rdomain` is the modified `RelayDomain` instance, it contains an extra `oldname` field which contains the old name**

## RoleChanged

Raised when the role of an account is about to be changed.

*Callback prototype:*

```
def callback(account, role): pass
```

- `account` is the account being modified
- `role` is the new role (string)

## SaveExtraFormFields

Raised to save extra fields declared using *ExtraFormFields*.

*Callback prototype:*

```
def callback(form_name, instance, values): pass
```

- `form_name` is a string used to distinguish a specific form
- `instance` is a django model instance related to `form_name`
- `values` is a dictionary containing the form's values

### UserCanSetRole

Raised to check if a user is allowed to set a given role to an account.

*Callback prototype:*

```
def callback(user, role, account): pass
```

- `user` is the `User` instance corresponding to the currently logged in user
- `role` is the role `user` tries to set
- `account` is the account being modified (None on creation)

Must return a list containing `True` or `False` to indicate if this user can is allowed to set `role`.



---

## Additional resource

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## 5.1 Tools for migration

### 5.1.1 Migrate existing IMAP accounts

OfflineIMAP extension.

### 5.1.2 PostfixAdmin

Official repository.

## 5.2 Using the virtual machine

### 5.2.1 Introduction

A virtual machine with a ready-to-use Modoboa setup is available [here](#). It is composed of the following components:

- Debian 6.0 (squeeze)
- Modoboa and its prerequisites
- MySQL
- Postfix
- Dovecot
- nginx and gunicorn

Actually, it is the result you obtain if you follow the official documentation.

The disk image is using the **VMDK** format and is compressed using bzip2. To decompress it, just run the following command:

```
$ bunzip2 modoboa.vmdk.bz2
```

If you can't use the vmdk format, you can use **qemu** to convert it to another one. For example:

```
$ qemu-img convert modoboa.vmdk -O qcow2 modoboa.qcow2
```

Then, just use your preferred virtualization software (qemu, kvm, virtualbox, etc.) to start the machine. You'll need to configure at least one bridged network interface if you want to be able to play with Modoboa, ie. your machine must be visible from your network.

The default network interface of the machine (`eth0`) is configured to use the DHCP protocol.

## 5.2.2 Connect to the machine

The following UNIX users are available if you want to connect to the system:

Login	Password	Description
root	demo	the root user
demo	demo	an unprivileged user

To connect to Modoboa, first connect to the system and retrieve its current network address like this:

```
$ /sbin/ifconfig eth0
```

Once you know its address, open a web browser and go to this url:

```
http://<ip_address>/admin/
```

You should see the login page. Here are the users available by default:

Login	Pass-word	Capabililities
admin	password	Default super administrator. Can do anything on the admin but can't access applications
ad-min@demo.local	admin	Administrator of the domain <i>demo.local</i> . Can administrater its domain and access to applications.
user@demo.local	user	Simple user. Can access to applications.