
Kotti Documentation

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Kotti is a light-weight, user-friendly and extensible web content management system. It is licensed under a [BSD-like license](#)

Features

- **User-friendly:** a simple edit interface hides advanced functionality from less experienced users
- **WYSIWYG editor:** includes a rich text editor that lets you edit content like in office applications
- **Security:** advanced user, groups and user roles management; uses [access control lists](#) (ACL) to control access to different parts of the site
- **Templating:** extend Kotti with your own look & feel with very little programming required
- **Customizable:** Many aspects of Kotti are configured through a simple INI file
- **Add-ons:** a plug-in system allows third party software to greatly extend Kotti
- **Pluggable authentication:** allows authentication of users through LDAP or other existing user databases
- **Open:** built on top of well-documented, open source components, such as [Python](#), [Pyramid](#) and [SQLAlchemy](#)
- **Tested:** [continuous testing](#) with a test coverage of 100% guarantees Kotti's stability

1.1 Try it out

You can try out Kotti on [Kotti's demo site](#).

1.2 Under the hood

Kotti is written in [Python](#) and builds upon on the two excellent libraries [Pyramid](#) and [SQLAlchemy](#). Kotti tries to leverage these libraries as much as possible, thus:

- minimizing the amount of code and extra concepts, and
- allowing users familiar with Pyramid and SQLAlchemy to feel right at home since Kotti's API is mostly that of Pyramid and SQLAlchemy.

Installation

2.1 Requirements

- Runs on Python versions 2.5, 2.6 and 2.7.
- Support for [many SQL databases](#), including SQLite, MySQL and PostgreSQL
- Support for WSGI and a [variety of web servers](#), including Apache

2.2 Installation using `virtualenv`

It's recommended to install Kotti inside a `virtualenv`:

```
virtualenv mysite --no-site-packages
cd mysite
bin/pip install Kotti
```

Kotti uses [Paste Deploy](#) for configuration and deployment. An example configuration file is included with Kotti's source distribution:

```
wget https://github.com/dnouri/Kotti/raw/master/development.ini
```

Finally, to run the application:

```
bin/paster serve development.ini
```

Configuration and customization

3.1 INI File

Kotti is configured using an INI configuration file. The [installation](#) section explains how to get hold of a sample configuration file. The `[app:main]` section in it might look like this:

```
[app:main]
use = egg:Kotti
pyramid.reload_templates = true
pyramid.debug_authorization = false
pyramid.debug_notfound = false
pyramid.debug_routematch = false
pyramid.debug_templates = true
pyramid.default_locale_name = en
pyramid.includes = pyramid_debugtoolbar
                  pyramid_tm
mail.default_sender = yourname@yourhost
sqlalchemy.url = sqlite:///%(here)s/Kotti.db
kotti.site_title = Kotti
kotti.secret = changethis1
```

Various aspects of your site can be changed right here.

3.2 Overview of settings

This table provides an overview of available settings. All these settings must go into the `[app:main]` section of your Paste Deploy configuration file.

Setting	Description
kotti.site_title	The title of your site
kotti.secret	Secret token used as initial admin password
kotti.secret2	Secret token used for email password reset token
sqlalchemy.url	SQLAlchemy database URL
mail.default_sender	Sender address for outgoing email
mail.host	Email host to send from
kotti.includes	List of Python configuration hooks
kotti.available_types	List of active content types
kotti.base_includes	List of base Python configuration hooks
kotti.configurators	List of advanced functions for config
kotti.populators	List of functions to fill initial database
kotti.templates.master_view	Master template used for public views
kotti.templates.master_edit	Master template used for edit screens
kotti.templates.snippets	Override <head> and other common elements
kotti.templates.view_css	CSS file used for public views
kotti.templates.edit_css	CSS file used for edit screens
kotti.templates.base_css	Base CSS file; used for both
kotti.templates.api	Override <code>api</code> used by all templates
kotti.authn_policy_factory	Component used for authentication
kotti.authz_policy_factory	Component used for authorization
kotti.session_factory	Component used for sessions
kotti.date_format	Date format to use, default: <code>medium</code>
kotti.datetime_format	Datetime format to use, default: <code>medium</code>
kotti.time_format	Time format to use, default: <code>medium</code>

Only the settings in bold letters required. The rest has defaults.

3.3 kotti.secret and kotti.secret2

The value of `kotti.secret` will define the initial password of the `admin` user. This is the initial user that Kotti creates in the user database. So if you put *mysecret* here, use *mysecret* as the password when you log in as `admin`. You may then change the `admin` user's password through the web interface.

The `kotti.secret` token is also used for signing browser session cookies.

The `kotti.secret2` token is used for signing the password reset token.

Here's an example. Make sure you use different values though!

```
kotti.secret = myadminspassword
kotti.secret2 = $2a$12$VVpW/i1MA2wUUIUHwY6v8O
```

3.4 Adjusting the look & feel

The `kotti.templates.*` configuration settings allow you to define alternative template and CSS files to be used. An example that overrides both the master template for all public views and configures an alternative CSS file for the edit interface:

```
kotti.templates.master_view = mypackage:templates/master.pt
kotti.templates.edit_css = mypackage:static/edit.css
```

3.5 Using add-ons

Add-ons will usually include in their installation instructions which settings one should modify to activate them. Configuration settings that are used to activate add-ons are:

- `kotti.includes`
- `kotti.available_types`
- `kotti.base_includes`
- `kotti.configurators`

3.5.1 `kotti.includes`

`kotti.includes` defines a list of hooks that will be called by Kotti when it starts up. This gives the opportunity to third party packages to add registrations to the [Pyramid Configurator API](#) in order to configure views and more.

As an example, we'll add the `kotti_twitter` extension to add a Twitter profile widget to the right column of all pages. First we install the package from PyPI:

```
bin/pip install kotti_twitter
```

Then we activate the add-on in our site by editing the `kotti.includes` setting in the `[app:main]` section of our INI file. (If a line with `kotti.includes` does not exist, add it.)

```
kotti.includes = kotti_twitter.include_profile_widget
```

`kotti_twitter` also asks us to configure the Twitter widget itself, so we add some more lines right where we were:

```
kotti_twitter.profile_widget.user = dnouri
kotti_twitter.profile_widget.loop = true
```

The order in which the includes are listed matters. For example, when you add two slots on the right hand side, the order in which you list them here will control the order in which they will appear.

With this configuration, the search widget is displayed on top of the profile widget:

```
kotti.includes =
    kotti_twitter.include_search_widget
    kotti_twitter.include_profile_widget
```

3.5.2 `kotti.available_types`

The `kotti.available_types` setting defines the list of content types available. The default configuration here is:

```
kotti.available_types = kotti.resources.Document
```

An example that adds two content types:

```
kotti.available_types =
    kotti.resources.Document
    mypackage.resources.Calendar
    mypackage.resources.Event
```

3.6 Configuring authentication and authorization

You can override the authentication and authorization policy that Kotti uses. By default, Kotti uses these factories:

```
kotti.authn_policy_factory = kotti.authkt_factory
kotti.authz_policy_factory = kotti.acl_factory
```

These settings correspond to `pyramid.authentication.AuthTktAuthenticationPolicy` and `pyramid.authorization.ACLAuthorizationPolicy` being used.

3.7 Sessions

The `kotti.session_factory` configuration variable allows the overriding of the default session factory, which is `pyramid.session.UnencryptedCookieSessionFactoryConfig`.

Writing add-ons

4.1 Content types

Defining your own content types is easy. The implementation of the Document content type serves as an example here:

```
class Document(Content):
    type_info = Content.type_info.copy(
        name=u'Document',
        add_view=u'add_document',
        addable_to=[u'Document'],
    )

    def __init__(self, body=u"", mime_type='text/html', **kwargs):
        super(Document, self).__init__(**kwargs)
        self.body = body
        self.mime_type = mime_type

documents = Table('documents', metadata,
    Column('id', Integer, ForeignKey('contents.id'), primary_key=True),
    Column('body', UnicodeText()),
    Column('mime_type', String(30)),
)

mapper(Document, documents, inherits=Content, polymorphic_identity='document')
```

You can configure the list of active content types in Kotti by modifying the `kotti.available_types` setting.

4.1.1 Using `kotti.populators` to create your own root object

If you were to totally customize Kotti, and not even include the stock Document type, you would need to follow the template provided by Document, with some attention to detail for configuration and for instantiating a resource hierarchy, especially the root object. For example, let's say that you replace Document with a custom type called Project (updating available types configuration as needed). In your design, under the Project custom type, you might have a hierarchy of other types, the relationships determined by how the `type_info.addable_to` setup is done, and how the parent property is set for each record on instantiation. When you instantiate the root Project object, the code in the `populate()` method of `resources.py` would be something like:

```
root = Project(name="", title="Mother Project", propertyOne="Something", parent=None)
```

NOTE: So, the details are that the root object must have an empty name (`name=""`) and the parent is None.

4.2 Configuring custom views, subscribers and more

`kotti.includes` allows you to hook `includeme` functions that configure your custom views, subscribers and more. An `includeme` function takes the `Pyramid Configurator API` object as its sole argument. An example:

```
def my_view(request):
    from pyramid.response import Response
    return Response('OK')

def includeme(config):
    config.add_view(my_view)
```

By adding the *dotted name string* of your `includeme` function to the `kotti.includes` setting, you ask Kotti to call it on application start-up. An example:

```
kotti.includes = mypackage.views.includeme
```

4.3 kotti.views.slots

4.4 kotti.events

4.5 kotti.configurators

Requiring users of your package to set all the configuration settings by hand in the Paste Deploy INI file is not ideal. That's why Kotti includes a configuration variable through which extending packages can set all other INI settings through Python. Here's an example of a function that programmatically modified `kotti.base_includes` and `kotti_principals` which would otherwise be configured by hand in the INI file:

```
# in mypackage/__init__.py
def kotti_configure(config):
    config['kotti.base_includes'] += ' mypackage.views'
    config['kotti.principals'] = 'mypackage.security.principals'
```

And this is how your users would hook it up in their INI file:

```
kotti.configurators = mypackage.kotti_configure
```

4.6 Security

Kotti builds mostly on `Pyramid's security API` and uses its `inherited access control lists` support. On top of that, Kotti defines *roles* and *groups* support: Users may be collected in groups, and groups may be given roles that define permissions.

The site root's ACL defines the default mapping of roles to their permissions:

```
root.__acl__ == [
    ['Allow', 'system.Everyone', ['view']],
    ['Allow', 'role:viewer', ['view']],
    ['Allow', 'role:editor', ['view', 'add', 'edit']],
    ['Allow', 'role:owner', ['view', 'add', 'edit', 'manage']],
]
```


Every Node object has an `__acl__` attribute, allowing the definition of localized row-level security.

The `kotti.security.set_groups()` function allows assigning roles and groups to users in a given context. `kotti.security.list_groups()` allows one to list the groups of a given user. You may also set the list of groups globally on principal objects, which are of type `kotti.security.Principal`.

Kotti delegates adding, deleting and search of user objects to an interface it calls `kotti.security.AbstractPrincipals`. You can configure Kotti to use a different Principals implementation by pointing the `kotti.principals_factory` configuration setting to a different factory. The default setting here is:

```
kotti.principals_factory = kotti.security.principals_factory
```

Contact us

Kotti itself is [developed on Github](#). The [issue tracker](#) also lives there.

Have a question or a suggestion? Write to [Kotti's mailing list](#) or find us on IRC on [irc.freenode.net](#) in channel `#kotti`.

Tests

To run Kotti's automated test suite, do:

```
bin/py.test
```

Or alternatively:

```
bin/python setup.py test
```

You can also run the tests against a different database using the `KOTTI_TEST_DB_STRING` environment variable. By default, Kotti uses an in-memory SQLite database. An example:

```
KOTTI_TEST_DB_STRING=postgresql://kotti:kotti@localhost:5432/kotti-testing bin/python setup.py test
```

Important: Never use this feature against a production database. It will destroy your data.

7.1 API Documentation

7.1.1 `kotti.security`

7.2 Indices and tables

- *genindex*
- *modindex*
- *search*