
django-filer Documentation

Release 0.9.3

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CONTENTS

django-filer is a file management application for django. It handles uploading and organizing files and images in contrib.admin.

Note: upgrading from 0.8.7? Checkout [Upgrading](#).

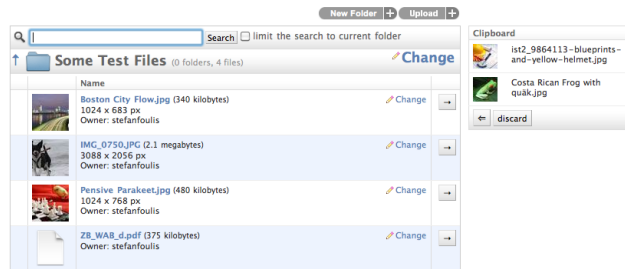


Figure 1: Directory list view with clipboard. New uploads are added to the clipboard and can then be filed into folders.

Custom model fields are provided for use in 3rd party apps as a replacement for the default `FileField` from django. Behind the scenes a `ForeignKey` to the `File` model is used.

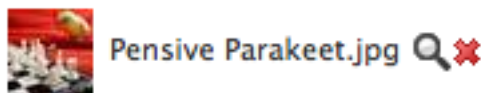


Figure 2: Default admin widget for file fields

GETTING HELP

- google group: <http://groups.google.com/group/django-filer>
- IRC: #django-filer on freenode.net

CONTRIBUTING

The code is hosted on github at <http://github.com/stefanfoulis/django-filer/> and is fully open source. We hope you choose to help us on the project! More about [how to contribute](#) can be found on [the wiki](#).

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3.1 Installation and Configuration

Note: upgrading from 0.8.7? Checkout *Upgrading*.

3.1.1 Getting the latest release

The easiest way to get `django-filer` is simply install it with `pip`:

```
$ pip install django-filer
```

If you are feeling adventurous you can get the latest sourcecode from [github](https://github.com/stefanfoulis/django-filer) or add http://stefanfoulis.github.com/django-filer/unstable_releases/ to find-links for the latest alpha and beta releases.

3.1.2 Dependencies

- Django >=1.3.1,<1.5
- django-mptt >=0.5.1,<0.6
- easy_thumbnails >= 1.0
- django-polymorphic >=0.2
- PIL 1.1.7 (with JPEG and ZLIB support) I recommend using [Pillow](#) instead.
- `django.contrib.staticfiles`

Since the [PIL package on pypi](#) can be notoriously hard to install on some platforms it is not listed in the package dependencies in `setup.py` and won't be installed automatically. Please make sure you install [PIL](#) with JPEG and ZLIB support installed. I recommend [Pillow](#) a better packaged fork of [PIL](#)).

3.1.3 Configuration

Add "filer" and related apps to your project's `INSTALLED_APPS` setting and run `manage.py syncdb` (or `manage.py migrate` if you're using [South](#)):

```
INSTALLED_APPS = [
    ...
    'filer',
    'easy_thumbnails',
    ...
]
```

Note that `easy_thumbnails` also has database tables and needs a `syncdb` or `migrate`.

Static media

In order to operate properly, django-filer needs some js and css files. They are located in the `static/filer` directory in the `filer` package. Use `django.contrib.staticfiles` (or `django-staticfiles`) to have them automatically served.

subject location aware cropping

It is possible to define the *important* part of an image (the *subject location*) in the admin interface for django-filer images. This is very useful when later resizing and cropping images with `easy_thumbnails`. The image can then be cropped automatically in a way, that the important part of the image is always visible.

To enable automatic subject location aware cropping of images replace `easy_thumbnails.processors.scale_and_crop` with `filer.thumbnail_processors.scale_and_crop_with_subject_location` in the `THUMBNAIL_PROCESSORS` setting:

```
THUMBNAIL_PROCESSORS = (
    'easy_thumbnails.processors.colorspace',
    'easy_thumbnails.processors.autocrop',
    #'easy_thumbnails.processors.scale_and_crop',
    'filer.thumbnail_processors.scale_and_crop_with_subject_location',
    'easy_thumbnails.processors.filters',
)
```

To crop an image and respect the subject location:

```
{% load thumbnail %}
{% thumbnail obj.img 200x300 crop upscale subject_location=obj.img.subject_location %}
```

permissions

Warning: File permissions are an experimental feature. The api may change at any time.

See [Permissions](#) section.

secure downloads

Warning: File download permissions are an experimental feature. The api may change at any time.

See [Secure Downloads](#) section.

debugging and logging

While by default `django-filer` usually silently skips icon/thumbnail generation errors, two options are provided to help when working with `django-filer`:

- `FILER_DEBUG`: Boolean, controls whether bubbling up any `easy-thumbnails` exception (typically if an image file doesn't exist); is `False` by default;
- `FILER_ENABLE_LOGGING`: Boolean, controls whether logging the above exceptions. It requires proper django logging configuration for default logger or `filer` logger. Please see <https://docs.djangoproject.com/en/dev/topics/logging/> for further information about django logging configuration.

3.2 Upgrading

3.2.1 from 0.9.1 to 0.9.2

From 0.9.2 `File.name` field is `null=False`.

Warning: Data migration in 0.9.2 changes existing null values to empty string.

3.2.2 from 0.8.7 to 0.9

0.9 introduces real separation of private and public files through multiple storage backends. Public files are placed inside `MEDIA_ROOT`, using Django's default file storage. Private files are now placed in their own location. Unfortunately the default settings in `django-filer` 0.8.x made all new uploads "private", but still placed them inside `MEDIA_ROOT` in a subfolder called `filer_private`. In most cases these files are actually meant to be public, so they should be moved.

Note: Quick and Dirty: set `FILER_0_8_COMPATIBILITY_MODE=True`. It will pick up the old style settings and configure storage backends the way they were in 0.8. This setting is only meant to ease migration and is not intended to be used long-term.

Manually (SQL)

faster for many large files

Fire up the `sql-console` and change `is_public` to `True` on all files in the `filer_file` table (`UPDATE filer_file SET is_public=1 WHERE is_public=0;`). The files will still be in `MEDIA_ROOT/filer_private/`, but serving them should already work. Then you can move the files into `filer_private` in the filesystem and update the corresponding paths in the database.

Automatic (Django)

Have `filer` move all files between storages. This might take a while, since `django` will read each file into memory and write it to the new location. Especially if you are using an external storage backend such as *Amazon S3*, this might not be an option. Set `FILER_0_8_COMPATIBILITY_MODE=True` and make sure you can access public and private files. Then run this snippet in the `django` shell:

```
from filer.models import File
import sys
for f in File.objects.filter(is_public=False):
    sys.stdout.write(u'moving %s to public storage... ' % f.id)
    f.is_public = True
    f.save()
    sys.stdout.write(u'done\n')
```

After running the script you can delete the `FILER_0_8_COMPATIBILITY_MODE` setting. If you want to use secure downloads see [Secure Downloads](#).

3.2.3 from pre-0.9a3 develop to 0.9

In develop pre-0.9a3 file path was written in the database as relative path inside *filer* directory; since 0.9a3 this is no longer the case so file must be migrate to the new paths. Same disclaimer as 0.8x migration applies: SQL migration is much faster for large datasets.

Manually (SQL)

Use whatever tool to access you database console and insert the correct directory name at the start of the *file* field. Example:

```
UPDATE filer_file SET file= 'filer_public/' || file WHERE file LIKE '20%' AND is_public=True;
UPDATE filer_file SET file= 'filer_private/' || file WHERE file LIKE '20%' AND is_public=False;
```

Then you will have to move by hand the files from the *MEDIA_ROOT/filer* directory to the new public and private storage directories

Automatic (Django)

Make sure the console user can access/write public and private files. Please note that the “*filer/*” string below should be modified if your files are not saved in *MEDIA_ROOT/filer* Then run this snippet in the django shell:

```
from filer.models import File
import sys
for f in File.objects.filter(is_public=True):
    sys.stdout.write(u'moving %s to public storage... ' % f.id)
    f.is_public = False
    f.file.name = "filer/%s" % f.file.name
    f.save()
    f.is_public = True
    f.save()
    sys.stdout.write(u'done\n')
for f in File.objects.filter(is_public=False):
    sys.stdout.write(u'moving %s to private storage... ' % f.id)
    f.is_public = True
    f.file.name = "filer/%s" % f.file.name
    f.save()
    f.is_public = False
    f.save()
    sys.stdout.write(u'done\n')
```

Double access modification is needed to enabled automatic file move.

3.3 Usage

django-filer provides model fields to replace *django*'s own `django.db.models.FileField` and `django.db.models.ImageField`. The *django-filer* versions provide the added benefit of being able to manage the files independently of where they are actually used in your content. As such the same file can be used in multiple places without re-uploading it multiple times and wasting bandwidth, time and storage.

It also comes with additional tools to detect file duplicates based on SHA1 checksums.

Note: behind the scenes this field is actually just a `ForeignKey` to the `File` model in *django-filer*. So you can easily access the extra metadata like this:

```
company.disclaimer.shal
company.disclaimer.size
company.logo.width
company.logo.height
company.logo.icons['64'] # or {{ company.logo.icons.64 }} in a template
```

3.3.1 FilerFileField and FilerImageField

They are subclasses of `django.db.models.ForeignKey`, so the same rules apply. The only difference is, that there is no need to declare what model we are referencing (it is always `filer.models.File` for the `FilerFileField` and `filer.models.Image` for the `FilerImageField`).

Simple example `models.py`:

```
from django.db import models
from filer.fields.image import FilerImageField
from filer.fields.file import FilerFileField

class Company(models.Model):
    name = models.CharField(max_length=255)
    logo = FilerImageField(null=True, blank=True)
    disclaimer = FilerFileField(null=True, blank=True)
```

multiple file fields on the same model:

```
from django.db import models
from filer.fields.image import FilerImageField

class Book(models.Model):
    title = models.CharField(max_length=255)
    cover = FilerImageField(related_name="book_covers")
    back = FilerImageField(related_name="book_backs")
```

As with `django.db.models.ForeignKey` in general, you have to define a non-clashing `related_name` if there are multiple `ForeignKey`s to the same model.

templates

django-filer plays well with `easy_thumbnails`. At the template level a `FilerImageField` can be used the same as a regular `django.db.models.ImageField`:

```
{% load thumbnail %}
{% thumbnail company.logo 250x250 crop %}
```

admin

The default widget provides a popup file selector that also directly supports uploading new images.



- Clicking on the magnifying glass will display the file selection popup.
- The red X will de-select the currently selected file (useful if the field can be `null`).

Warning: Don't place a `FilerFileField` as the first field in admin. Django admin will try to set the focus to the first field in the form. But since the form field of `FilerFileField` is hidden that will cause in a javascript error.

3.4 Permissions

Warning: File download permissions are an experimental feature. The api may change at any time.

By default files can be uploaded and managed by all staff members based on the standard django model permissions. Activating permission checking with the `FILER_ENABLE_PERMISSIONS` setting enables fine grained permissions based on individual folders. Permissions can be set in the “Folder permissions” section in Django admin.

Note: These permissions only concern editing files and folders in Django admin. All the files are still world downloadable by anyone who guesses the url. For real permission checks on downloads see the [Secure Downloads](#) section.

3.5 Secure Downloads

Warning: Secure downloads are experimental and the API may change at any time.

Warning: Server Backends currently only work with files in the local filesystem.

Note: For the impatient:

- set `FILER_ENABLE_PERMISSIONS` to `True`
- include `filer.server.urls` in the root `urls.py` without a prefix

To be able to check permissions on the file downloads, a special view is used. The files are saved in a separate location outside of `MEDIA_ROOT` to prevent accidental serving. By default this is a directory called `smedia` that is located in

the parent directory of `MEDIA_ROOT`. The `smedia` directory must **NOT** be served by the webserver directly, because that would bypass the permission checks.

To hook up the view `filer.server.urls` needs to be included in the root `urls.py`:

```
urlpatterns += patterns('',
    url(r'^$', include('filer.server.urls')),
)
```

Files with restricted permissions need to be placed in a secure storage backend. Configure a secure storage backend in *FILER_STORAGES* or use the default.

Warning: The “Permissions disabled” checkbox in the file detail view in Django admin controls in which storage backend the file is saved. In order for it to be protected, this field must not be checked.

For images the permissions also extend to all generated thumbnails.

By default files with permissions are served directly by the Django process (using the `filer.server.backends.default.DefaultServer` backend). That is acceptable in a development environment, but is very bad for performance and security in production.

The private file view will serve the permission-checked media files by delegating to one of its server backends. The ones bundled with django-filer live in `filer.server.backends` and it is easy to create new ones.

The default is `filer.server.backends.default.DefaultServer`. It is suitable for development and serves the file directly from django.

More suitable for production are server backends that delegate the actual file serving to an upstream webserver.

3.5.1 NginxXAccelRedirectServer

location: `filer.server.backends.nginx.NginxXAccelRedirectServer`

nginx docs about this stuff: <http://wiki.nginx.org/XSendfile>

in `settings.py`:

```
FILER_SERVERS = {
    'private': {
        'main': {
            'ENGINE': 'filer.server.backends.nginx.NginxXAccelRedirectServer',
            'OPTIONS': {
                'location': '/path/to/smedia/filer',
                'nginx_location': '/nginx_filer_private',
            },
        },
        'thumbnails': {
            'ENGINE': 'filer.server.backends.nginx.NginxXAccelRedirectServer',
            'OPTIONS': {
                'location': '/path/to/smedia/filer_thumbnails',
                'nginx_location': '/nginx_filer_private_thumbnails',
            },
        },
    },
}
```

`nginx_location` is the location directive where nginx “hides” permission-checked files from general access. A fitting nginx configuration might look something like this:

```
location /nginx_filer_private/ {
    internal;
    alias /path/to/smedia/filer_private/;
}
location /nginx_filer_private_thumbnails/ {
    internal;
    alias /path/to/smedia/filer_private_thumbnails/;
}
```

Note: make sure you follow the example exactly. Missing trailing slashes and `alias` vs. `root` have subtle differences that can make your config fail.

`NginxXAccelRedirectServer` will add the a `X-Accel-Redirect` header to the response instead of actually loading and delivering the file itself. The value in the header will be something like `/nginx_filer_private/2011/03/04/myfile.pdf`. Nginx picks this up and does the actual file delivery while the django backend is free to do other stuff again.

3.5.2 ApacheXSendfileServer

location: `filer.server.backends.xsendfile.ApacheXSendfileServer`

Warning: I have not tested this myself. Any feedback and example configurations are very welcome :-)

Once you have `mod_xsendfile` installed on your apache server you can configure the settings.

in `settings.py`:

```
FILER_SERVERS = {
    'private': {
        'main': {
            'ENGINE': 'filer.server.backends.xsendfile.ApacheXSendfileServer',
        },
        'thumbnails': {
            'ENGINE': 'filer.server.backends.xsendfile.ApacheXSendfileServer',
        },
    },
}
```

in your apache configuration:

```
XSendFilePath /path/to/smedia/
```

`XSendFilePath` is a whitelist for directories where apache will serve files from.

3.6 Settings

3.6.1 FILER_ENABLE_PERMISSIONS

Activate the or not the Permission check on the files and folders before displaying them in the admin. When set to `False` it gives all the authorization to staff members based on standard Django model permissions.

Defaults to `False`

3.6.2 FILER_IS_PUBLIC_DEFAULT

Should newly uploaded files have permission checking disabled (be public) by default.

Defaults to `False` (new files have permission checking disable, are public)

3.6.3 FILER_STATICMEDIA_PREFIX

The prefix for static media where filer will look for bundled javascript, css and images.

Defaults to `<STATIC_URL>/filer/` if `STATIC_URL` is defined. Otherwise falls back to `<MEDIA_URL>/filer/`. It is the URL where the `static/filer/` directory should be served.

3.6.4 FILER_STORAGES

A dictionary to configure storage backends used for file storage.

e.g:

```
FILER_STORAGES = {
    'public': {
        'main': {
            'ENGINE': 'filer.storage.PublicFileSystemStorage',
            'OPTIONS': {
                'location': '/path/to/media/filer',
                'base_url': '/smedia/filer/',
            },
            'UPLOAD_TO': 'filer.utils.generate_filename.by_date',
        },
        'thumbnails': {
            'ENGINE': 'filer.storage.PublicFileSystemStorage',
            'OPTIONS': {
                'location': '/path/to/media/filer_thumbnails',
                'base_url': '/smedia/filer_thumbnails/',
            },
        },
    },
    'private': {
        'main': {
            'ENGINE': 'filer.storage.PrivateFileSystemStorage',
            'OPTIONS': {
                'location': '/path/to/smedia/filer',
                'base_url': '/smedia/filer/',
            },
            'UPLOAD_TO': 'filer.utils.generate_filename.by_date',
        },
        'thumbnails': {
            'ENGINE': 'filer.storage.PrivateFileSystemStorage',
            'OPTIONS': {
                'location': '/path/to/smedia/filer_thumbnails',
                'base_url': '/smedia/filer_thumbnails/',
            },
        },
    },
}
```

Defaults to `FileSystemStorage` in `<MEDIA_ROOT>/filer_public/` and `<MEDIA_ROOT>/filer_public_thumbnails/` for public files and `<MEDIA_ROOT>/../smedia/filer_private/` and `<MEDIA_ROOT>/../smedia/filer_private_thumbnails/` for private files. Public storage uses `DEFAULT_FILE_STORAGE` as default storage backend.

`UPLOAD_TO` is the function to generate the path relative to the storage root. The default generates a date based path like `2011/05/03/filename.jpg`. This will be applied with the current date whenever a file is uploaded or moved between public (without permission checks) and private (with permission checks) storages. Defaults to `'filer.utils.generate_filename.by_date'`

3.6.5 FILER_SERVERS

Warning: Server Backends are experimental and the API may change at any time.

A dictionary to configure server backends to serve files with permissions.

e.g:

```
DEFAULT_FILER_SERVERS = {
    'private': {
        'main': {
            'ENGINE': 'filer.server.backends.default.DefaultServer',
        },
        'thumbnails': {
            'ENGINE': 'filer.server.backends.default.DefaultServer',
        }
    }
}
```

Defaults to using the `DefaultServer` (doh)! This will serve the files with the django app.

3.6.6 FILER_PAGINATE_BY

The number of items (Folders, Files) that should be displayed per page in admin.

Defaults to 20

3.6.7 FILER_SUBJECT_LOCATION_IMAGE_DEBUG

Draws a red circle around to point in the image that was used to do the subject location aware image cropping.

Defaults to `False`

3.6.8 FILER_ALLOW_REGULAR_USERS_TO_ADD_ROOT_FOLDERS

Regular users are not allowed to create new folders at the root level, only subfolders of already existing folders, unless this setting is set to `True`.

Defaults to `False`

3.7 Extending Django Filer

Django Filer ships with support for image files, and generic files (everything that's not an image).

So what if you wanted to add support for a particular kind of file that's not already included? It's easy to extend it to do this, without needing to touch the Filer's code at all (and no-one wants to have to maintain fork if they can avoid it).

So for example, you might want to be able to manage video files. You could of course simply store and file them as generic file types, but that might not be enough - perhaps your own application needs to know that certain files are in fact video files, so that it can treat them appropriately (process them, allow only them to be selected in certain widgets, and so on).

In this example we will create support for video files.

3.7.1 The model

The very basics

In your own application, you need to create a Video model. This model has to inherit from `filer.models.filemodels.File`.

```
# import the File class to inherit from
from filer.models.filemodels import File

# we'll need to refer to filer settings
from filer import settings as filer_settings

class Video(File):
    pass # for now...
```

When a file is uploaded, `filer.admin.clipboardadmin.ClipboardAdmin.ajax_upload()` loops over the different classes in `filer.settings.FILER_FILE_MODELS` and calls its `matches_file_type()` to see if the file matches a known filename extension.

When a match is found, the filer will create an instance of that class for the file.

So let's add a `matches_file_type()` method to the Video model:

```
@classmethod
def matches_file_type(cls, iname, ifile, request):
    # the extensions we'll recognise for this file type
    filename_extensions = ['.dv', '.mov', '.mp4', '.avi', '.wmv',]
    ext = os.path.splitext(iname)[1].lower()
    return ext in filename_extensions
```

Now you can upload files of those types into the Filer.

For each one you upload an instance of your Video class will be created.

Icons

At the moment, the files you upload will have the Filer's generic file icon - not very appropriate or helpful for video. What you need to do is add a suitable `_icon` attribute to the class.

The `filer.models.filemodels.File` class we've inherited from has an `icons()` property, from `filer.models.mixins.IconsMixin`.

This checks for the `_icon` attribute; if it finds one, it uses it to build URLs for the icons in various different sizes. If `_icons` is `video`, a typical result might be `/static/filer/icons/video_48x48.png`.

Of course, you can also create an `icons()` property specific to your new model. For example, `filer.models.imagemodels.Image` does that, so that it can create thumbnail icons for each file rather than a single icon for all of that type.

In our `Video` model the simple case will do:

```
# the icon it will use
_icon = "video"
```

And in fact, the Filer *already* has an icon that matches this - if there were not already a set of video icons in the Filer's static assets, we'd have to provide them - see `filer/static/icons` for examples.

3.7.2 The admin

Now we need to register our new model with the admin. Again, the very simplest case:

```
from django.contrib import admin
from filer.admin.fileadmin import FileAdmin
from models import Video

admin.site.register(Video, FileAdmin) # use the standard FileAdmin
```

... but of course if your model had particular fields of its own (as for example the `Image` model has a `subject_location` field) you would create your own `ModelAdmin` class for it, along with a form, special widgets and whatever else you needed.

3.7.3 Using your new file type

You've now done enough to be able to get hold of files of your new kind in the admin (wherever the admin uses a `FilerFileField`) but to make it really useful we need to to a little more.

For example, it might be useful to have:

- its own field type to get hold of it in some other model
- a special form for the field
- a widget for selecting it in the admin
- ... and so on

How you use it will be up to you, but a fairly typical use case would be in a django CMS plugin, and that is the example that will be followed here.

3.7.4 Create a custom field for your file type

```
from filer.fields.file import FilerFileField

class FilerVideoField(FilerFileField):
    default_model_class = Video
```

Of course you could also create an admin widget and admin form, but it's not necessary at this stage - the ones generic files use will do just fine.

3.7.5 Create some other model that uses it

Here, it's going to be a django CMS plugin:

```
from cms.models import CMSPlugin

class VideoPluginEditor(CMSPlugin):
    video = FilerVideoField()
    # you'd probably want some other fields in practice...
```

You'll have to provide an admin class for your model; in this case, the admin will be provided as part of the django CMS plugin architecture.

Note: If you are not already familiar with the django CMS plugin architecture, http://docs.django-cms.org/en/latest/extending_cms/custom_plugins.html#overview will provide an explanation.

```
from cms.plugin_base import CMSPluginBase
from models import VideoPluginEditor

class VideoPluginPublisher(CMSPluginBase):
    model = VideoPluginEditor
    render_template = "video/video.html"
    text_enabled = True
    admin_preview = False

    def icon_src(self, instance):
        return "/static/plugin_icons/video.png"

    def render(self, context, instance, placeholder):
        context.update({
            'video': instance,
            'placeholder': placeholder,
        })
        return context

plugin_pool.register_plugin(VideoPluginPublisher)
```

... and now, assuming you have created a suitable `video/video.html`, you've got a working plugin that will make use of your new Filer file type.

3.7.6 Other things you could add

Admin templating

`filer/templates/templates/admin/filer/folder` lists the individual items in each folder. It checks `item.file_type` to determine how to display those items and what to display for them.

You might want to extend this, so that the list includes the appropriate information for your new file type. In that case you will need to override the template, and in the `Video` model:

```
# declare the file_type for the list template
file_type = 'Video'
```

Note that if you do this, you *will* need to override the template - otherwise your items will fail to display in the folder lists.

3.8 Running tests

There is a minimal project and buildout configuration to get the tests up and running. In the source checkout switch to the `tests` directory and run:

```
python bootstrap.py
./bin/buildout
```

This will setup buildout and install all the needed dependencies in a isolated environment.

Run the tests:

```
./bin/django test filer
```