Anymail Documentation

Release 10.3

Anymail contributors

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USING ANYMAIL

Version 10.3

Anymail lets you send and receive email in Django using your choice of transactional email service providers (ESPs). It extends the standard `django.core.mail` with many common ESP-added features, providing a consistent API that avoids locking your code to one specific ESP (and making it easier to change ESPs later if needed).

Anymail currently supports these ESPs:

- **Amazon SES**
- **Brevo** (formerly SendinBlue)
- **MailerSend**
- **Mailgun**
- **Mailjet**
- **Mandrill** (MailChimp transactional)
- **Postal** (self-hosted ESP)
- **Postmark**
- **Resend**
- **SendGrid**
- **SparkPost**
- **Unisender Go**

Anymail includes:

- Integration of each ESP's sending APIs into Django's built-in email package, including support for HTML, attachments, extra headers, and other standard email features
- Extensions to expose common ESP-added functionality, like tags, metadata, and tracking, with code that's portable between ESPs
- Simplified inline images for HTML email
- Normalized sent-message status and tracking notification, by connecting your ESP's webhooks to Django signals
- "Batch transactional" sends using your ESP's merge and template features
- Inbound message support, to receive email through your ESP's webhooks, with simplified, portable access to attachments and other inbound content

Anymail maintains compatibility with all Django versions that are in mainstream or extended support, plus (usually) a few older Django versions, and is extensively tested on all Python versions supported by Django. (Even-older Django versions may still be covered by an Anymail extended support release; consult the changelog for details.)

Anymail releases follow semantic versioning. The package is released under the BSD license.

DOCUMENTATION

1.1 Anymail 1-2-3

Here's how to send a message. This example uses Mailgun, but you can substitute Mailjet or Postmark or SendGrid or SparkPost or any other supported ESP where you see "mailgun":

1. Install Anymail from PyPI:

```
$ pip install "django-anymail[mailgun]"
```

(The `[mailgun]` part installs any additional packages needed for that ESP. Mailgun doesn't have any, but some other ESPs do.)

2. Edit your project's `settings.py`:

```
INSTALLED_APPS = [
    # ...
    "anymail",
    # ...
]

ANYMAIL = {
    # (exact settings here depend on your ESP...)
    "MAILGUN_API_KEY": "<your Mailgun key>",
    "MAILGUN_SENDER_DOMAIN": 'mg.example.com',  # your Mailgun domain, if needed
}
EMAIL_BACKEND = "anymail.backends.mailgun.EmailBackend"  # or sendgrid.EmailBackend,
↪ or...
DEFAULT_FROM_EMAIL = "you@example.com"  # if you don't already have this in settings
SERVER_EMAIL = "your-server@example.com"  # ditto (default from-email for Django
↪errors)
```

3. Now the regular Django email functions will send through your chosen ESP:

```
from django.core.mail import send_mail

send_mail("It works!", "This will get sent through Mailgun",
          "Anymail Sender <from@example.com>", ["to@example.com"])
```

You could send an HTML message, complete with an inline image, custom tags and metadata:

```python
from django.core.mail import EmailMultiAlternatives
from anymail.message import attach_inline_image_file

msg = EmailMultiAlternatives(
    subject="Please activate your account",
    body="Click to activate your account: https://example.com/activate",
    from_email="Example <admin@example.com>",
    to=["New User <user1@example.com>", "account.manager@example.com"],
    reply_to=["Helpdesk <support@example.com>"])

# Include an inline image in the html:
logo_cid = attach_inline_image_file(msg, "/path/to/logo.jpg")
html = """<img alt="Logo" src="cid:{logo_cid}">
          <p>Please <a href="https://example.com/activate">activate</a>
          your account</p>""".format(logo_cid=logo_cid)
msg.attach_alternative(html, "text/html")

# Optional Anymail extensions:
msg.metadata = {"user_id": "8675309", "experiment_variation": 1}
msg.tags = ["activation", "onboarding"]
msg.track_clicks = True

# Send it:
msg.send()
```

Problems? We have some *Troubleshooting* info that may help.

Now what?

Now that you've got Anymail working, you might be interested in:

- *Sending email with Anymail*
- *Receiving inbound email*
- *ESP-specific information*
- *All the docs*

1.2 Installation and configuration

1.2.1 Installing Anymail

To use Anymail in your Django project:

1. Install the django-anymail app. It's easiest to install from PyPI using pip:

```
$ pip install "django-anymail[sendgrid,sparkpost]"
```

The [sendgrid,sparkpost] part of that command tells pip you also want to install additional packages required for those ESPs. You can give one or more comma-separated, lowercase ESP names. (Most ESPs don't have additional requirements, so you can often just skip this. Or change your mind later. Anymail will let you know if there are any missing dependencies when you try to use it.)

2. Edit your Django project's `settings.py`, and add `anymail` to your `INSTALLED_APPS` (anywhere in the list):

```
INSTALLED_APPS = [
    # ...
    "anymail",
    # ...
]
```

3. Also in `settings.py`, add an `ANYMAIL` settings dict, substituting the appropriate settings for your ESP. E.g.:

```
ANYMAIL = {
    "MAILGUN_API_KEY": "<your Mailgun key>",
}
```

The exact settings vary by ESP. See the *supported ESPs* section for specifics.

Then continue with either or both of the next two sections, depending on which Anymail features you want to use.

1.2.2 Configuring Django's email backend

To use Anymail for *sending* email from Django, make additional changes in your project's `settings.py`. (Skip this section if you are only planning to *receive* email.)

1. Change your existing Django `EMAIL_BACKEND` to the Anymail backend for your ESP. For example, to send using Mailgun by default:

```
EMAIL_BACKEND = "anymail.backends.mailgun.EmailBackend"
```

(`EMAIL_BACKEND` sets Django's default for sending emails; you can also use *multiple Anymail backends* to send particular messages through different ESPs.)

2. If you don't already have `DEFAULT_FROM_EMAIL` and `SERVER_EMAIL` in your settings, this is a good time to add them. (Django's defaults are "webmaster@localhost" and "root@localhost", respectively, and most ESPs won't allow sending from those addresses.)

With the settings above, you are ready to send outgoing email through your ESP. If you also want to enable status tracking or inbound handling, continue with the settings below. Otherwise, skip ahead to *Sending email*.

1.2.3 Configuring tracking and inbound webhooks

Anymail can optionally connect to your ESP's event webhooks to notify your app of:

- status tracking events for sent email, like bounced or rejected messages, successful delivery, message opens and clicks, etc.
- inbound message events, if you are set up to receive email through your ESP

Skip this section if you won't be using Anymail's webhooks.

Warning: Webhooks are ordinary urls, and are wide open to the internet. You must use care to **avoid creating security vulnerabilities** that could expose your users' emails and other private information, or subject your app to malicious input data.

At a minimum, your site should **use https** and you should configure a **webhook secret** as described below.

See *Securing webhooks* for additional information.

If you want to use Anymail's inbound or tracking webhooks:

1. In your `settings.py`, add *WEBHOOK_SECRET* to the `ANYMAIL` block:

```
ANYMAIL = {
    ...
    'WEBHOOK_SECRET': '<a random string>:<another random string>',
}
```

This setting should be a string with two sequences of random characters, separated by a colon. It is used as a shared secret, known only to your ESP and your Django app, to ensure nobody else can call your webhooks.

We suggest using 16 characters (or more) for each half of the secret. Always generate a new, random secret just for this purpose. (*Don't* use your Django secret key or ESP's API key.)

An easy way to generate a random secret is to run this command in a shell:

```
$ python -c "from django.utils import crypto; print(':'.join(crypto.get_random_
↪string(16) for _ in range(2)))"
```

(This setting is actually an HTTP basic auth string. You can also set it to a list of auth strings, to simplify credential rotation or use different auth with different ESPs. See *ANYMAIL_WEBHOOK_SECRET* in the *Securing webhooks* docs for more details.)

2. In your project's `urls.py`, add routing for the Anymail webhook urls:

```
from django.urls import include, path

urlpatterns = [
    ...
    path("anymail/", include("anymail.urls")),
]
```

(You can change the "anymail" prefix in the first parameter to `path()` if you'd like the webhooks to be served at some other URL. Just match whatever you use in the webhook URL you give your ESP in the next step.)

3. Enter the webhook URL(s) into your ESP's dashboard or control panel. In most cases, the URL will be:

   https://random:random@yoursite.example.com/anymail/*esp/type/*

   - "https" (rather than http) is *strongly recommended*
   - *random:random* is the WEBHOOK_SECRET string you created in step 1
   - *yoursite.example.com* is your Django site
   - "anymail" is the url prefix (from step 2)
   - *esp* is the lowercase name of your ESP (e.g., "sendgrid" or "mailgun")
   - *type* is either "tracking" for Anymail's sent-mail event tracking webhooks, or "inbound" for receiving email

   Some ESPs support different webhooks for different tracking events. You can usually enter the same Anymail *tracking* webhook URL for all of them (or all that you want to receive)—but be sure to use the separate *inbound* URL for inbound webhooks. And always check the specific details for your ESP under *Supported ESPs*.

   Also, some ESPs try to validate the webhook URL immediately when you enter it. If so, you'll need to deploy your Django project to your live server before you can complete this step.

Some WSGI servers may need additional settings to pass HTTP authorization headers through to Django. For example, Apache with mod_wsgi requires `WSGIPassAuthorization On`, else Anymail will complain about "missing or invalid basic auth" when your webhook is called.

See *Tracking sent mail status* for information on creating signal handlers and the status tracking events you can receive. See *Receiving mail* for information on receiving inbound message events.

1.2.4 Anymail settings reference

You can add Anymail settings to your project's `settings.py` either as a single `ANYMAIL` dict, or by breaking out individual settings prefixed with `ANYMAIL_`. So this settings dict:

```
ANYMAIL = {
    "MAILGUN_API_KEY": "12345",
    "SEND_DEFAULTS": {
        "tags": ["myapp"]
    },
}
```

...is equivalent to these individual settings:

```
ANYMAIL_MAILGUN_API_KEY = "12345"
ANYMAIL_SEND_DEFAULTS = {"tags": ["myapp"]}
```

In addition, for some ESP settings like API keys, Anymail will look for a setting without the `ANYMAIL_` prefix if it can't find the Anymail one. (This can be helpful if you are using other Django apps that work with the same ESP.)

```
MAILGUN_API_KEY = "12345"   # used only if neither ANYMAIL["MAILGUN_API_KEY"]
                            # nor ANYMAIL_MAILGUN_API_KEY have been set
```

Finally, for complex use cases, you can override most settings on a per-instance basis by providing keyword args where the instance is initialized (e.g., in a `get_connection()` call to create an email backend instance, or in a `View.as_view()` call to set up webhooks in a custom urls.py). To get the kwargs parameter for a setting, drop "ANYMAIL" and the ESP name, and lowercase the rest: e.g., you can override ANYMAIL_MAILGUN_API_KEY for a particular connection by calling `get_connection("anymail.backends.mailgun.EmailBackend", api_key="abc")`. See *Mixing email backends* for an example.

There are specific Anymail settings for each ESP (like API keys and urls). See the *supported ESPs* section for details. Here are the other settings Anymail supports:

IGNORE_RECIPIENT_STATUS

Set to `True` to disable `AnymailRecipientsRefused` exceptions on invalid or rejected recipients. (Default `False`.) See *Refused recipients*.

```
ANYMAIL = {
    ...
    "IGNORE_RECIPIENT_STATUS": True,
}
```

SEND_DEFAULTS and *ESP*_SEND_DEFAULTS

A `dict` of default options to apply to all messages sent through Anymail. See *Global send defaults*.

IGNORE_UNSUPPORTED_FEATURES

Whether Anymail should raise `AnymailUnsupportedFeature` errors for email with features that can't be accurately communicated to the ESP. Set to `True` to ignore these problems and send the email anyway. See *Unsupported features*. (Default `False`.)

WEBHOOK_SECRET

A `'random:random'` shared secret string. Anymail will reject incoming webhook calls from your ESP that don't include this authentication. You can also give a list of shared secret strings, and Anymail will allow ESP webhook calls that match any of them (to facilitate credential rotation). See *Securing webhooks*.

Default is unset, which leaves your webhooks insecure. Anymail will warn if you try to use webhooks without a shared secret.

This is actually implemented using HTTP basic authentication, and the string is technically a "username:password" format. But you should *not* use any real username or password for this shared secret.

REQUESTS_TIMEOUT

For Requests-based Anymail backends, the timeout value used for all API calls to your ESP. The default is 30 seconds. You can set to a single float, a 2-tuple of floats for separate connection and read timeouts, or `None` to disable timeouts (not recommended). See Timeouts in the Requests docs for more information.

DEBUG_API_REQUESTS

Added in version 4.3.

When set to `True`, outputs the raw API communication with the ESP, to assist in debugging. Each HTTP request and ESP response is dumped to `sys.stdout` once the response is received.

> **Caution:** Do not enable `DEBUG_API_REQUESTS` in production deployments. The debug output will include your API keys, email addresses, and other sensitive data that you generally don't want to capture in server logs or reveal on the console.

`DEBUG_API_REQUESTS` only applies to sending email through Requests-based Anymail backends. For other backends, there may be similar debugging facilities available in the ESP's API wrapper package (e.g., `boto3. set_stream_logger` for Amazon SES).

1.3 Sending email

1.3.1 Django email support

Anymail builds on Django's core email functionality. If you are already sending email using Django's default SMTP `EmailBackend`, switching to Anymail will be easy. Anymail is designed to "just work" with Django.

If you're not familiar with Django's email functions, please take a look at Sending email in the Django docs first.

Anymail supports most of the functionality of Django's `EmailMessage` and `EmailMultiAlternatives` classes.

Anymail handles **all** outgoing email sent through Django's `django.core.mail` module, including `send_mail()`, `send_mass_mail()`, the `EmailMessage` class, and even `mail_admins()`. If you'd like to selectively send only some messages through Anymail, or you'd like to use different ESPs for particular messages, there are ways to use *multiple email backends*.

HTML email

To send an HTML message, you can simply use Django's `send_mail()` function with the `html_message` parameter:

```python
from django.core.mail import send_mail

send_mail("Subject", "text body", "from@example.com",
          ["to@example.com"], html_message="<html>html body</html>")
```

However, many Django email capabilities—and additional Anymail features—are only available when working with an `EmailMultiAlternatives` object. Use its `attach_alternative()` method to send HTML:

```python
from django.core.mail import EmailMultiAlternatives

msg = EmailMultiAlternatives("Subject", "text body",
                             "from@example.com", ["to@example.com"])
msg.attach_alternative("<html>html body</html>", "text/html")
# you can set any other options on msg here, then...
msg.send()
```

It's good practice to send equivalent content in your plain-text body and the html version.

AMP Email

Django's `EmailMultiAlternatives` also supports sending AMP for email content. Attach the AMP alternative with the MIME type *text/x-amp-html*. Add the AMPHTML first, before the regular html alternative, to keep the parts in the recommended order:

```python
from django.core.mail import EmailMultiAlternatives

msg = EmailMultiAlternatives("Subject", "text body",
                             "from@example.com", ["to@example.com"])
msg.attach_alternative("<!doctype html><html amp4email data-css-strict>...",
                       "text/x-amp-html")
msg.attach_alternative("<!doctype html><html>...", "text/html")
msg.send()
```

Not all ESPs allow AMPHTML (check the chart under *Supported ESPs*). If yours doesn't, trying to send AMP content will raise an *unsupported feature* error.

Attachments

Anymail will send a message's attachments to your ESP. You can add attachments with the `attach()` or `attach_file()` methods of Django's `EmailMessage`.

Note that some ESPs impose limits on the size and type of attachments they will send.

Inline images

If your message has any attachments with `Content-Disposition: inline` headers, Anymail will tell your ESP to treat them as inline rather than ordinary attached files. If you want to reference an attachment from an <img> in your HTML source, the attachment also needs a `Content-ID` header.

Anymail comes with `attach_inline_image()` and `attach_inline_image_file()` convenience functions that do the right thing. See *Inline images* in the "Anymail additions" section.

(If you prefer to do the work yourself, Python's `MIMEImage` and `add_header()` should be helpful.)

Even if you mark an attachment as inline, some email clients may decide to also display it as an attachment. This is largely outside your control.

Changed in version 4.3: For convenience, Anymail will treat an attachment with a `Content-ID` but no `Content-Disposition` as inline. (Many—though not all—email clients make the same assumption. But to ensure consistent behavior with non-Anymail email backends, you should always set *both* `Content-ID` and `Content-Disposition: inline` headers for inline images. Or just use Anymail's *inline image helpers*, which handle this for you.)

Additional headers

Anymail passes additional headers to your ESP. (Some ESPs may limit which headers they'll allow.) EmailMessage expects a `dict` of headers:

```
# Use `headers` when creating an EmailMessage
msg = EmailMessage( ...
    headers={
        "List-Unsubscribe": unsubscribe_url,
        "X-Example-Header": "myapp",
    }
)

# Or use the `extra_headers` attribute later
msg.extra_headers["In-Reply-To"] = inbound_msg["Message-ID"]
```

Anymail treats header names as case-*insensitive* (because that's how email handles them). If you supply multiple headers that differ only in case, only one of them will make it into the resulting email.

Django's default `SMTP EmailBackend` has special handling for certain headers. Anymail replicates its behavior for compatibility:

- If you supply a "Reply-To" header, it will *override* the message's `reply_to` attribute.

- If you supply a "From" header, it will override the message's `from_email` and become the *From* field the recipient sees. In addition, the original `from_email` value will be used as the message's `envelope_sender`, which becomes the `Return-Path` at the recipient end. (Only if your ESP supports altering envelope sender, otherwise you'll get an *unsupported feature* error.)

- If you supply a "To" header, you'll usually get an *unsupported feature* error. With Django's SMTP EmailBackend, this can be used to show the recipient a *To* address that's different from the actual envelope recipients in the message's `to` list. Spoofing the *To* header like this is popular with spammers, and almost none of Anymail's supported ESPs allow it.

Unsupported features

Some email capabilities aren't supported by all ESPs. When you try to send a message using features Anymail can't communicate to the current ESP, you'll get an *AnymailUnsupportedFeature* error, and the message won't be sent.

For example, very few ESPs support alternative message parts added with `attach_alternative()` (other than a single `text/html` part that becomes the HTML body). If you try to send a message with other alternative parts, Anymail will raise *AnymailUnsupportedFeature*. If you'd like to silently ignore *AnymailUnsupportedFeature* errors and send the messages anyway, set `"IGNORE_UNSUPPORTED_FEATURES"` to `True` in your settings.py:

```
ANYMAIL = {
    ...
    "IGNORE_UNSUPPORTED_FEATURES": True,
}
```

Refused recipients

If *all* recipients (to, cc, bcc) of a message are invalid or rejected by your ESP *at send time,* the send call will raise an *AnymailRecipientsRefused* error.

You can examine the message's `anymail_status` attribute to determine the cause of the error. (See *ESP send status*.)

If a single message is sent to multiple recipients, and *any* recipient is valid (or the message is queued by your ESP because of rate limiting or `send_at`), then this exception will not be raised. You can still examine the message's `anymail_status` property after the send to determine the status of each recipient.

You can disable this exception by setting `"IGNORE_RECIPIENT_STATUS"` to `True` in your settings.py `ANYMAIL` dict, which will cause Anymail to treat *any* response from your ESP (other than an API error) as a successful send.

Note: Most ESPs don't check recipient status during the send API call. For example, Mailgun always queues sent messages, so you'll never catch `AnymailRecipientsRefused` with the Mailgun backend.

You can use Anymail's *delivery event tracking* if you need to be notified of sends to suppression-listed or invalid emails.

1.3.2 Anymail additions

Anymail normalizes several common ESP features, like adding metadata or tags to a message. It also normalizes the response from the ESP's send API.

There are three ways you can use Anymail's ESP features with your Django email:

- Just use Anymail's added attributes directly on *any* Django `EmailMessage` object (or any subclass).

- Create your email message using the *AnymailMessage* class, which exposes extra attributes for the ESP features.

- Use the *AnymailMessageMixin* to add the Anymail extras to some other EmailMessage-derived class (your own or from another Django package).

The first approach is usually the simplest. The other two can be helpful if you are working with Python development tools that offer type checking or other static code analysis.

ESP send options (AnymailMessage)

Availability of each of these features varies by ESP, and there may be additional limitations even when an ESP does support a particular feature. Be sure to check Anymail's docs for your *specific ESP*. If you try to use a feature your ESP does not offer, Anymail will raise an *unsupported feature* error.

class anymail.message.**AnymailMessage**

A subclass of Django's `EmailMultiAlternatives` that exposes additional ESP functionality.

The constructor accepts any of the attributes below, or you can set them directly on the message at any time before sending:

```python
from anymail.message import AnymailMessage

message = AnymailMessage(
    subject="Welcome",
    body="Welcome to our site",
    to=["New User <user1@example.com>"],
    tags=["Onboarding"],  # Anymail extra in constructor
)
# Anymail extra attributes:
message.metadata = {"onboarding_experiment": "variation 1"}
message.track_clicks = True

message.send()
status = message.anymail_status  # available after sending
status.message_id  # e.g., '<12345.67890@example.com>'
status.recipients["user1@example.com"].status  # e.g., 'queued'
```

Attributes you can add to messages

Note: Anymail looks for these attributes on **any** `EmailMessage` you send. (You don't have to use `AnymailMessage`.)

---

envelope_sender

Set this to a `str` email address that should be used as the message's envelope sender. If supported by your ESP, this will become the Return-Path in the recipient's mailbox.

(Envelope sender is also known as bounce address, MAIL FROM, envelope from, unixfrom, SMTP FROM command, return path, and several other terms. Confused? Here's some good info on how envelope sender relates to return path.)

ESP support for envelope sender varies widely. Be sure to check Anymail's docs for your *specific ESP* before attempting to use it. And note that those ESPs who do support it will often use only the domain portion of the envelope sender address, overriding the part before the @ with their own encoded bounce mailbox.

[The `envelope_sender` attribute is unique to Anymail. If you also use Django's SMTP EmailBackend, you can portably control envelope sender by *instead* setting `message.extra_headers["From"]` to the desired email *header From*, and `message.from_email` to the *envelope sender*. Anymail also allows this approach, for compatibility with the SMTP EmailBackend. See the notes in Django's bug tracker.]

metadata

If your ESP supports tracking arbitrary metadata, you can set this to a `dict` of metadata values the ESP should store with the message, for later search and retrieval. This can be useful with Anymail's *status tracking* webhooks.

```
message.metadata = {"customer": customer.id,
                    "order": order.reference_number}
```

ESPs have differing restrictions on metadata content. For portability, it's best to stick to alphanumeric keys, and values that are numbers or strings.

You should format any non-string data into a string before setting it as metadata. See *Formatting merge data*.

Depending on the ESP, this metadata **could be exposed to the recipients** in the message headers, so don't include sensitive data.

merge_metadata

On a message with multiple recipients, if your ESP supports it, you can set this to a `dict` of *per-recipient* metadata values the ESP should store with the message, for later search and retrieval. Each key in the dict is a recipient email (address portion only), and its value is a dict of metadata for that recipient:

```
message.to = ["wile@example.com", "Mr. Runner <rr@example.com>"]
message.merge_metadata = {
    "wile@example.com": {"customer": 123, "order": "acme-zxyw"},
    "rr@example.com": {"customer": 45678, "order": "acme-wblt"},
}
```

When `merge_metadata` is set, Anymail will use the ESP's *batch sending* option, so that each `to` recipient gets an individual message (and doesn't see the other emails on the `to` list).

All of the notes on *metadata* keys and value formatting also apply to `merge_metadata`. If there are conflicting keys, the `merge_metadata` values will take precedence over `metadata` for that recipient.

Depending on the ESP, this metadata **could be exposed to the recipients** in the message headers, so don't include sensitive data.

tags

If your ESP supports it, you can set this to a `list` of `str` tags to apply to the message. This can be useful for segmenting your ESP's reports, and is also often used with Anymail's *status tracking* webhooks.

```
message.tags = ["Order Confirmation", "Test Variant A"]
```

ESPs have differing restrictions on tags. For portability, it's best to stick with strings that start with an alphanumeric character. (Also, a few ESPs allow only a single tag per message.)

> **Caution:** Some ESPs put `metadata` (and a recipient's `merge_metadata`) and `tags` in email headers, which are included with the email when it is delivered. Anything you put in them **could be exposed to the recipients,** so don't include sensitive data.

track_opens

If your ESP supports open tracking, you can set this to `True` or `False` to override your ESP's default for this particular message. (Most ESPs let you configure open tracking defaults at the account or sending domain level.)

For example, if you have configured your ESP to *not* insert open tracking pixels by default, this will attempt to enable that for this one message:

```
message.track_opens = True
```

track_clicks

If your ESP supports click tracking, you can set this to `True` or `False` to override your ESP's default for this particular message. (Most ESPs let you configure click tracking defaults at the account or sending domain level.)

For example, if you have configured your ESP to normally rewrite links to add click tracking, this will attempt to disable that for this one message:

```
message.track_clicks = False
```

send_at

If your ESP supports scheduled transactional sending, you can set this to a `datetime` to have the ESP delay sending the message until the specified time. (You can also use a `float` or `int`, which will be treated as a POSIX timestamp as in `time.time()`.)

```
from datetime import datetime, timedelta, timezone

message.send_at = datetime.now(timezone.utc) + timedelta(hours=1)
```

To avoid confusion, it's best to provide either an *aware* `datetime` (one that has its tzinfo set), or an `int` or `float` seconds-since-the-epoch timestamp.

If you set `send_at` to a `date` or a *naive* `datetime` (without a timezone), Anymail will interpret it in Django's current timezone. (Careful: `datetime.now()` returns a *naive* datetime, unless you call it with a timezone like in the example above.)

The sent message will be held for delivery by your ESP – not locally by Anymail.

esp_extra

> Although Anymail normalizes common ESP features, many ESPs offer additional functionality that doesn't map neatly to Anymail's standard options. You can use `esp_extra` as an "escape hatch" to access ESP functionality that Anymail doesn't (or doesn't yet) support.
>
> Set it to a `dict` of additional, ESP-specific settings for the message. See the notes for each *specific ESP* for information on its `esp_extra` handling.
>
> Using this attribute is inherently non-portable between ESPs, so it's best to avoid it unless absolutely necessary. If you ever want to switch ESPs, you will need to update or remove all uses of `esp_extra` to avoid unexpected behavior.

Status response from the ESP

anymail_status

> Normalized response from the ESP API's send call. Anymail adds this to each `EmailMessage` as it is sent.
>
> The value is an `AnymailStatus`. See *ESP send status* below for details.

Convenience methods

(These methods are only available on `AnymailMessage` or `AnymailMessageMixin` objects. Unlike the attributes above, they can't be used on an arbitrary `EmailMessage`.)

attach_inline_image_file(*path*, *subtype=None*, *idstring='img'*, *domain=None*)

> Attach an inline (embedded) image to the message and return its `Content-ID`.
>
> This calls `attach_inline_image_file()` on the message. See *Inline images* for details and an example.

attach_inline_image(*content*, *filename=None*, *subtype=None*, *idstring='img'*, *domain=None*)

> Attach an inline (embedded) image to the message and return its `Content-ID`.
>
> This calls `attach_inline_image()` on the message. See *Inline images* for details and an example.

ESP send status

class anymail.message.**AnymailStatus**

> When you send a message through an Anymail backend, Anymail adds an `anymail_status` attribute to the `EmailMessage`, with a normalized version of the ESP's response.
>
> Anymail backends create this attribute *as they process each message.* Before that, anymail_status won't be present on an ordinary Django EmailMessage or EmailMultiAlternatives—you'll get an `AttributeError` if you try to access it.
>
> This might cause problems in your test cases, because Django substitutes its own locmem EmailBackend during testing (so anymail_status never gets attached to the EmailMessage). If you run into this, you can: change your code to guard against a missing anymail_status attribute; switch from using EmailMessage to `AnymailMessage` (or the `AnymailMessageMixin`) to ensure the anymail_status attribute is always there; or substitute *Anymail's test backend* in any affected test cases.
>
> After sending through an Anymail backend, `anymail_status` will be an object with these attributes:

message_id

> The message id assigned by the ESP, or `None` if the send call failed.
>
> The exact format varies by ESP. Some use a UUID or similar; some use an **RFC 2822** `Message-ID` as the id:

```
message.anymail_status.message_id
# '<20160306015544.116301.25145@example.org>'
```

Some ESPs assign a unique message ID for *each recipient* (to, cc, bcc) of a single message. In that case, `message_id` will be a `set` of all the message IDs across all recipients:

```
message.anymail_status.message_id
# set(['16fd2706-8baf-433b-82eb-8c7fada847da',
#      '886313e1-3b8a-5372-9b90-0c9aee199e5d'])
```

status

A `set` of send statuses, across all recipients (to, cc, bcc) of the message, or `None` if the send call failed.

```
message1.anymail_status.status
# set(['queued'])  # all recipients were queued
message2.anymail_status.status
# set(['rejected', 'sent'])  # at least one recipient was sent,
#                            # and at least one rejected

# This is an easy way to check there weren't any problems:
if message3.anymail_status.status.issubset({'queued', 'sent'}):
    print("ok!")
```

Anymail normalizes ESP sent status to one of these values:

- `'sent'` the ESP has sent the message (though it may or may not end up delivered)

- `'queued'` the ESP has accepted the message and will try to send it asynchronously

- `'invalid'` the ESP considers the sender or recipient email invalid

- `'rejected'` the recipient is on an ESP suppression list (unsubscribe, previous bounces, etc.)

- `'failed'` the attempt to send failed for some other reason

- `'unknown'` anything else

Not all ESPs check recipient emails during the send API call – some simply queue the message, and report problems later. In that case, you can use Anymail's *Tracking sent mail status* features to be notified of delivery status events.

recipients

A `dict` of per-recipient message ID and status values.

The dict is keyed by each recipient's base email address (ignoring any display name). Each value in the dict is an object with `status` and `message_id` properties:

```
message = EmailMultiAlternatives(
    to=["you@example.com", "Me <me@example.com>"],
    subject="Re: The apocalypse")
message.send()

message.anymail_status.recipients["you@example.com"].status
# 'sent'
message.anymail_status.recipients["me@example.com"].status
# 'queued'
message.anymail_status.recipients["me@example.com"].message_id
# '886313e1-3b8a-5372-9b90-0c9aee199e5d'
```

Will be an empty dict if the send call failed.

esp_response

The raw response from the ESP API call. The exact type varies by backend. Accessing this is inherently non-portable.

```
# This will work with a requests-based backend,
# for an ESP whose send API provides a JSON response:
message.anymail_status.esp_response.json()
```

Inline images

Anymail includes convenience functions to simplify attaching inline images to email.

These functions work with *any* Django `EmailMessage` – they're not specific to Anymail email backends. You can use them with messages sent through Django's SMTP backend or any other that properly supports MIME attachments.

(Both functions are also available as convenience methods on Anymail's `AnymailMessage` and `AnymailMessageMixin` classes.)

anymail.message.**attach_inline_image_file**(*message*, *path*, *subtype=None*, *idstring='img'*, *domain=None*)

Attach an inline (embedded) image to the message and return its `Content-ID`.

In your HTML message body, prefix the returned id with `cid:` to make an <img> src attribute:

```python
from django.core.mail import EmailMultiAlternatives
from anymail.message import attach_inline_image_file

message = EmailMultiAlternatives( ... )
cid = attach_inline_image_file(message, 'path/to/picture.jpg')
html = '... <img alt="Picture" src="cid:%s"> ...' % cid
message.attach_alternative(html, 'text/html')

message.send()
```

`message` must be an `EmailMessage` (or subclass) object.

`path` must be the pathname to an image file. (Its basename will also be used as the attachment's filename, which may be visible in some email clients.)

`subtype` is an optional MIME *image* subtype, e.g., `"png"` or `"jpg"`. By default, this is determined automatically from the content.

`idstring` and `domain` are optional, and are passed to Python's `make_msgid()` to generate the `Content-ID`. Generally the defaults should be fine.

Changed in version 4.0: If you don't supply a `domain`, Anymail will use the simple string "inline" rather than `make_msgid()`'s default local hostname. This avoids a problem with ESPs that confuse `Content-ID` and attachment filename: if your local server's hostname ends in ".com", Gmail could block messages with inline attachments generated by earlier Anymail versions and sent through these ESPs.

anymail.message.**attach_inline_image**(*message*, *content*, *filename=None*, *subtype=None*, *idstring='img'*, *domain=None*)

This is a version of `attach_inline_image_file()` that accepts raw image data, rather than reading it from a file.

`message` must be an `EmailMessage` (or subclass) object.

---

content must be the binary image data

filename is an optional str that will be used as as the attachment's filename – e.g., "picture.jpg". This may be visible in email clients that choose to display the image as an attachment as well as making it available for inline use (this is up to the email client). It should be a base filename, without any path info.

subtype, idstring and domain are as described in *attach_inline_image_file()*

Global send defaults

In your settings.py, you can set ANYMAIL_SEND_DEFAULTS to a dict of default options that will apply to all messages sent through Anymail:

```
ANYMAIL = {
    ...
    "SEND_DEFAULTS": {
        "metadata": {"district": "North", "source": "unknown"},
        "tags": ["myapp", "version3"],
        "track_clicks": True,
        "track_opens": True,
    },
}
```

At send time, the attributes on each EmailMessage get merged with the global send defaults. For example, with the settings above:

```
message = AnymailMessage(...)
message.tags = ["welcome"]
message.metadata = {"source": "Ads", "user_id": 12345}
message.track_clicks = False

message.send()
# will send with:
#   tags: ["myapp", "version3", "welcome"] (merged with defaults)
#   metadata: {"district": "North", "source": "Ads", "user_id": 12345} (merged)
#   track_clicks: False (message overrides defaults)
#   track_opens: True (from the defaults)
```

To prevent a message from using a particular global default, set that attribute to None. (E.g., message.tags = None will send the message with no tags, ignoring the global default.)

Anymail's send defaults actually work for all django.core.mail.EmailMessage attributes. So you could set "bcc": ["always-copy@example.com"] to add a bcc to every message. (You could even attach a file to every message – though your recipients would probably find that annoying!)

You can also set ESP-specific global defaults. If there are conflicts, the ESP-specific value will override the main SEND_DEFAULTS:

```
ANYMAIL = {
    ...
    "SEND_DEFAULTS": {
        "tags": ["myapp", "version3"],
    },
    "POSTMARK_SEND_DEFAULTS": {
        # Postmark only supports a single tag
```

(continues on next page)

```
        "tags": ["version3"],  # overrides SEND_DEFAULTS['tags'] (not merged!)
    },
    "MAILGUN_SEND_DEFAULTS": {
        "esp_extra": {"o:dkim": "no"},  # Disable Mailgun DKIM signatures
    },
}
```

AnymailMessageMixin

class anymail.message.**AnymailMessageMixin**

Mixin class that adds Anymail's ESP extra attributes and convenience methods to other `EmailMessage` sub-classes.

For example, with the django-mail-templated package's custom EmailMessage:

```python
from anymail.message import AnymailMessageMixin
from mail_templated import EmailMessage

class TemplatedAnymailMessage(AnymailMessageMixin, EmailMessage):
    """
    An EmailMessage that supports both Mail-Templated
    and Anymail features
    """
    pass

msg = TemplatedAnymailMessage(
    template_name="order_confirmation.tpl",  # Mail-Templated arg
    track_opens=True,  # Anymail arg
    ...
)
msg.context = {"order_num": "12345"}  # Mail-Templated attribute
msg.tags = ["templated"]  # Anymail attribute
```

1.3.3 Batch sending/merge and ESP templates

If your ESP offers templates and batch-sending/merge capabilities, Anymail can simplify using them in a portable way. Anymail doesn't translate template syntax between ESPs, but it does normalize using templates and providing merge data for batch sends.

Here's an example using both an ESP stored template and merge data:

```python
from django.core.mail import EmailMessage

message = EmailMessage(
    subject=None,  # use the subject in our stored template
    from_email="marketing@example.com",
    to=["Wile E. <wile@example.com>", "rr@example.com"])
message.template_id = "after_sale_followup_offer"  # use this ESP stored template
message.merge_data = {  # per-recipient data to merge into the template
    'wile@example.com': {'NAME': "Wile E.",
                         'OFFER': "15% off anvils"},
```

```
    'rr@example.com':    {'NAME': "Mr. Runner"},
}
message.merge_global_data = {  # merge data for all recipients
    'PARTNER': "Acme, Inc.",
    'OFFER': "5% off any Acme product",  # a default if OFFER missing for recipient
}
message.send()
```

The message's `template_id` identifies a template stored at your ESP which provides the message body and subject. (Assuming the ESP supports those features.)

The message's `merge_data` supplies the per-recipient data to substitute for merge fields in your template. Setting this attribute also lets Anymail know it should use the ESP's *batch sending* feature to deliver separate, individually-customized messages to each address on the "to" list. (Again, assuming your ESP supports that.)

Note: Templates and batch sending capabilities can vary widely between ESPs, as can the syntax for merge fields. Be sure to read the notes for *your specific ESP*, and test carefully with a small recipient list before launching a gigantic batch send.

Although related and often used together, *ESP stored templates* and *merge data* are actually independent features. For example, some ESPs will let you use merge field syntax directly in your `EmailMessage` body, so you can do customized batch sending without needing to define a stored template at the ESP.

ESP stored templates

Many ESPs support transactional email templates that are stored and managed within your ESP account. To use an ESP stored template with Anymail, set `template_id` on an `EmailMessage`.

`AnymailMessage.`**`template_id`**

> The identifier of the ESP stored template you want to use. For most ESPs, this is a `str` name or unique id. (See the notes for your *specific ESP*.)

> ```
> message.template_id = "after_sale_followup_offer"
> ```

With most ESPs, using a stored template will ignore any body (plain-text or HTML) from the `EmailMessage` object.

A few ESPs also allow you to define the message's subject as part of the template, but any subject you set on the `EmailMessage` will override the template subject. To use the subject stored with the ESP template, set the message's `subject` to `None`:

> ```
> message.subject = None  # use subject from template (if supported)
> ```

Similarly, some ESPs can also specify the "from" address in the template definition. Set `message.from_email = None` to use the template's "from." (You must set this attribute *after* constructing an `EmailMessage` object; passing `from_email=None` to the constructor will use Django's `DEFAULT_FROM_EMAIL` setting, overriding your template value.)

Batch sending with merge data

Several ESPs support "batch transactional sending," where a single API call can send messages to multiple recipients. The message is customized for each email on the "to" list by merging per-recipient data into the body and other message fields.

To use batch sending with Anymail (for ESPs that support it):

- Use "merge fields" (sometimes called "substitution variables" or similar) in your message. This could be in an *ESP stored template* referenced by `template_id`, or with some ESPs you can use merge fields directly in your `EmailMessage` (meaning the message itself is treated as an on-the-fly template).

- Set the message's `merge_data` attribute to define merge field substitutions for each recipient, and optionally set `merge_global_data` to defaults or values to use for all recipients.

- Specify all of the recipients for the batch in the message's `to` list.

> **Caution:** It's critical to set the `merge_data` (or `merge_metadata`) attribute: this is how Anymail recognizes the message as a batch send.
>
> When you provide merge_data, Anymail will tell the ESP to send an individual customized message to each "to" address. Without it, you may get a single message to everyone, exposing all of the email addresses to all recipients. (If you don't have any per-recipient customizations, but still want individual messages, just set merge_data to an empty dict.)

The exact syntax for merge fields varies by ESP. It might be something like `*|NAME|*` or `-name-` or `<%name%>`. (Check the notes for *your ESP*, and remember you'll need to change the template if you later switch ESPs.)

AnymailMessage.`merge_data`

> A `dict` of *per-recipient* template substitution/merge data. Each key in the dict is a recipient email address, and its value is a `dict` of merge field names and values to use for that recipient:

```
message.merge_data = {
    'wile@example.com': {'NAME': "Wile E.",
                         'OFFER': "15% off anvils"},
    'rr@example.com':   {'NAME': "Mr. Runner",
                         'OFFER': "instant tunnel paint"},
}
```

> When `merge_data` is set, Anymail will use the ESP's batch sending option, so that each `to` recipient gets an individual message (and doesn't see the other emails on the `to` list).

AnymailMessage.`merge_global_data`

> A `dict` of template substitution/merge data to use for *all* recipients. Keys are merge field names in your message template:

```
message.merge_global_data = {
    'PARTNER': "Acme, Inc.",
    'OFFER': "5% off any Acme product",  # a default OFFER
}
```

Merge data values must be strings. (Some ESPs also allow other JSON-serializable types like lists or dicts.) See *Formatting merge data* for more information.

Like all *Anymail additions*, you can use these extended template and merge attributes with any `EmailMessage` or subclass object. (It doesn't have to be an `AnymailMessage`.)

Tip: you can add `merge_global_data` to your global Anymail *send defaults* to supply merge data available to all batch sends (e.g, site name, contact info). The global defaults will be merged with any per-message `merge_global_data`.

Formatting merge data

If you're using a `date`, `datetime`, `Decimal`, or anything other than strings and integers, you'll need to format them into strings for use as merge data:

```python
product = Product.objects.get(123)  # A Django model
total_cost = Decimal('19.99')
ship_date = date(2015, 11, 18)

# Won't work -- you'll get "not JSON serializable" errors at send time:
message.merge_global_data = {
    'PRODUCT': product,
    'TOTAL_COST': total_cost,
    'SHIP_DATE': ship_date
}

# Do something this instead:
message.merge_global_data = {
    'PRODUCT': product.name,  # assuming name is a CharField
    'TOTAL_COST': "{cost:0.2f}".format(cost=total_cost),
    'SHIP_DATE': ship_date.strftime('%B %d, %Y')  # US-style "March 15, 2015"
}
```

These are just examples. You'll need to determine the best way to format your merge data as strings.

Although floats are usually allowed in merge data, you'll generally want to format them into strings yourself to avoid surprises with floating-point precision.

Anymail will raise *AnymailSerializationError* if you attempt to send a message with merge data (or metadata) that can't be sent to your ESP.

ESP templates vs. Django templates

ESP templating languages are generally proprietary, which makes them inherently non-portable.

Anymail only exposes the stored template capabilities that your ESP already offers, and then simplifies providing merge data in a portable way. It won't translate between different ESP template syntaxes, and it can't do a batch send if your ESP doesn't support it.

There are two common cases where ESP template and merge features are particularly useful with Anymail:

- When the people who develop and maintain your transactional email templates are different from the people who maintain your Django page templates. (For example, you use a single ESP for both marketing and transactional email, and your marketing team manages all the ESP email templates.)

- When you want to use your ESP's batch-sending capabilities for performance reasons, where a single API call can trigger individualized messages to hundreds or thousands of recipients. (For example, sending a daily batch of shipping notifications.)

If neither of these cases apply, you may find that *using Django templates* can be a more portable and maintainable approach for building transactional email.

1.3.4 Tracking sent mail status

Anymail provides normalized handling for your ESP's event-tracking webhooks. You can use this to be notified when sent messages have been delivered, bounced, been opened or had links clicked, among other things.

Webhook support is optional. If you haven't yet, you'll need to *configure webhooks* in your Django project. (You may also want to review *Securing webhooks*.)

Once you've enabled webhooks, Anymail will send an `anymail.signals.tracking` custom Django signal for each ESP tracking event it receives. You can connect your own receiver function to this signal for further processing.

Be sure to read Django's listening to signals docs for information on defining and connecting signal receivers.

Example:

```python
from anymail.signals import tracking
from django.dispatch import receiver

@receiver(tracking)  # add weak=False if inside some other function/class
def handle_bounce(sender, event, esp_name, **kwargs):
    if event.event_type == 'bounced':
        print("Message %s to %s bounced" % (
                event.message_id, event.recipient))

@receiver(tracking)
def handle_click(sender, event, esp_name, **kwargs):
    if event.event_type == 'clicked':
        print("Recipient %s clicked url %s" % (
                event.recipient, event.click_url))
```

You can define individual signal receivers, or create one big one for all event types, whichever you prefer. You can even handle the same event in multiple receivers, if that makes your code cleaner. These *signal receiver functions* are documented in more detail below.

Note that your tracking signal receiver(s) will be called for all tracking webhook types you've enabled at your ESP, so you should always check the `event_type` as shown in the examples above to ensure you're processing the expected events.

Some ESPs batch up multiple events into a single webhook call. Anymail will invoke your signal receiver once, separately, for each event in the batch.

Normalized tracking event

class anymail.signals.**AnymailTrackingEvent**

> The `event` parameter to Anymail's `tracking` *signal receiver* is an object with the following attributes:

> **event_type**

> > A normalized `str` identifying the type of tracking event.

> > ---

> > **Note:** Most ESPs will send some, but *not all* of these event types. Check the *specific ESP* docs for more details. In particular, very few ESPs implement the "sent" and "delivered" events.

> > ---

> > One of:

> > - `'queued'`: the ESP has accepted the message and will try to send it (possibly at a later time).

- `'sent'`: the ESP has sent the message (though it may or may not get successfully delivered).

- `'rejected'`: the ESP refused to send the messsage (e.g., because of a suppression list, ESP policy, or invalid email). Additional info may be in `reject_reason`.

- `'failed'`: the ESP was unable to send the message (e.g., because of an error rendering an ESP template)

- `'bounced'`: the message was rejected or blocked by receiving MTA (message transfer agent—the receiving mail server).

- `'deferred'`: the message was delayed by in transit (e.g., because of a transient DNS problem, a full mailbox, or certain spam-detection strategies). The ESP will keep trying to deliver the message, and should generate a separate `'bounced'` event if later it gives up.

- `'delivered'`: the message was accepted by the receiving MTA. (This does not guarantee the user will see it. For example, it might still be classified as spam.)

- `'autoresponded'`: a robot sent an automatic reply, such as a vacation notice, or a request to prove you're a human.

- `'opened'`: the user opened the message (used with your ESP's `track_opens` feature).

- `'clicked'`: the user clicked a link in the message (used with your ESP's `track_clicks` feature).

- `'complained'`: the recipient reported the message as spam.

- `'unsubscribed'`: the recipient attempted to unsubscribe (when you are using your ESP's subscription management features).

- `'subscribed'`: the recipient attempted to subscribe to a list, or undo an earlier unsubscribe (when you are using your ESP's subscription management features).

- `'unknown'`: anything else. Anymail isn't able to normalize this event, and you'll need to examine the raw `esp_event` data.

message_id

A `str` unique identifier for the message, matching the `message.anymail_status.message_id` attribute from when the message was sent.

The exact format of the string varies by ESP. (It may or may not be an actual "Message-ID", and is often some sort of UUID.)

timestamp

A `datetime` indicating when the event was generated. (The timezone is often UTC, but the exact behavior depends on your ESP and account settings. Anymail ensures that this value is an *aware* datetime with an accurate timezone.)

event_id

A `str` unique identifier for the event, if available; otherwise `None`. Can be used to avoid processing the same event twice. Exact format varies by ESP, and not all ESPs provide an event_id for all event types.

recipient

The `str` email address of the recipient. (Just the "recipient@example.com" portion.)

metadata

A `dict` of unique data attached to the message. Will be empty if the ESP doesn't provide metadata with its tracking events. (See `AnymailMessage.metadata`.)

tags

A `list` of `str` tags attached to the message. Will be empty if the ESP doesn't provide tags with its tracking events. (See `AnymailMessage.tags`.)

reject_reason

For `'bounced'` and `'rejected'` events, a normalized `str` giving the reason for the bounce/rejection. Otherwise `None`. One of:

- `'invalid'`: bad email address format.

- `'bounced'`: bounced recipient. (In a `'rejected'` event, indicates the recipient is on your ESP's prior-bounces suppression list.)

- `'timed_out'`: your ESP is giving up after repeated transient delivery failures (which may have shown up as `'deferred'` events).

- `'blocked'`: your ESP's policy prohibits this recipient.

- `'spam'`: the receiving MTA or recipient determined the message is spam. (In a `'rejected'` event, indicates the recipient is on your ESP's prior-spam-complaints suppression list.)

- `'unsubscribed'`: the recipient is in your ESP's unsubscribed suppression list.

- `'other'`: some other reject reason; examine the raw *esp_event*.

- `None`: Anymail isn't able to normalize a reject/bounce reason for this ESP.

Note: Not all ESPs provide all reject reasons, and this area is often under-documented by the ESP. Anymail does its best to interpret the ESP event, but you may find that it will report `'timed_out'` for one ESP, and `'bounced'` for another, sending to the same non-existent mailbox.

We appreciate *bug reports* with the raw *esp_event* data in cases where Anymail is getting it wrong.

---

description

If available, a `str` with a (usually) human-readable description of the event. Otherwise `None`. For example, might explain why an email has bounced. Exact format varies by ESP (and sometimes event type).

mta_response

If available, a `str` with a raw (intended for email administrators) response from the receiving mail transfer agent. Otherwise `None`. Often includes SMTP response codes, but the exact format varies by ESP (and sometimes receiving MTA).

user_agent

For `'opened'` and `'clicked'` events, a `str` identifying the browser and/or email client the user is using, if available. Otherwise `None`.

click_url

For `'clicked'` events, the `str` url the user clicked. Otherwise `None`.

esp_event

The "raw" event data from the ESP, deserialized into a Python data structure. For most ESPs this is either parsed JSON (as a `dict`), or HTTP POST fields (as a Django `QueryDict`).

This gives you (non-portable) access to additional information provided by your ESP. For example, some ESPs include geo-IP location information with open and click events.

Signal receiver functions

Your Anymail signal receiver must be a function with this signature:

def my_handler(sender, event, esp_name, **kwargs):

>   (You can name it anything you want.)

>   **Parameters**

>   - **sender** (*class*) – The source of the event. (One of the `anymail.webhook.*` View classes, but you generally won't examine this parameter; it's required by Django's signal mechanism.)

>   - **event** (`AnymailTrackingEvent`) – The normalized tracking event. Almost anything you'd be interested in will be in here.

>   - **esp_name** (`str`) – e.g., "SendGrid" or "Postmark". If you are working with multiple ESPs, you can use this to distinguish ESP-specific handling in your shared event processing.

>   - ***kwargs** – Required by Django's signal mechanism (to support future extensions).

>   **Returns**

>   nothing

>   **Raises**

>   any exceptions in your signal receiver will result in a 400 HTTP error to the webhook. See discussion below.

If any of your signal receivers raise an exception, Anymail will discontinue processing the current batch of events and return an HTTP 400 error to the ESP. Most ESPs respond to this by re-sending the event(s) later, a limited number of times.

This is the desired behavior for transient problems (e.g., your Django database being unavailable), but can cause confusion in other error cases. You may want to catch some (or all) exceptions in your signal receiver, log the problem for later follow up, and allow Anymail to return the normal 200 success response to your ESP.

Some ESPs impose strict time limits on webhooks, and will consider them failed if they don't respond within (say) five seconds. And will retry sending the "failed" events, which could cause duplicate processing in your code. If your signal receiver code might be slow, you should instead queue the event for later, asynchronous processing (e.g., using something like celery).

If your signal receiver function is defined within some other function or instance method, you *must* use the `weak=False` option when connecting it. Otherwise, it might seem to work at first, but will unpredictably stop being called at some point—typically on your production server, in a hard-to-debug way. See Django's listening to signals docs for more information.

1.3.5 Pre- and post-send signals

Anymail provides *pre-send* and *post-send* signals you can connect to trigger actions whenever messages are sent through an Anymail backend.

Be sure to read Django's listening to signals docs for information on defining and connecting signal receivers.

Pre-send signal

You can use Anymail's *pre_send* signal to examine or modify messages before they are sent. For example, you could implement your own email suppression list:

```python
from anymail.exceptions import AnymailCancelSend
from anymail.signals import pre_send
from django.dispatch import receiver
from email.utils import parseaddr

from your_app.models import EmailBlockList


@receiver(pre_send)
def filter_blocked_recipients(sender, message, **kwargs):
    # Cancel the entire send if the from_email is blocked:
    if not ok_to_send(message.from_email):
        raise AnymailCancelSend("Blocked from_email")
    # Otherwise filter the recipients before sending:
    message.to = [addr for addr in message.to if ok_to_send(addr)]
    message.cc = [addr for addr in message.cc if ok_to_send(addr)]


def ok_to_send(addr):
    # This assumes you've implemented an EmailBlockList model
    # that holds emails you want to reject...
    name, email = parseaddr(addr)  # just want the <email> part
    try:
        EmailBlockList.objects.get(email=email)
        return False  # in the blocklist, so *not* OK to send
    except EmailBlockList.DoesNotExist:
        return True  # *not* in the blocklist, so OK to send
```

Any changes you make to the message in your pre-send signal receiver will be reflected in the ESP send API call, as shown for the filtered "to" and "cc" lists above. Note that this will modify the original EmailMessage (not a copy)—be sure this won't confuse your sending code that created the message.

If you want to cancel the message altogether, your pre-send receiver function can raise an `AnymailCancelSend` exception, as shown for the "from_email" above. This will silently cancel the send without raising any other errors.

anymail.signals.**pre_send**

> Signal delivered before each EmailMessage is sent.
>
> Your pre_send receiver must be a function with this signature:
>
> def **my_pre_send_handler**(sender, message, esp_name, **kwargs):
>
> > (You can name it anything you want.)
> >
> > > **Parameters**
> > >
> > > * **sender** (*class*) – The Anymail backend class processing the message. This parameter is required by Django's signal mechanism, and despite the name has nothing to do with the *email message's* sender. (You generally won't need to examine this parameter.)
> > >
> > > * **message** (*EmailMessage*) – The message being sent. If your receiver modifies the message, those changes will be reflected in the ESP send call.
> > >
> > > * **esp_name** (*str*) – The name of the ESP backend in use (e.g., "SendGrid" or "Mailgun").

- ****kwargs** – Required by Django's signal mechanism (to support future extensions).

Raises

anymail.exceptions.AnymailCancelSend if your receiver wants to cancel this message without causing errors or interrupting a batch send.

Post-send signal

You can use Anymail's *post_send* signal to examine messages after they are sent. This is useful to centralize handling of the *sent status* for all messages.

For example, you could implement your own ESP logging dashboard (perhaps combined with Anymail's *event-tracking webhooks*):

```python
from anymail.signals import post_send
from django.dispatch import receiver

from your_app.models import SentMessage


@receiver(post_send)
def log_sent_message(sender, message, status, esp_name, **kwargs):
    # This assumes you've implemented a SentMessage model for tracking sends.
    # status.recipients is a dict of email: status for each recipient
    for email, recipient_status in status.recipients.items():
        SentMessage.objects.create(
            esp=esp_name,
            message_id=recipient_status.message_id,  # might be None if send failed
            email=email,
            subject=message.subject,
            status=recipient_status.status,  # 'sent' or 'rejected' or ...
        )
```

anymail.signals.**post_send**

Signal delivered after each EmailMessage is sent.

If you register multiple post-send receivers, Anymail will ensure that all of them are called, even if one raises an error.

Your post_send receiver must be a function with this signature:

def my_post_send_handler(sender, message, status, esp_name, **kwargs):

(You can name it anything you want.)

Parameters

- **sender** (*class*) – The Anymail backend class processing the message. This parameter is required by Django's signal mechanism, and despite the name has nothing to do with the *email message's* sender. (You generally won't need to examine this parameter.)

- **message** (*EmailMessage*) – The message that was sent. You should not modify this in a post-send receiver.

- **status** (*AnymailStatus*) – The normalized response from the ESP send call. (Also available as *message.anymail_status*.)

- **esp_name** (*str*) – The name of the ESP backend in use (e.g., "SendGrid" or "Mailgun").

- ****kwargs** – Required by Django's signal mechanism (to support future extensions).

1.3.6 Exceptions

exception anymail.exceptions.**AnymailUnsupportedFeature**

> If the email tries to use features that aren't supported by the ESP, the send call will raise an AnymailUnsupportedFeature error, and the message won't be sent. See *Unsupported features*.
>
> You can disable this exception (ignoring the unsupported features and sending the message anyway, without them) by setting ANYMAIL_IGNORE_UNSUPPORTED_FEATURES to True.

exception anymail.exceptions.**AnymailRecipientsRefused**

> Raised when *all* recipients (to, cc, bcc) of a message are invalid or rejected by your ESP *at send time*. See *Refused recipients*.
>
> You can disable this exception by setting ANYMAIL_IGNORE_RECIPIENT_STATUS to True in your settings.py, which will cause Anymail to treat any non-AnymailAPIError response from your ESP as a successful send.

exception anymail.exceptions.**AnymailAPIError**

> If the ESP's API fails or returns an error response, the send call will raise an AnymailAPIError.
>
> The exception's status_code and response attributes may help explain what went wrong. (Tip: you may also be able to check the API log in your ESP's dashboard. See *Troubleshooting*.)
>
> In production, it's not unusual for sends to occasionally fail due to transient connectivity problems, ESP maintenance, or other operational issues. Typically these failures have a 5xx status_code. See *Handling transient errors* for suggestions on retrying these failed sends.

exception anymail.exceptions.**AnymailInvalidAddress**

> The send call will raise a AnymailInvalidAddress error if you attempt to send a message with invalidly-formatted email addresses in the from_email or recipient lists.
>
> One source of this error can be using a display-name ("real name") containing commas or parentheses. Per **RFC 5322**, you should use double quotes around the display-name portion of an email address:

```
# won't work:
send_mail(from_email='Widgets, Inc. <widgets@example.com>', ...)
# must use double quotes around display-name containing comma:
send_mail(from_email='"Widgets, Inc." <widgets@example.com>', ...)
```

exception anymail.exceptions.**AnymailSerializationError**

> The send call will raise a AnymailSerializationError if there are message attributes Anymail doesn't know how to represent to your ESP.
>
> The most common cause of this error is including values other than strings and numbers in your merge_data or metadata. (E.g., you need to format Decimal and date data to strings before setting them into merge_data.)
>
> See *Formatting merge data* for more information.

1.4 Receiving mail

For ESPs that support receiving inbound email, Anymail offers normalized handling of inbound events.

If you didn't set up webhooks when first installing Anymail, you'll need to *configure webhooks* to get started with inbound email. (You should also review *Securing webhooks*.)

Once you've enabled webhooks, Anymail will send a anymail.signals.inbound custom Django signal for each ESP inbound message it receives. You can connect your own receiver function to this signal for further processing. (This

is very much like how Anymail handles *status tracking* events for sent messages. Inbound events just use a different signal receiver and have different event parameters.)

Be sure to read Django's listening to signals docs for information on defining and connecting signal receivers.

Example:

```python
from anymail.signals import inbound
from django.dispatch import receiver

@receiver(inbound)  # add weak=False if inside some other function/class
def handle_inbound(sender, event, esp_name, **kwargs):
    message = event.message
    print("Received message from %s (envelope sender %s) with subject '%s'" % (
        message.from_email, message.envelope_sender, message.subject))
```

Some ESPs batch up multiple inbound messages into a single webhook call. Anymail will invoke your signal receiver once, separately, for each message in the batch.

> **Warning: Be careful with inbound email**
>
> Inbound email is user-supplied content. There are all kinds of ways a malicious sender can abuse the email format to give your app misleading or dangerous data. Treat inbound email content with the same suspicion you'd apply to any user-submitted data. Among other concerns:
>
> - Senders can spoof the From header. An inbound message's `from_email` may or may not match the actual address that sent the message. (There are both legitimate and malicious uses for this capability.)
>
> - Most other fields in email can be falsified. E.g., an inbound message's `date` may or may not accurately reflect when the message was sent.
>
> - Inbound attachments have the same security concerns as user-uploaded files. If you process inbound attachments, you'll need to verify that the attachment content is valid.
>
>   This is particularly important if you publish the attachment content through your app. For example, an "image" attachment could actually contain an executable file or raw HTML. You wouldn't want to serve that as a user's avatar.
>
>   It's *not* sufficient to check the attachment's content-type or filename extension—senders can falsify both of those. Consider using python-magic or a similar approach to validate the *actual attachment content*.
>
> The Django docs have additional notes on user-supplied content security.

1.4.1 Normalized inbound event

class anymail.signals.**AnymailInboundEvent**

> The event parameter to Anymail's inbound *signal receiver* is an object with the following attributes:

> **message**
>
> > An *AnymailInboundMessage* representing the email that was received. Most of what you're interested in will be on this message attribute. See the full details *below*.

> **event_type**
>
> > A normalized str identifying the type of event. For inbound events, this is always 'inbound'.

timestamp

A `datetime` indicating when the inbound event was generated by the ESP, if available; otherwise `None`. (Very few ESPs provide this info.)

This is typically when the ESP received the message or shortly thereafter. (Use `event.message.date` if you're interested in when the message was sent.)

(The timestamp's timezone is often UTC, but the exact behavior depends on your ESP and account settings. Anymail ensures that this value is an *aware* datetime with an accurate timezone.)

event_id

A `str` unique identifier for the event, if available; otherwise `None`. Can be used to avoid processing the same event twice. The exact format varies by ESP, and very few ESPs provide an event_id for inbound messages.

An alternative approach to avoiding duplicate processing is to use the inbound message's `Message-ID` header (`event.message['Message-ID']`).

esp_event

The "raw" event data from the ESP, deserialized into a python data structure. For most ESPs this is either parsed JSON (as a `dict`), or sometimes the complete Django `HttpRequest` received by the webhook.

This gives you (non-portable) access to original event provided by your ESP, which can be helpful if you need to access data Anymail doesn't normalize.

1.4.2 Normalized inbound message

class anymail.inbound.`AnymailInboundMessage`

The `message` attribute of an `AnymailInboundEvent` is an AnymailInboundMessage—an extension of Python's standard `email.message.EmailMessage` with additional features to simplify inbound handling.

Changed in version 10.1: Earlier releases extended Python's legacy `email.message.Message` class. `EmailMessage` is a superset that fixes bugs and improves compatibility with email standards.

In addition to the base `EmailMessage` functionality, `AnymailInboundMessage` includes these attributes:

envelope_sender

The actual sending address of the inbound message, as determined by your ESP. This is a `str` "addr-spec"—just the email address portion without any display name (`"sender@example.com"`)—or `None` if the ESP didn't provide a value.

The envelope sender often won't match the message's From header—for example, messages sent on someone's behalf (mailing lists, invitations) or when a spammer deliberately falsifies the From address.

envelope_recipient

The actual destination address the inbound message was delivered to. This is a `str` "addr-spec"—just the email address portion without any display name (`"recipient@example.com"`)—or `None` if the ESP didn't provide a value.

The envelope recipient may not appear in the To or Cc recipient lists—for example, if your inbound address is bcc'd on a message.

from_email

The value of the message's From header. Anymail converts this to an `EmailAddress` object, which makes it easier to access the parsed address fields:

```
>>> str(message.from_email)  # the fully-formatted address
'"Dr. Justin Customer, CPA" <jcustomer@example.com>'
>>> message.from_email.addr_spec  # the "email" portion of the address
'jcustomer@example.com'
>>> message.from_email.display_name  # empty string if no display name
'Dr. Justin Customer, CPA'
>>> message.from_email.domain
'example.com'
>>> message.from_email.username
'jcustomer'
```

(This API is borrowed from Python 3.6's `email.headerregistry.Address`.)

If the message has an invalid or missing From header, this property will be `None`. Note that From headers can be misleading; see *envelope_sender*.

to

> A `list` of of parsed `EmailAddress` objects from the To header, or an empty list if that header is missing or invalid. Each address in the list has the same properties as shown above for *from_email*.
>
> See *envelope_recipient* if you need to know the actual inbound address that received the inbound message.

cc

> A `list` of of parsed `EmailAddress` objects, like *to*, but from the Cc headers.

subject

> The value of the message's Subject header, as a `str`, or `None` if there is no Subject header.

date

> The value of the message's Date header, as a `datetime` object, or `None` if the Date header is missing or invalid. This attribute will almost always be an aware datetime (with a timezone); in rare cases it can be naive if the sending mailer indicated that it had no timezone information available.
>
> The Date header is the sender's claim about when it sent the message, which isn't necessarily accurate. (If you need to know when the message was received at your ESP, that might be available in *event.timestamp*. If not, you'd need to parse the messages's `Received` headers, which can be non-trivial.)

text

> The message's plaintext message body as a `str`, or `None` if the message doesn't include a plaintext body.
>
> For certain messages that are sent as plaintext with inline images (such as those sometimes composed by the Apple Mail app), this will include only the text before the first inline image.

html

> The message's HTML message body as a `str`, or `None` if the message doesn't include an HTML body.

attachments

> A `list` of all attachments to the message, or an empty list if there are no attachments. See *Attached and inline content* below a description of the values.
>
> If the inbound message includes an attached message, `attachments` will include the attached message and all of *its* attachments, recursively. Consider Python's `iter_attachments()` as an alternative that doesn't descend into attached messages.

inlines

> A `list` of all inline content parts in the message, or an empty list if none. See *Attached and inline content* below for a description of the values.

Like `attachments`, this will recursively descend into any attached messages.

Added in version 10.1.

content_id_map

A `dict` mapping inline Content-ID references to inline content. Each key is an "unquoted" cid without angle brackets. E.g., if the `html` body contains <img src="cid:abc123...">, you could get that inline image using `message.content_id_map["abc123..."]`.

The value of each item is described in *Attached and inline content* below.

Added in version 10.1: This property was previously available as `inline_attachments`. The old name still works, but is deprecated.

spam_score

A `float` spam score (usually from SpamAssassin) if your ESP provides it; otherwise `None`. The range of values varies by ESP and spam-filtering configuration, so you may need to experiment to find a useful threshold.

spam_detected

If your ESP provides a simple yes/no spam determination, a `bool` indicating whether the ESP thinks the inbound message is probably spam. Otherwise `None`. (Most ESPs just assign a *spam_score* and leave its interpretation up to you.)

stripped_text

If provided by your ESP, a simplified version the inbound message's plaintext body; otherwise `None`.

What exactly gets "stripped" varies by ESP, but it often omits quoted replies and sometimes signature blocks. (And ESPs who do offer stripped bodies usually consider the feature experimental.)

stripped_html

Like *stripped_text*, but for the HTML body. (Very few ESPs support this.)

Other headers, complex messages, etc.

You can use all of Python's `email.message.EmailMessage` features with an AnymailInboundMessage. For example, you can access message headers using EmailMessage's `mapping interface`:

```
message['reply-to']  # the Reply-To header (header keys are case-insensitive)
message.get_all('DKIM-Signature')  # list of all DKIM-Signature headers
```

And you can use Message methods like `walk()` and `get_content_type()` to examine more-complex multipart MIME messages (digests, delivery reports, or whatever).

1.4.3 Attached and inline content

Anymail converts each inbound attachment and inline content to a specialized MIME object with additional methods for handling attachments and integrating with Django.

The objects in an AnymailInboundMessage's `attachments`, `inlines`, and `content_id_map` have these methods:

class AnymailInboundMessage

as_uploaded_file()

Returns the content converted to a Django `UploadedFile` object. This is suitable for assigning to a model's `FileField` or `ImageField`:

```
# allow users to mail in jpeg attachments to set their profile avatars...
if attachment.get_content_type() == "image/jpeg":
    # for security, you must verify the content is really a jpeg
    # (you'll need to supply the is_valid_jpeg function)
    if is_valid_jpeg(attachment.get_content_bytes()):
        user.profile.avatar_image = attachment.as_uploaded_file()
```

See Django's docs on Managing files for more information on working with uploaded files.

get_content_type()

get_content_maintype()

get_content_subtype()

The type of attachment content, as specified by the sender. (But remember attachments are essentially user-uploaded content, so you should *never trust the sender*.)

See the Python docs for more info on `email.message.EmailMessage.get_content_type()`, `get_content_maintype()`, and `get_content_subtype()`.

(Note that you *cannot* determine the attachment type using code like `issubclass(attachment, email.mime.image.MIMEImage)`. You should instead use something like `attachment.get_content_maintype() == 'image'`. The email package's specialized MIME subclasses are designed for constructing new messages, and aren't used for parsing existing, inbound email messages.)

get_filename()

The original filename of the attachment, as specified by the sender.

Never use this filename directly to write files—that would be a huge security hole. (What would your app do if the sender gave the filename "/etc/passwd" or "../settings.py"?)

is_attachment()

Returns `True` for attachment content (with *Content-Disposition* "attachment"), `False` otherwise.

is_inline()

Returns `True` for inline content (with *Content-Disposition* "inline"), `False` otherwise.

Changed in version 10.1: This method was previously named `is_inline_attachment()`; the old name still works, but is deprecated.

get_content_disposition()

Returns the lowercased value (without parameters) of the attachment's *Content-Disposition* header. The return value should be either "inline" or "attachment", or `None` if the attachment is somehow missing that header.

get_content_text(*charset=None*, *errors='replace'*)

Returns the content of the attachment decoded to Unicode text. (This is generally only appropriate for text or message-type attachments.)

If provided, charset will override the attachment's declared charset. (This can be useful if you know the attachment's *Content-Type* has a missing or incorrect charset.)

The errors param is as in `decode()`. The default "replace" substitutes the Unicode "replacement character" for any illegal characters in the text.

get_content_bytes()

Returns the raw content of the attachment as bytes. (This will automatically decode any base64-encoded attachment data.)

Complex attachments

An Anymail inbound attachment is actually just an `AnymailInboundMessage` instance, following the Python email package's usual recursive representation of MIME messages. All `AnymailInboundMessage` and `email.message.EmailMessage` functionality is available on attachment objects (though of course not all features are meaningful in all contexts).

This can be helpful for, e.g., parsing email messages that are forwarded as attachments to an inbound message.

Anymail loads all attachment content into memory as it processes each inbound message. This may limit the size of attachments your app can handle, beyond any attachment size limits imposed by your ESP. Depending on how your ESP transmits attachments, you may also need to adjust Django's `DATA_UPLOAD_MAX_MEMORY_SIZE` setting to successfully receive larger attachments.

1.4.4 Inbound signal receiver functions

Your Anymail inbound signal receiver must be a function with this signature:

def my_handler(sender, event, esp_name, **kwargs):

> (You can name it anything you want.)

> > **Parameters**
> >
> > > • **sender** (`class`) – The source of the event. (One of the `anymail.webhook.*` View classes, but you generally won't examine this parameter; it's required by Django's signal mechanism.)
> > >
> > > • **event** (`AnymailInboundEvent`) – The normalized inbound event. Almost anything you'd be interested in will be in here—usually in the `AnymailInboundMessage` found in `event.message`.
> > >
> > > • **esp_name** (`str`) – e.g., "SendMail" or "Postmark". If you are working with multiple ESPs, you can use this to distinguish ESP-specific handling in your shared event processing.
> > >
> > > • ****kwargs** – Required by Django's signal mechanism (to support future extensions).
> >
> > **Returns**
> > > nothing
> >
> > **Raises**
> > > any exceptions in your signal receiver will result in a 400 HTTP error to the webhook. See discussion below.

If (any of) your signal receivers raise an exception, Anymail will discontinue processing the current batch of events and return an HTTP 400 error to the ESP. Most ESPs respond to this by re-sending the event(s) later, a limited number of times.

This is the desired behavior for transient problems (e.g., your Django database being unavailable), but can cause confusion in other error cases. You may want to catch some (or all) exceptions in your signal receiver, log the problem for later follow up, and allow Anymail to return the normal 200 success response to your ESP.

Some ESPs impose strict time limits on webhooks, and will consider them failed if they don't respond within (say) five seconds. And they may then retry sending these "failed" events, which could cause duplicate processing in your code. If your signal receiver code might be slow, you should instead queue the event for later, asynchronous processing (e.g., using something like celery).

If your signal receiver function is defined within some other function or instance method, you *must* use the `weak=False` option when connecting it. Otherwise, it might seem to work at first, but will unpredictably stop being called at some point—typically on your production server, in a hard-to-debug way. See Django's docs on signals for more information.

1.5 Supported ESPs

Anymail currently supports these Email Service Providers. Click an ESP's name for specific Anymail settings required, and notes about any quirks or limitations:

1.5.1 Amazon SES

Anymail integrates with the Amazon Simple Email Service (SES) using the Boto 3 AWS SDK for Python, and supports sending, tracking, and inbound receiving capabilities.

Changed in version 11.0: Anymail supports only the newer Amazon SES v2 API. (Anymail 10.x supported both SES v1 and v2, and used v2 by default. Anymail 9.x and earlier used SES v1.) See *Migrating to the SES v2 API* below if you are upgrading from an earlier Anymail version.

> **Alternatives**
>
> At least two other packages offer Django integration with Amazon SES: django-amazon-ses and django-ses. Depending on your needs, one of them may be more appropriate than Anymail.

Installation

You must ensure the boto3 package is installed to use Anymail's Amazon SES backend. Either include the `amazon-ses` option when you install Anymail:

```
$ pip install "django-anymail[amazon-ses]"
```

or separately run `pip install boto3`.

Changed in version 10.0: In earlier releases, the "extra name" could use an underscore (`django-anymail[amazon_ses]`). That now causes pip to warn that "django-anymail does not provide the extra 'amazon_ses'," and may result in a broken installation that is missing boto3.

To send mail with Anymail's Amazon SES backend, set:

```
EMAIL_BACKEND = "anymail.backends.amazon_ses.EmailBackend"
```

in your settings.py.

In addition, you must make sure boto3 is configured with AWS credentials having the necessary *IAM permissions*. There are several ways to do this; see Credentials in the Boto docs for options. Usually, an IAM role for EC2 instances, standard Boto environment variables, or a shared AWS credentials file will be appropriate. For more complex cases, use Anymail's *AMAZON_SES_CLIENT_PARAMS* setting to customize the Boto session.

Limitations and quirks

Hard throttling

Like most ESPs, Amazon SES throttles sending for new customers. But unlike most ESPs, SES does not queue and slowly release throttled messages. Instead, it hard-fails the send API call. A strategy for *retrying errors* is required with any ESP; you're likely to run into it right away with Amazon SES.

Tags limitations

Amazon SES's handling for tags is a bit different from other ESPs. Anymail tries to provide a useful, portable default behavior for its `tags` feature. See *Tags and metadata* below for more information and additional options.

No merge_metadata

Amazon SES's batch sending API does not support the custom headers Anymail uses for metadata, so Anymail's `merge_metadata` feature is not available. (See *Tags and metadata* below for more information.)

Open and click tracking overrides

Anymail's `track_opens` and `track_clicks` are not supported. Although Amazon SES *does* support open and click tracking, it doesn't offer a simple mechanism to override the settings for individual messages. If you need this feature, provide a custom `ConfigurationSetName` in Anymail's *esp_extra*.

No delayed sending

Amazon SES does not support `send_at`.

No global send defaults for non-Anymail options

With the Amazon SES backend, Anymail's *global send defaults* are only supported for Anymail's added message options (like `metadata` and `esp_extra`), not for standard EmailMessage attributes like `bcc` or `from_email`.

Arbitrary alternative parts allowed

Amazon SES is one of the few ESPs that *does* support sending arbitrary alternative message parts (beyond just a single text/plain and text/html part).

AMP for Email

Amazon SES supports sending AMPHTML email content. To include it, use `message.attach_alternative("...AMPHTML content...", "text/x-amp-html")` (and be sure to also include regular HTML and text bodies, too).

Envelope-sender is forwarded

Anymail's `envelope_sender` becomes Amazon SES's `FeedbackForwardingEmailAddress`. That address will receive bounce and other delivery notifications, but will not appear in the message sent to the recipient. SES always generates its own anonymized envelope sender (mailfrom) for each outgoing message, and then forwards that address to your envelope-sender. See Email feedback forwarding destination in the SES docs.

Spoofed To header allowed

Amazon SES is one of the few ESPs that supports spoofing the `To` header (see *Additional headers*). (But be aware that most ISPs consider this a strong spam signal, and using it will likely prevent delivery of your email.)

Template limitations

Messages sent with templates have a number of additional limitations, such as not supporting attachments. See *Batch sending/merge and ESP templates* below.

Tags and metadata

Amazon SES provides two mechanisms for associating additional data with sent messages, which Anymail uses to implement its `tags` and `metadata` features:

- **SES Message Tags** can be used for filtering or segmenting CloudWatch metrics and dashboards, and are available to Kinesis Firehose streams. (See "How do message tags work?" in the Amazon blog post Introducing Sending Metrics.)

  By default, Anymail does *not* use SES Message Tags. They have strict limitations on characters allowed, and are not consistently available to tracking webhooks. (They may be included in SES Event Publishing but not SES Notifications.)

- **Custom Email Headers** are available to all SNS notifications (webhooks), but not to CloudWatch or Kinesis.

  These are ordinary extension headers included in the sent message (and visible to recipients who view the full headers). There are no restrictions on characters allowed.

By default, Anymail uses only custom email headers. A message's `metadata` is sent JSON-encoded in a custom `X-Metadata` header, and a message's `tags` are sent in custom `X-Tag` headers. Both are available in Anymail's *tracking webhooks*.

Because Anymail `tags` are often used for segmenting reports, Anymail has an option to easily send an Anymail tag as an SES Message Tag that can be used in CloudWatch. Set the Anymail setting `AMAZON_SES_MESSAGE_TAG_NAME` to the name of an SES Message Tag whose value will be the *single* Anymail tag on the message. For example, with this setting:

```
ANYMAIL = {
    ...
    "AMAZON_SES_MESSAGE_TAG_NAME": "Type",
}
```

this send will appear in CloudWatch with the SES Message Tag `"Type": "Marketing"`:

```
message = EmailMessage(...)
message.tags = ["Marketing"]
message.send()
```

Anymail's `AMAZON_SES_MESSAGE_TAG_NAME` setting is disabled by default. If you use it, then only a single tag is supported, and both the tag and the name must be limited to alphanumeric, hyphen, and underscore characters.

For more complex use cases, set the SES `EmailTags` parameter (or `DefaultEmailTags` for template sends) directly in Anymail's *esp_extra*. See the example below. (Because custom headers do not work with SES's SendBulkEmail call, esp_extra `DefaultEmailTags` is the only way to attach data to SES messages also using Anymail's `template_id` and `merge_data` features, and `merge_metadata` cannot be supported.)

esp_extra support

To use Amazon SES features not directly supported by Anymail, you can set a message's `esp_extra` to a `dict` that will be shallow-merged into the params for the SendEmail or SendBulkEmail SES v2 API call.

Examples (for a non-template send):

```
message.esp_extra = {
    # Override AMAZON_SES_CONFIGURATION_SET_NAME for this message:
    'ConfigurationSetName': 'NoOpenOrClickTrackingConfigSet',
    # Authorize a custom sender:
```

(continues on next page)

```
        'FromEmailAddressIdentityArn': 'arn:aws:ses:us-east-
↪1:123456789012:identity/example.com',
        # Set SES Message Tags (change to 'DefaultEmailTags' for template sends):
        'EmailTags': [
            # (Names and values must be A-Z a-z 0-9 - and _ only)
            {'Name': 'UserID', 'Value': str(user_id)},
            {'Name': 'TestVariation', 'Value': 'Subject-Emoji-Trial-A'},
        ],
        # Set options for unsubscribe links:
        'ListManagementOptions': {
            'ContactListName': 'RegisteredUsers',
            'TopicName': 'DailyUpdates',
        },
}
```

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Batch sending/merge and ESP templates

Amazon SES offers *ESP stored templates* and *batch sending* with per-recipient merge data. See Amazon's Sending personalized email guide for more information.

When you set a message's `template_id` to the name of one of your SES templates, Anymail will use the SES v2 SendBulkEmail call to send template messages personalized with data from Anymail's normalized `merge_data` and `merge_global_data` message attributes.

```
message = EmailMessage(
    from_email="shipping@example.com",
    # you must omit subject and body (or set to None) with Amazon SES templates
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = "MyTemplateName"  # Amazon SES TemplateName
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

Amazon's templated email APIs don't support several features available for regular email. When `template_id` is used:

- Attachments and alternative parts (including AMPHTML) are not supported

- Extra headers are not supported

- Overriding the template's subject or body is not supported

- Anymail's `metadata` is not supported

- Anymail's `tags` are only supported with the `AMAZON_SES_MESSAGE_TAG_NAME` setting; only a single tag is allowed, and the tag is not directly available to webhooks. (See *Tags and metadata* above.)

Status tracking webhooks

Anymail can provide normalized *status tracking* notifications for messages sent through Amazon SES. SES offers two (confusingly) similar kinds of tracking, and Anymail supports both:

- SES Notifications include delivered, bounced, and complained (spam) Anymail `event_type`s. (Enabling these notifications may allow you to disable SES "email feedback forwarding.")

- SES Event Publishing also includes delivered, bounced and complained events, as well as sent, rejected, opened, clicked, and (template rendering) failed.

Both types of tracking events are delivered to Anymail's webhook URL through Amazon Simple Notification Service (SNS) subscriptions.

Amazon's naming here can be really confusing. We'll try to be clear about "SES Notifications" vs. "SES Event Publishing" as the two different kinds of SES tracking events. And then distinguish all of that from "SNS"—the publish/subscribe service used to notify Anymail's tracking webhooks about *both* kinds of SES tracking event.

To use Anymail's status tracking webhooks with Amazon SES:

1. First, *configure Anymail webhooks* and deploy your Django project. (Deploying allows Anymail to confirm the SNS subscription for you in step 3.)

Then in Amazon's **Simple Notification Service** console:

2. Create an SNS Topic to receive Amazon SES tracking events. The exact topic name is up to you; choose something meaningful like *SES_Tracking_Events*.

3. Subscribe Anymail's tracking webhook to the SNS Topic you just created. In the SNS console, click into the topic from step 2, then click the "Create subscription" button. For protocol choose HTTPS. For endpoint enter:

   `https://random:random@yoursite.example.com/anymail/amazon_ses/tracking/`

   - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret

   - *yoursite.example.com* is your Django site

   Anymail will automatically confirm the SNS subscription. (For other options, see *Confirming SNS subscriptions* below.)

Finally, switch to Amazon's **Simple Email Service** console:

4. **If you want to use SES Notifications:** Follow Amazon's guide to configure SES notifications through SNS, using the SNS Topic you created above. Choose any event types you want to receive. Be sure to choose "Include original headers" if you need access to Anymail's `metadata` or `tags` in your webhook handlers.

5. **If you want to use SES Event Publishing:**

   a. Follow Amazon's guide to create an SES "Configuration Set". Name it something meaningful, like *TrackingConfigSet*.

   b. Follow Amazon's guide to add an SNS event destination for SES event publishing, using the SNS Topic you created above. Choose any event types you want to receive.

   c. Update your Anymail settings to send using this Configuration Set by default:

   ```
   ANYMAIL = {
       # ... other settings ...
       # Use the name from step 5a above:
       "AMAZON_SES_CONFIGURATION_SET_NAME": "TrackingConfigSet",
   }
   ```

> **Caution:** The delivery, bounce, and complaint event types are available in both SES Notifications *and* SES Event Publishing. If you're using both, don't enable the same events in both places, or you'll receive duplicate notifications with *different* `event_id`s.

Note that Amazon SES's open and click tracking does not distinguish individual recipients. If you send a single message to multiple recipients, Anymail will call your tracking handler with the "opened" or "clicked" event for *every* original recipient of the message, including all to, cc and bcc addresses. (Amazon recommends avoiding multiple recipients with SES.)

In your tracking signal receiver, the normalized AnymailTrackingEvent's `esp_event` will be set to the the parsed, top-level JSON event object from SES: either SES Notification contents or SES Event Publishing contents. (The two formats are nearly identical.) You can use this to obtain SES Message Tags (see *Tags and metadata*) from SES Event Publishing notifications:

```python
from anymail.signals import tracking
from django.dispatch import receiver

@receiver(tracking)  # add weak=False if inside some other function/class
def handle_tracking(sender, event, esp_name, **kwargs):
    if esp_name == "Amazon SES":
        try:
            message_tags = {
                name: values[0]
                for name, values in event.esp_event["mail"]["tags"].items()}
        except KeyError:
            message_tags = None  # SES Notification (not Event Publishing) event
        print("Message %s to %s event %s: Message Tags %r" % (
            event.message_id, event.recipient, event.event_type, message_tags))
```

Anymail does *not* currently check SNS signature verification, because Amazon has not released a standard way to do that in Python. Instead, Anymail relies on your `WEBHOOK_SECRET` to verify SNS notifications are from an authorized source.

Note: Amazon SNS's default policy for handling HTTPS notification failures is to retry three times, 20 seconds apart, and then drop the notification. That means **if your webhook is ever offline for more than one minute, you may miss events.**

For most uses, it probably makes sense to configure an SNS retry policy with more attempts over a longer period. E.g., 20 retries ranging from 5 seconds minimum to 600 seconds (5 minutes) maximum delay between attempts, with geometric backoff.

Also, SNS does *not* guarantee notifications will be delivered to HTTPS subscribers like Anymail webhooks. The longest SNS will ever keep retrying is one hour total. If you need retries longer than that, or guaranteed delivery, you may need to implement your own queuing mechanism with something like Celery or directly on Amazon Simple Queue Service (SQS).

Inbound webhook

You can receive email through Amazon SES with Anymail's normalized *inbound* handling. See Receiving email with Amazon SES for background.

Configuring Anymail's inbound webhook for Amazon SES is similar to installing the *tracking webhook*. You must use a different SNS Topic for inbound.

To use Anymail's inbound webhook with Amazon SES:

1. First, if you haven't already, *configure Anymail webhooks* and deploy your Django project. (Deploying allows Anymail to confirm the SNS subscription for you in step 3.)

2. Create an SNS Topic to receive Amazon SES inbound events. The exact topic name is up to you; choose something meaningful like *SES_Inbound_Events*. (If you are also using Anymail's tracking events, this must be a *different* SNS Topic.)

3. Subscribe Anymail's inbound webhook to the SNS Topic you just created. In the SNS console, click into the topic from step 2, then click the "Create subscription" button. For protocol choose HTTPS. For endpoint enter:

   `https://`*random:random*`@yoursite.example.com/anymail/amazon_ses/inbound/`

     • *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret

     • *yoursite.example.com* is your Django site

   Anymail will automatically confirm the SNS subscription. (For other options, see *Confirming SNS subscriptions* below.)

4. Next, follow Amazon's guide to Setting up Amazon SES email receiving. There are several steps. Come back here when you get to "Action Options" in the last step, "Creating Receipt Rules."

5. Anymail supports two SES receipt actions: S3 and SNS. (Both actually use SNS.) You can choose either one: the SNS action is easier to set up, but the S3 action allows you to receive larger messages and can be more robust. (You can change at any time, but don't use both simultaneously.)

     • **For the SNS action:** choose the SNS Topic you created in step 2. Anymail will handle either Base64 or UTF-8 encoding; use Base64 if you're not sure.

     • **For the S3 action:** choose or create any S3 bucket that Boto will be able to read. (See *IAM permissions*; *don't* use a world-readable bucket!) "Object key prefix" is optional. Anymail does *not* currently support the "Encrypt message" option. Finally, choose the SNS Topic you created in step 2.

Amazon SES will likely deliver a test message to your Anymail inbound handler immediately after you complete the last step.

If you are using the S3 receipt action, note that Anymail does not delete the S3 object. You can delete it from your code after successful processing, or set up S3 bucket policies to automatically delete older messages. In your inbound handler, you can retrieve the S3 object key by prepending the "object key prefix" (if any) from your receipt rule to Anymail's `event.event_id`.

Amazon SNS imposes a 15 second limit on all notifications. This includes time to download the message (if you are using the S3 receipt action) and any processing in your signal receiver. If the total takes longer, SNS will consider the notification failed and will make several repeat attempts. To avoid problems, it's essential any lengthy operations are offloaded to a background task.

Amazon SNS's default retry policy times out after one minute of failed notifications. If your webhook is ever unreachable for more than a minute, **you may miss inbound mail.** You'll probably want to adjust your SNS topic settings to reduce the chances of that. See the note about *retry policies* in the tracking webhooks discussion above.

In your inbound signal receiver, the normalized AnymailTrackingEvent's `esp_event` will be set to the the parsed, top-level JSON object described in SES Email Receiving contents.

Confirming SNS subscriptions

Amazon SNS requires HTTPS endpoints (webhooks) to confirm they actually want to subscribe to an SNS Topic. See Sending SNS messages to HTTPS endpoints in the Amazon SNS docs for more information.

(This has nothing to do with verifying email identities in Amazon *SES*, and is not related to email recipients confirming subscriptions to your content.)

Anymail will automatically handle SNS endpoint confirmation for you, for both tracking and inbound webhooks, if both:

1. You have deployed your Django project with *Anymail webhooks enabled* and an Anymail `WEBHOOK_SECRET` set, **before** subscribing the SNS Topic to the webhook URL.

   > **Caution:** If you create the SNS subscription *before* deploying your Django project with the webhook secret set, confirmation will fail and you will need to **re-create the subscription** by entering the full URL and webhook secret into the SNS console again.
   >
   > You **cannot** use the SNS console's "Request confirmation" button to re-try confirmation. (That will fail due to an SNS console bug that sends authentication as asterisks, rather than the username:password secret you originally entered.)

2. The SNS endpoint URL includes the correct Anymail `WEBHOOK_SECRET` as HTTP basic authentication. (Amazon SNS only allows this with https urls, not plain http.)

   Anymail requires a valid secret to ensure the subscription request is coming from you, not some other AWS user.

If you do not want Anymail to automatically confirm SNS subscriptions for its webhook URLs, set `AMAZON_SES_AUTO_CONFIRM_SNS_SUBSCRIPTIONS` to `False` in your ANYMAIL settings.

When auto-confirmation is disabled (or if Anymail receives an unexpected confirmation request), it will raise an `AnymailWebhookValidationFailure`, which should show up in your Django error logging. The error message will include the Token you can use to manually confirm the subscription in the Amazon SNS console or through the SNS API.

Settings

Additional Anymail settings for use with Amazon SES:

AMAZON_SES_CLIENT_PARAMS

Optional. Additional client parameters Anymail should use to create the boto3 session client. Example:

```
ANYMAIL = {
    ...
    "AMAZON_SES_CLIENT_PARAMS": {
        # example: override normal Boto credentials specifically for Anymail
        "aws_access_key_id": os.getenv("AWS_ACCESS_KEY_FOR_ANYMAIL_SES"),
        "aws_secret_access_key": os.getenv("AWS_SECRET_KEY_FOR_ANYMAIL_SES"),
        "region_name": "us-west-2",
        # override other default options
        "config": {
            "connect_timeout": 30,
            "read_timeout": 30,
```

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```
            }
        },
    }
```

In most cases, it's better to let Boto obtain its own credentials through one of its other mechanisms: an IAM role for EC2 instances, standard AWS_ACCESS_KEY_ID, AWS_SECRET_ACCESS_KEY and AWS_SESSION_TOKEN environment variables, or a shared AWS credentials file.

AMAZON_SES_SESSION_PARAMS

Optional. Additional session parameters Anymail should use to create the boto3 Session. Example:

```
ANYMAIL = {
    ...
    "AMAZON_SES_SESSION_PARAMS": {
        "profile_name": "anymail-testing",
    },
}
```

AMAZON_SES_CONFIGURATION_SET_NAME

Optional. The name of an Amazon SES Configuration Set Anymail should use when sending messages. The default is to send without any Configuration Set. Note that a Configuration Set is required to receive SES Event Publishing tracking events. See *Status tracking webhooks* above.

You can override this for individual messages with *esp_extra*.

AMAZON_SES_MESSAGE_TAG_NAME

Optional, default `None`. The name of an Amazon SES "Message Tag" whose value is set from a message's Anymail `tags`. See *Tags and metadata* above.

AMAZON_SES_AUTO_CONFIRM_SNS_SUBSCRIPTIONS

Optional boolean, default `True`. Set to `False` to prevent Anymail webhooks from automatically accepting Amazon SNS subscription confirmation requests. See *Confirming SNS subscriptions* above.

IAM permissions

Anymail requires IAM permissions that will allow it to use these actions:

- To send mail:
  - Ordinary (non-templated) sends: `ses:SendEmail`
  - Template/merge sends: `ses:SendBulkEmail`
- To *automatically confirm* webhook SNS subscriptions: `sns:ConfirmSubscription`
- For status tracking webhooks: no special permissions
- To receive inbound mail:

– With an "SNS action" receipt rule: no special permissions

– With an "S3 action" receipt rule: `s3:GetObject` on the S3 bucket and prefix used (or S3 Access Control List read access for inbound messages in that bucket)

This IAM policy covers all of those:

```
{
  "Version": "2012-10-17",
  "Statement": [{
    "Effect": "Allow",
    "Action": ["ses:SendEmail", "ses:SendBulkEmail"],
    "Resource": "*"
  }, {
    "Effect": "Allow",
    "Action": ["sns:ConfirmSubscription"],
    "Resource": ["arn:aws:sns:*:*:*"]
  }, {
    "Effect": "Allow",
    "Action": ["s3:GetObject"],
    "Resource": ["arn:aws:s3:::MY-PRIVATE-BUCKET-NAME/MY-INBOUND-PREFIX/*"]
  }]
}
```

(Anymail does not need access to `ses:SendRawEmail` or `ses:SendBulkTemplatedEmail`. Those are SES v1 actions.)

Note: Misleading IAM error messages

Permissions errors for the SES v2 API often refer to the equivalent SES v1 API name, which can be confusing. For example, this error (emphasis added):

```
An error occurred (AccessDeniedException) when calling the SendEmail operation:
User 'arn:...' is not authorized to perform 'ses:SendRawEmail' on resource 'arn:...'
```

actually indicates problems with IAM policies for the v2 `ses:SendEmail` action, *not* the v1 `ses:SendRawEmail` action. (The correct action appears as the "operation" in the first line of the error message.)

Following the principle of least privilege, you should omit permissions for any features you aren't using, and you may want to add additional restrictions:

- For Amazon SES sending, you can add conditions to restrict senders, recipients, times, or other properties. See Amazon's Controlling access to Amazon SES guide. (Be aware that the SES v2 `SendBulkEmail` API does not support condition keys that restrict email addresses, and using them can cause misleading error messages. All other SES APIs used by Anymail *do* support address restrictions, including the SES v2 `SendEmail` API used for non-template sends.)

- For auto-confirming webhooks, you might limit the resource to SNS topics owned by your AWS account, and/or specific topic names or patterns. E.g., `"arn:aws:sns:*:0000000000000000:SES_*_Events"` (replacing the zeroes with your numeric AWS account id). See Amazon's guide to Amazon SNS ARNs.

- For inbound S3 delivery, there are multiple ways to control S3 access and data retention. See Amazon's Managing access permissions to your Amazon S3 resources. (And obviously, you should *never store incoming emails to a public bucket!*)

  Also, you may need to grant Amazon SES (but *not* Anymail) permission to *write* to your inbound bucket. See Amazon's Giving permissions to Amazon SES for email receiving.

- For all operations, you can limit source IP, allowable times, user agent, and more. (Requests from Anymail will include "django-anymail/*version*" along with Boto's user-agent.) See Amazon's guide to IAM condition context keys.

Migrating to the SES v2 API

Changed in version 10.0.

Anymail 10.0 and later use Amazon's updated SES v2 API to send email. Earlier Anymail releases used the original Amazon SES API (v1) by default. Although the capabilities of the two SES versions are virtually identical, Amazon is implementing improvements (such as increased maximum message size) only in the v2 API.

(The upgrade for SES v2 affects only sending email. There are no changes required for status tracking webhooks or receiving inbound email.)

Migrating to SES v2 requires minimal code changes:

1. Update your *IAM permissions* to grant Anymail access to the SES v2 sending actions: `ses:SendEmail` for ordinary sends, and/or `ses:SendBulkEmail` to send using SES templates. (The IAM action prefix is just `ses` for both the v1 and v2 APIs.)

   Access to `ses:SendRawEmail` or `ses:SendBulkTemplatedEmail` can be removed. (Those actions are only needed for SES v1.)

   If you run into unexpected IAM authorization failures, see the note about *misleading IAM permissions errors* above.

2. If your code uses Anymail's `esp_extra` to pass additional SES API parameters, or examines the raw `esp_response` after sending a message, you may need to update it for the v2 API. Many parameters have different names in the v2 API compared to the equivalent v1 calls, and the response formats are slightly different.

   Among v1 parameters commonly used, `ConfigurationSetName` is unchanged in v2, but v1's `Tags` and most `*Arn` parameters have been renamed in v2. See AWS's docs for SES v1 SendRawEmail vs. v2 SendEmail, or if you are sending with SES templates, compare v1 SendBulkTemplatedEmail to v2 SendBulkEmail.

   (If you do not use `esp_extra` or `esp_response`, you can safely ignore this.)

3. If your settings.py `EMAIL_BACKEND` setting refers to `amazon_sesv1` or `amazon_sesv2`, change that to just `amazon_ses`:

```
EMAIL_BACKEND = "anymail.backends.amazon_ses.EmailBackend"
```

1.5.2 Brevo

Anymail integrates with the Brevo email service (formerly Sendinblue), using their API v3. Brevo's transactional API does not support some basic email features, such as inline images. Be sure to review the *limitations* below.

Changed in version 10.3: SendinBlue rebranded as Brevo in May, 2023. Anymail 10.3 uses the new name throughout its code; earlier versions used the old name. Code that refers to "SendinBlue" should continue to work, but is now deprecated. See *Updating code from SendinBlue to Brevo* for details.

Important: Troubleshooting: If your Brevo messages aren't being delivered as expected, be sure to look for events in your Brevo logs.

Brevo detects certain types of errors only *after* the send API call reports the message as "queued." These errors appear in the logging dashboard.

Settings

EMAIL_BACKEND

To use Anymail's Brevo backend, set:

```
EMAIL_BACKEND = "anymail.backends.brevo.EmailBackend"
```

in your settings.py.

BREVO_API_KEY

The API key can be retrieved from your Brevo SMTP & API settings on the "API Keys" tab (don't try to use an SMTP key). Required.

Make sure the version column indicates "v3." (v2 keys don't work with Anymail. If you don't see a v3 key listed, use "Create a New API Key".)

```
ANYMAIL = {
    ...
    "BREVO_API_KEY": "<your v3 API key>",
}
```

Anymail will also look for `BREVO_API_KEY` at the root of the settings file if neither `ANYMAIL["BREVO_API_KEY"]` nor `ANYMAIL_BREVO_API_KEY` is set.

BREVO_API_URL

The base url for calling the Brevo API.

The default is `BREVO_API_URL = "https://api.brevo.com/v3/"` (It's unlikely you would need to change this.)

Changed in version 10.1: Earlier Anymail releases used `https://api.sendinblue.com/v3/`.

esp_extra support

To use Brevo features not directly supported by Anymail, you can set a message's `esp_extra` to a `dict` that will be merged into the json sent to Brevo's smtp/email API.

For example, you could set Brevo's *batchId* for use with their batched scheduled sending:

```
message.esp_extra = {
    'batchId': '275d3289-d5cb-4768-9460-a990054b6c81',  # merged into send
→params
}
```

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Limitations and quirks

Brevo's v3 API has several limitations. In most cases below, Anymail will raise an `AnymailUnsupportedFeature` error if you try to send a message using missing features. You can override this by enabling the `ANYMAIL_IGNORE_UNSUPPORTED_FEATURES` setting, and Anymail will try to limit the API request to features Brevo can handle.

HTML body required
> Brevo's API returns an error if you attempt to send a message with only a plain-text body. Be sure to *include HTML* content for your messages if you are not using a template.
>
> (Brevo *does* allow HTML without a plain-text body. This is generally not recommended, though, as some email systems treat HTML-only content as a spam signal.)

Inline images
> Brevo's v3 API doesn't support inline images, at all. (Confirmed with Brevo support Feb 2018.)
>
> If you are ignoring unsupported features, Anymail will try to send inline images as ordinary image attachments.

Attachment names must be filenames with recognized extensions
> Brevo determines attachment content type by assuming the attachment's name is a filename, and examining that filename's extension (e.g., ".jpg").
>
> Trying to send an attachment without a name, or where the name does not end in a supported filename extension, will result in a Brevo API error. Anymail has no way to communicate an attachment's desired content-type to the Brevo API if the name is not set correctly.

Single Reply-To
> Brevo's v3 API only supports a single Reply-To address.
>
> If you are ignoring unsupported features and have multiple reply addresses, Anymail will use only the first one.

Metadata exposed in message headers
> Anymail passes `metadata` to Brevo as a JSON-encoded string using their `X-Mailin-custom` email header. This header is included in the sent message, so **metadata will be visible to message recipients** if they view the raw message source.

Special headers
> Brevo uses special email headers to control certain features. You can set these using Django's `EmailMessage.headers`:

```
message = EmailMessage(
    ...,
    headers = {
        "sender.ip": "10.10.1.150",  # use a dedicated IP
        "idempotencyKey": "...uuid...",  # batch send deduplication
    }
)

# Note the constructor param is called `headers`, but the
# corresponding attribute is named `extra_headers`:
message.extra_headers = {
    "sender.ip": "10.10.1.222",
    "idempotencyKey": "...uuid...",
}
```

Delayed sending
> Added in version 9.0: Earlier versions of Anymail did not support `send_at` with Brevo.

No click-tracking or open-tracking options
: Brevo does not provide a way to control open or click tracking for individual messages. Anymail's `track_clicks` and `track_opens` settings are unsupported.

No envelope sender overrides
: Brevo does not support overriding `envelope_sender` on individual messages.

Batch sending/merge and ESP templates

Changed in version 10.3: Added support for batch sending with `merge_data` and `merge_metadata`.

Brevo supports *ESP stored templates* and *batch sending* with per-recipient merge data.

To use a Brevo template, set the message's `template_id` to the numeric Brevo template ID, and supply substitution params using Anymail's normalized `merge_data` and `merge_global_data` message attributes:

```
message = EmailMessage(
    # (subject and body come from the template, so don't include those)
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = 3   # use this Brevo template
message.from_email = None  # to use the template's default sender
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

Within your Brevo template body and subject, you can refer to merge variables using Django-like template syntax, like `{{ params.order_no }}` or `{{ params.ship_date }}` for the example above. See Brevo's guide to the Brevo Template Language.

The message's `from_email` (which defaults to your `DEFAULT_FROM_EMAIL` setting) will override the template's default sender. If you want to use the template's sender, be sure to set `from_email` to `None` *after* creating the message, as shown in the example above.

You can also override the template's subject and reply-to address (but not body) using standard `EmailMessage` attributes.

Brevo also supports batch-sending without using an ESP-stored template. In this case, each recipient will receive the same content (Brevo doesn't support inline templates) but will see only their own *To* email address. Setting either of `merge_data` or `merge_metadata`—even to an empty dict—will cause Anymail to use Brevo's batch send option (`"messageVersions"`).

You can use Anymail's `merge_metadata` to supply custom tracking data for each recipient:

```
message = EmailMessage(
    to=["alice@example.com", "Bob <bob@example.com>"],
    from_email="...", subject="...", body="..."
)
message.merge_metadata = {
    'alice@example.com': {'user_id': "12345"},
    'bob@example.com': {'user_id': "54321"},
}
```

To use Brevo's "idempotencyKey" with a batch send, set it in the message's headers: `message.extra_headers = {"idempotencyKey": "...uuid..."}`.

> **Caution: "Old template language" not supported**
>
> Brevo once supported two different template styles: a "new" template language that uses Django-like template syntax (with `{{ param.NAME }}` substitutions), and an "old" template language that used percent-delimited `%NAME%` substitutions.
>
> Anymail 7.0 and later work *only* with new style templates, now known as the "Brevo Template Language."
>
> Although unconverted old templates may appear to work with Anymail, there can be subtle bugs. In particular, `reply_to` overrides and recipient display names are silently ignored when *old* style templates are sent with Anymail 7.0 or later. If you still have old style templates, follow Brevo's instructions to convert each old template to the new language.
>
> Changed in version 7.0: Dropped support for Sendinblue old template language

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, add the url at Brevo's site under Transactional > Email > Settings > Webhook.

The "URL to call" is:

`https://random:random@yoursite.example.com/anymail/brevo/tracking/`

- *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
- *yoursite.example.com* is your Django site

Be sure to select the checkboxes for all the event types you want to receive. (Also make sure you are in the "Transactional" section of their site; Brevo has a separate set of "Campaign" webhooks, which don't apply to messages sent through Anymail.)

If you are interested in tracking opens, note that Brevo has both "First opening" and an "Known open" event types. The latter seems to be generated only for the second and subsequent opens. Anymail normalizes both types to "opened." To track unique opens enable only "First opening," or to track all message opens enable both. (Brevo used to deliver both events for the first open, so be sure to check their current behavior if duplicate first open events might cause problems for you. You might be able to use the event timestamp to de-dupe.)

Brevo will report these Anymail `event_type`s: queued, rejected, bounced, deferred, delivered, opened (see note above), clicked, complained, unsubscribed, subscribed (though this should never occur for transactional email).

For events that occur in rapid succession, Brevo frequently delivers them out of order. For example, it's not uncommon to receive a "delivered" event before the corresponding "queued."

The event's `esp_event` field will be a `dict` of raw webhook data received from Brevo.

Changed in version 10.3: Older Anymail versions used a tracking webhook URL containing "sendinblue" rather than "brevo". The old URL will still work, but is deprecated. See *Updating code from SendinBlue to Brevo* below.

Inbound webhook

Added in version 10.1.

If you want to receive email from Brevo through Anymail's normalized *inbound* handling, follow Brevo's Inbound parsing webhooks guide to enable inbound service and add Anymail's inbound webhook.

At the "Creating the webhook" step, set the `"url"` param to:

> https://*random:random*@*yoursite.example.com*/anymail/brevo/inbound/

>> • *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
>> • *yoursite.example.com* is your Django site

Brevo does not currently seem to have a dashboard for managing or monitoring inbound service. However, you can run API calls directly from their documentation by entering your API key in "Header" field above the example, and then clicking "Try It!". The webhooks management APIs and inbound events list API can be helpful for diagnosing inbound issues.

Changed in version 10.3: Older Anymail versions used an inbound webhook URL containing "sendinblue" rather than "brevo". The old URL will still work, but is deprecated. See *Updating code from SendinBlue to Brevo* below.

Updating code from SendinBlue to Brevo

SendinBlue rebranded as Brevo in May, 2023. Anymail 10.3 has switched to the new name.

If your code refers to the old "sendinblue" name (in `EMAIL_BACKEND` and `ANYMAIL` settings, `esp_name` checks, or elsewhere) you should update it to use "brevo" instead. If you are using Anymail's tracking or inbound webhooks, you should also update the webhook URLs you've configured at Brevo.

For compatibility, code and URLs using the old name are still functional in Anymail. But they will generate deprecation warnings, and may be removed in a future release.

To update your code:

1. In your settings.py, update the `EMAIL_BACKEND` and rename any `"SENDINBLUE_..."` settings to `"BREVO_..."`:

```
- EMAIL_BACKEND = "anymail.backends.sendinblue.EmailBackend"  # old
+ EMAIL_BACKEND = "anymail.backends.brevo.EmailBackend"       # new

  ANYMAIL = {
      ...
-     "SENDINBLUE_API_KEY": "<your v3 API key>",  # old
+     "BREVO_API_KEY": "<your v3 API key>",       # new
      # (Also change "SENDINBLUE_API_URL" to "BREVO_API_URL" if present)

      # If you are using Brevo-specific global send defaults, change:
-     "SENDINBLUE_SEND_DEFAULTS" = {...},  # old
+     "BREVO_SEND_DEFAULTS" = {...},       # new
  }
```

2. If you are using Anymail's status tracking webhook, go to Brevo's dashboard (under Transactional > Email > Settings > Webhook), and change the end of the URL from `.../anymail/sendinblue/tracking/` to `.../anymail/brevo/tracking/`. (Or use the code below to automate this.)

   In your *tracking signal receiver function*, if you are examining the `esp_name` parameter, the name will change once you have updated the webhook URL. If you had been checking whether `esp_name == "SendinBlue"`, change that to check if `esp_name == "Brevo"`.

3. If you are using Anymail's inbound handling, update the inbound webhook URL to change `.../anymail/sendinblue/inbound/` to `.../anymail/brevo/inbound/`. You will need to use Brevo's webhooks API to make the change—see below.

   In your *inbound signal receiver function*, if you are examining the `esp_name` parameter, the name will change once you have updated the webhook URL. If you had been checking whether `esp_name == "SendinBlue"`, change that to check if `esp_name == "Brevo"`.

That should be everything, but to double check you may want to search your code for any remaining references to "sendinblue" (case-insensitive). (E.g., `grep -r -i sendinblue`.)

To update both the tracking and inbound webhook URLs using Brevo's webhooks API, you could run something like this Python code:

```python
# Update Brevo webhook URLs to replace "anymail/sendinblue" with "anymail/brevo".
import requests
BREVO_API_KEY = "<your API key>"

headers = {
    "accept": "application/json",
    "api-key": BREVO_API_KEY,
}

response = requests.get("https://api.brevo.com/v3/webhooks", headers=headers)
response.raise_for_status()
webhooks = response.json()

for webhook in webhooks:
    if "anymail/sendinblue" in webhook["url"]:
        response = requests.put(
            f"https://api.brevo.com/v3/webhooks/{webhook['id']}",
            headers=headers,
            json={
                "url": webhook["url"].replace("anymail/sendinblue", "anymail/brevo")
            }
        )
        response.raise_for_status()
```

1.5.3 MailerSend

Anymail integrates Django with the MailerSend transactional email service, using their email API endpoint.

Settings

EMAIL_BACKEND

To use Anymail's MailerSend backend, set:

```
EMAIL_BACKEND = "anymail.backends.mailersend.EmailBackend"
```

in your settings.py.

MAILERSEND_API_TOKEN

Required for sending. A MailerSend API token generated in your MailerSend Email domains settings. For the token permission level, "custom access" is recommended, with full access to email and *no access* for all other features.

```
ANYMAIL = {
    ...
    "MAILERSEND_API_TOKEN": "<your API token>",
}
```

Anymail will also look for `MAILERSEND_API_TOKEN` at the root of the settings file if neither `ANYMAIL["MAILERSEND_API_TOKEN"]` nor `ANYMAIL_MAILERSEND_API_TOKEN` is set.

If your Django project sends email from multiple MailerSend domains, you will need a separate API token for each domain. Use the token matching your `DEFAULT_FROM_EMAIL` domain in settings.py, and then override where necessary for individual emails by setting `"api_token"` in the message's *esp_extra*. (You could centralize this logic using Anymail's *Pre-send signal*.)

MAILERSEND_BATCH_SEND_MODE

If you are using Anymail's `merge_data` with multiple recipients ("*batch sending*"), set this to indicate how to handle the batch. See *Batch send mode* below for more information.

Choices are `"use-bulk-email"` or `"expose-to-list"`. The default `None` will raise an error if `merge_data` is used with more than one `to` recipient.

```
ANYMAIL = {
    ...
    "MAILERSEND_BATCH_SEND_MODE": "use-bulk-email",
}
```

MAILERSEND_SIGNING_SECRET

The MailerSend webhook signing secret needed to verify webhook posts. Required if you are using activity tracking, otherwise not necessary. (This is separate from Anymail's *WEBHOOK_SECRET* setting.)

Find this in your MailerSend Email domains settings: after adding a webhook, look for the "signing secret" on the webhook's management page.

```
ANYMAIL = {
    ...
    "MAILERSEND_SIGNING_SECRET": "<secret from webhook management page>",
}
```

MailerSend generates a unique secret for each webhook; if you edit your webhook you will need to update this setting with the new signing secret. (Also, inbound routes use a *different* secret, with a different setting—see below.)

MAILERSEND_INBOUND_SECRET

The MailerSend inbound route secret needed to verify inbound notifications. Required if you are using inbound routing, otherwise not necessary.

Find this in your MailerSend Email domains settings: after you have added an inbound route, look for the "secret" immediately below the route url on the management page for that inbound route.

```
ANYMAIL = {
    ...
    "MAILERSEND_INBOUND_SECRET": "<secret from inbound management page>",
}
```

MailerSend generates a unique secret for each inbound route url; if you edit your route you will need to update this setting with the new secret. (Also, activity tracking webhooks use a *different* secret, with a different setting—see above.)

MAILERSEND_API_URL

The base url for calling the MailerSend API.

The default is `MAILERSEND_API_URL = "https://api.mailersend.com/v1/"`. (It's unlikely you would need to change this.)

exp_extra support

Anymail's MailerSend backend will pass `esp_extra` values directly to MailerSend's email API.

In addition, you can override the *MAILERSEND_API_TOKEN* for an individual message by providing `"api-token"`, and *MAILERSEND_BATCH_SEND_MODE* by providing `"batch-send-mode"` in the `esp_extra` dict.

Example:

```python
message = AnymailMessage(...)
message.esp_extra = {
    # override your MailerSend domain's content tracking default:
    "settings": {"track_content": False},

    # use a different MAILERSEND_API_TOKEN for this message:
    "api_token": MAILERSEND_API_TOKEN_FOR_MARKETING_DOMAIN,

    # override the MAILERSEND_BATCH_SEND_MODE setting
    # just for this message:
    "batch_send_mode": "use-bulk-email",
}
```

Nested values are merged deeply. When sending using MailerSend's bulk-email API endpoint, the `esp_extra` params are merged into the payload for every individual message in the batch.

Limitations and quirks

MailerSend does not support a few features offered by some other ESPs.

Anymail normally raises an `AnymailUnsupportedFeature` error when you try to send a message using features that MailerSend doesn't support You can tell Anymail to suppress these errors and send the messages anyway – see *Unsupported features*.

Attachments require filenames, ignore content type
> MailerSend requires every attachment (even inline ones) to have a filename. And it determines the content type of the attachment from the filename extension.
>
> If you try to send an attachment without a filename, Anymail will substitute "attachment*.ext*" using an appropriate *.ext* for the content type.
>
> If you try to send an attachment whose content type doesn't match its filename extension, MailerSend will change the content type to match the extension. (E.g., the filename "data.txt" will always be sent as "text/plain", even if you specified a "text/csv" content type.)

Single Reply-To
> MailerSend only supports a single Reply-To address.
>
> If your message has multiple reply addresses, you'll get an `AnymailUnsupportedFeature` error—or if you've enabled `ANYMAIL_IGNORE_UNSUPPORTED_FEATURES`, Anymail will use only the first one.

Limited extra headers
> MailerSend does not allow most extra headers. There are two exceptions:
>
> - You can include `In-Reply-To` in extra headers, set to a message-id (without the angle brackets).
>
> - You can include `Precedence` in extra headers to override the "Add precedence bulk header" option from your MailerSend domain advanced settings (look under "More settings"). Anymail will set MailerSend's `precedence_bulk` param to `true` if your extra headers have `Precedence` set to `"bulk"` or `"list"` or `"junk"`, or `false` for any other value.
>
> Any other extra headers will raise an `AnymailUnsupportedFeature` error.

No metadata support
> MailerSend does not support Anymail's `metadata` or `merge_metadata` features.

No envelope sender overrides
> MailerSend does not support overriding `envelope_sender` on individual messages. (To use a MailerSend sender identity, set the verified identity's email address as the message's `from_email`.)

API rate limits
> MailerSend provides rate limit headers with each API call response. To access them after a successful send, use (e.g.,) `message.anymail_status.esp_response.headers["x-ratelimit-remaining"]`.
>
> If you exceed a rate limit, you'll get an `AnymailAPIError` with `error.status_code == 429`, and can determine how many seconds to wait from `error.response.headers["retry-after"]`.

Batch sending/merge and ESP templates

MailerSend supports *ESP stored templates*, on-the-fly templating, and *batch sending* with per-recipient merge data. MailerSend's approaches to batch sending don't align perfectly with Anymail's; be sure to read *Batch send mode* below to understand the options.

MailerSend offers two different syntaxes for substituting data into templates: "simple personalization" and "advanced personalization." Anymail supports *only* the more flexible advanced personalization syntax. If you have MailerSend templates using the "simple" syntax (`{$variable_name}`), you'll need to convert them to the "advanced" syntax (`{{ variable_name }}`) for use with Anymail's `merge_data` and `merge_global_data`.

Here's an example defining an on-the-fly template that uses MailerSend advanced personalization variables:

```python
message = EmailMessage(
    from_email="shipping@example.com",
    subject="Your order {{ order_no }} has shipped",
    body="""Hi {{ name }},
            We shipped your order {{ order_no }}
            on {{ ship_date }}.""",
    to=["alice@example.com", "Bob <bob@example.com>"]
)
# (you'd probably also set a similar html body with variables)
message.merge_data = {
    "alice@example.com": {"name": "Alice", "order_no": "12345"},
    "bob@example.com": {"name": "Bob", "order_no": "54321"},
}
message.merge_global_data = {
    "ship_date": "May 15"  # Anymail maps globals to all recipients
}
# (see discussion of batch-send-mode below)
message.esp_extra = {
    "batch-send-mode": "use-bulk-email"
}
```

To send the same message with a MailerSend stored template from your account, set `template_id`, and omit any plain-text or html `body`. If you've set a subject in your MailerSend template's default settings, you can omit `subject` (otherwise you must include it). And if your template default settings specify the *From* email, that will override `from_email`. Example:

```python
message = EmailMessage(
    from_email="shipping@example.com",
    # (subject and body from template)
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = "vzq12345678"  # id of template in our account
# ... set merge_data and merge_global_data as above
```

MailerSend does not natively support global merge data. Anymail emulates the capability by copying any `merge_global_data` values to every recipient.

Batch send mode

Anymail's model for *batch sending* is that each recipient receives a separate email personalized for them, and that each recipient sees *only their own email address* in the message's `To` header.

MailerSend has a bulk-email API that matches Anymail's batch sending model, but operates completely asynchronously, which can complicate status tracking and error handling.

MailerSend also supports batch sending personalized emails through its regular email API, which avoids the bulk-email limitations but exposes the entire `To` list to all recipients.

If you want to use Anymail's `merge_data` for batch sending to multiple `to` recipients, you must select one of these two approaches by specifying either `"use-bulk-email"` or `"expose-to-list"` in your Anymail `MAILERSEND_BATCH_SEND_MODE` setting—or as `"batch-send-mode"` in the message's *esp_extra*.

> **Caution:** Using the `"expose-to-list"` MailerSend batch send mode will reveal *all* of the message's `To` email addresses to *every* recipient of the message.

If you use the `"use-bulk-email"` MailerSend batch send mode:

- The `message.anymail_status.status` will be {`"unknown"`}, because MailerSend detects errors and rejected recipients at a later time.

- The `message.anymail_status.message_id` will be a MailerSend `bulk_email_id`, prefixed with `"bulk:"` to distinguish it from a regular `message_id`.

- You will need to poll MailerSend's bulk-email status API to determine whether the send was successful, partially successful, or failed, and to determine the `event.message_id` that will be sent to status tracking webhooks.

- Be aware that rate limits for the bulk-email API are significantly lower than MailerSend's regular email API.

Rather than one of these batch sending options, an often-simpler approach is to loop over your recipient list and send a separate message for each. You can still use templates and `merge_data`:

```python
# How to "manually" send a batch of emails to one recipient at a time.
# (There's no need to specify a MailerSend "batch-send-mode".)
to_list = ["alice@example.com", "bob@example.com"]
merge_data = {
    "alice@example.com": {"name": "Alice", "order_no": "12345"},
    "bob@example.com": {"name": "Bob", "order_no": "54321"},
}
merge_global_data = {
    "ship_date": "May 15",
}
for to_email in to_list:
    message = AnymailMessage(
        # just one recipient per message:
        to=[to_email],
        # provide template variables for this one recipient:
        merge_global_data = merge_global_data | merge_data[to_email],
        # any other attributes you want:
        template_id = "vzq12345678",
        from_email="shipping@example.com",
    )
    try:
        message.send()
```

```
    except AnymailAPIError:
        # Handle error -- e.g., schedule for retry later.
    else:
        # Either successful send or to_email is rejected.
        # message.anymail_status will be {"queued"} or {"rejected"}.
        # message.anymail_status.message_id can be stored to match
        # with event.message_id in a status tracking signal receiver.
```

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, follow MailerSend's instructions to add a webhook to your domain.

- Enter this Anymail tracking URL as the webhook's "Endpoint URL" (where *yoursite.example.com* is your Django site):

  `https://yoursite.example.com/anymail/mailersend/tracking/`

  Because MailerSend implements webhook signing, it's not necessary to use Anymail's shared webhook secret for security with MailerSend webhooks. However, it doesn't hurt to use both. If you *have* set an Anymail `WEBHOOK_SECRET`, include that *random:random* shared secret in the webhook endpoint URL:

  `https://random:random@yoursite.example.com/anymail/mailersend/tracking/`

- For "Events to send", select any or all events you want to track.

- After you have saved the webhook, go back into MailerSend's webhook management page, and reveal and copy the MailerSend "webhook signing secret". Provide that in your settings.py `ANYMAIL` settings as `MAILERSEND_SIGNING_SECRET` so that Anymail can verify calls to the webhook:

```
ANYMAIL = {
    # ...
    "MAILERSEND_SIGNING_SECRET": "<secret you copied>"
}
```

For troubleshooting, MailerSend provides a helpful log of calls to the webhook. See "About webhook attempts" in their documentation for more details.

Note: MailerSend has a relatively short three second timeout for webhook calls. Be sure to avoid any lengthy operations in your Anymail tracking signal receiver function, or MailerSend will consider the notification failed at retry it. The event's `event_id` field can help identify duplicate notifications.

MailerSend retries webhook notifications only twice, with delays of 10 and then 100 seconds. If your webhook is ever offline for more than a couple minutes, you many miss some tracking events. You can use MailerSend's activity API to query for events that may have been missed.

MailerSend will report these Anymail `event_type`s: sent, delivered, bounced, complained, unsubscribed, opened, and clicked.

The event's `esp_event` field will be the *complete* parsed MailerSend webhook payload, including an additional wrapper object not shown in their documentation. The activity data in MailerSend's webhook payload example is available as `event.esp_event["data"]`.

Inbound routing

If you want to receive email from MailerSend through Anymail's normalized *inbound* handling, follow MailerSend's guide to How to set up an inbound route.

- For "Route to" (in their step 8), enter this Anymail inbound route endpoint URL (where *yoursite.example.com* is your Django site):

  `https://yoursite.example.com/anymail/mailersend/inbound/`

  Because MailerSend signs its inbound notifications, it's not necessary to use Anymail's shared webhook secret for security with MailerSend inbound routing. However, it doesn't hurt to use both. If you *have* set an Anymail `WEBHOOK_SECRET`, include that *random:random* shared secret in the inbound route endpoint URL:

  `https://random:random@yoursite.example.com/anymail/mailersend/inbound/`

- After you have saved the inbound route, go back into MailerSend's inbound route management page, and copy the "Secret" displayed immediately below the "Route to" URL. Provide that in your settings.py `ANYMAIL` settings as `MAILERSEND_INBOUND_SECRET` so that Anymail can verify calls to the inbound endpoint:

  ```
  ANYMAIL = {
      # ...
      "MAILERSEND_INBOUND_SECRET": "<secret you copied>"
  }
  ```

  Note that this is a *different* secret from the `MAILERSEND_SIGNING_SECRET` used to verify activity tracking webhooks. If you are using both features, be sure to include both settings.

For troubleshooting, MailerSend provides a helpful inbound activity log near the end of the route management page. See Where to find inbound emails in their docs for more details.

Note: MailerSend imposes a three second limit on all notifications. If your inbound signal receiver function takes too long, MailerSend may think the notification failed. To avoid problems, it's essential you offload any lengthy operations to a background task.

MailerSend does not retry failed inbound notifications. If your Django app is ever unreachable for any reason, **you will miss inbound mail** that arrives during that time.

1.5.4 Mailgun

Anymail integrates with the Mailgun transactional email service, using their messages REST API.

Note: By default, Anymail connects to Mailgun's US-based API servers. If you are using Mailgun's EU region, be sure to change the `MAILGUN_API_URL` Anymail setting as shown below.

Settings

EMAIL_BACKEND

To use Anymail's Mailgun backend, set:

```
EMAIL_BACKEND = "anymail.backends.mailgun.EmailBackend"
```

in your settings.py.

MAILGUN_API_KEY

Required for sending:

```
ANYMAIL = {
    ...
    "MAILGUN_API_KEY": "<your API key>",
}
```

The key can be either:

- (recommended) a domain-level Mailgun "Sending API key," found in Mailgun's dashboard under "Sending" > "Domain settings" > "Sending API keys" (make sure the correct domain is selected in the popup at top right!)

- an account-level "Mailgun API key" from your Mailgun API security settings.

The account-level API key permits sending from any verified domain, but it also allows access to all other Mailgun APIs for your account (which Anymail doesn't need).

The domain-level sending API key is preferred if you send from only a single domain. With multiple domains, either use an account API key, or supply the sending API key for a default domain in settings.py and use Django's `get_connection()` to substitute a different sending API key for other domains:

```python
from django.core.mail import EmailMessage, get_connection
# By default, use the settings.py MAILGUN_API_KEY:
message1 = EmailMessage(from_email="support@default-domain.example.com", ...)
message1.send()

# Use a different sending API key for this message:
connection = get_connection(api_key=SENDING_API_KEY_FOR_OTHER_DOMAIN)
message2 = EmailMessage(from_email="support@other-domain.example.com", ...,
                        connection=connection)
message2.send()
```

Anymail will also look for `MAILGUN_API_KEY` at the root of the settings file if neither `ANYMAIL["MAILGUN_API_KEY"]` nor `ANYMAIL_MAILGUN_API_KEY` is set.

MAILGUN_API_URL

The base url for calling the Mailgun API.

The default is `MAILGUN_API_URL = "https://api.mailgun.net/v3"`, which connects to Mailgun's US service. You must change this if you are using Mailgun's European region:

```
ANYMAIL = {
  "MAILGUN_API_KEY": "...",
  "MAILGUN_API_URL": "https://api.eu.mailgun.net/v3",
  # ...
}
```

(Do not include your sender domain or "/messages" in the API URL. Anymail *figures this out* for you.)

MAILGUN_SENDER_DOMAIN

If you are using a specific Mailgun sender domain that is *different* from your messages' `from_email` domains, set this to the domain you've configured in your Mailgun account.

If your messages' `from_email` domains always match a configured Mailgun sender domain, this setting is not needed.

See *Email sender domain* below for examples.

MAILGUN_WEBHOOK_SIGNING_KEY

Added in version 6.1.

Required for tracking or inbound webhooks. Your "HTTP webhook signing key" from the Mailgun API security settings:

```
ANYMAIL = {
    ...
    "MAILGUN_WEBHOOK_SIGNING_KEY": "<your webhook signing key>",
}
```

If not provided, Anymail will attempt to validate webhooks using the *MAILGUN_API_KEY* setting instead. (These two keys have the same values for new Mailgun users, but will diverge if you ever rotate either key.)

Email sender domain

Mailgun's API requires identifying the sender domain. By default, Anymail uses the domain of each message's `from_email` (e.g., "example.com" for "from@example.com").

You will need to override this default if you are using a dedicated Mailgun sender domain that is different from a message's `from_email` domain.

For example, if you are sending from "orders@example.com", but your Mailgun account is configured for "*mail1*.example.com", you should provide *MAILGUN_SENDER_DOMAIN* in your settings.py:

```
ANYMAIL = {
    ...
    "MAILGUN_API_KEY": "<your API key>",
    "MAILGUN_SENDER_DOMAIN": "mail1.example.com"
}
```

If you need to override the sender domain for an individual message, use Anymail's *envelope_sender* (only the domain is used; anything before the @ is ignored):

```
message = EmailMessage(from_email="marketing@example.com", ...)
message.envelope_sender = "anything@mail2.example.com"  # the "anything@" is
↪ignored
```

exp_extra support

Anymail's Mailgun backend will pass all *esp_extra* values directly to Mailgun. You can use any of the (non-file) parameters listed in the Mailgun sending docs. Example:

```
message = AnymailMessage(...)
message.esp_extra = {
    'o:deliverytime-optimize-period': '24h',  # use Mailgun Send Time
↪Optimization
    'o:time-zone-localize': '16:00',  # use Mailgun Timezone Optimization
    'o:testmode': 'yes',  # use Mailgun's test mode
}
```

Limitations and quirks

Attachments require filenames

Mailgun has an undocumented API requirement that every attachment must have a filename. Attachments with missing filenames are silently dropped from the sent message. Similarly, every inline attachment must have a `Content-ID`.

To avoid unexpected behavior, Anymail will raise an *AnymailUnsupportedFeature* error if you attempt to send a message through Mailgun with any attachments that don't have filenames (or inline attachments that don't have `Content-ID`s).

Ensure your attachments have filenames by using `message.attach_file(filename)`, `message.attach(content, filename="...")`, or if you are constructing your own MIME objects to attach, `mimeobj.add_header("Content-Disposition", "attachment", filename="...")`.

Ensure your inline attachments have Content-IDs by using Anymail's *inline image helpers*, or if you are constructing your own MIME objects, `mimeobj.add_header("Content-ID", "...")` and `mimeobj.add_header("Content-Disposition", "inline")`.

Changed in version 4.3: Earlier Anymail releases did not check for these cases, and attachments without filenames/Content-IDs would be ignored by Mailgun without notice.

Display name problems with punctuation and non-ASCII characters

Mailgun does not correctly handle certain display names in *From*, *To*, and other email headers. If a display name includes *both* non-ASCII characters and certain punctuation (such as parentheses), the resulting email will use a non-standard encoding that causes some email clients to display additional " or \" characters wrapping the display name. (Verified and reported to Mailgun engineering 3/2022. See Anymail issue #270 for examples and specific details.)

Envelope sender uses only domain

Anymail's *envelope_sender* is used to select your Mailgun *sender domain*. For obvious reasons, only the domain portion applies. You can use anything before the @, and it will be ignored.

Using merge_metadata with merge_data

If you use both Anymail's *merge_data* and *merge_metadata* features, make sure your merge_data keys do not

start with `v:`. (It's a good idea anyway to avoid colons and other special characters in merge_data keys, as this isn't generally portable to other ESPs.)

The same underlying Mailgun feature ("recipient-variables") is used to implement both Anymail features. To avoid conflicts, Anymail prepends `v:` to recipient variables needed for merge_metadata. (This prefix is stripped as Mailgun prepares the message to send, so it won't be present in your Mailgun API logs or the metadata that is sent to tracking webhooks.)

Additional limitations on merge_data with template_id

If you are using Mailgun's stored handlebars templates (Anymail's `template_id`), `merge_data` cannot contain complex types or have any keys that conflict with `metadata`. See *Limitations with stored handlebars templates* below for more details.

merge_metadata values default to empty string

If you use Anymail's `merge_metadata` feature, and you supply metadata keys for some recipients but not others, Anymail will first try to resolve the missing keys in `metadata`, and if they are not found there will default them to an empty string value.

Your tracking webhooks will receive metadata values (either that you provided or the default empty string) for *every* key used with *any* recipient in the send.

AMP for Email

Mailgun supports sending AMPHTML email content. To include it, use `message.attach_alternative(". ..AMPHTML content...", "text/x-amp-html")` (and be sure to also include regular HTML and/or text bodies, too).

Added in version 8.2.

Batch sending/merge and ESP templates

Mailgun supports *ESP stored templates*, on-the-fly templating, and *batch sending* with per-recipient merge data.

Changed in version 7.0: Added support for Mailgun's stored (handlebars) templates.

Mailgun has two different syntaxes for substituting data into templates:

- "Recipient variables" look like `%recipient.name%`, and are used with on-the-fly templates. You can refer to a recipient variable inside a message's body, subject, or other message attributes defined in your Django code. See Mailgun batch sending for more information. (Note that Mailgun's docs also sometimes refer to recipient variables as "template *variables*," and there are some additional predefined ones described in their docs.)

- "Template *substitutions*" look like `{{ name }}`, and can *only* be used in handlebars templates that are defined and stored in your Mailgun account (via the Mailgun dashboard or API). You refer to a stored template using Anymail's `template_id` in your Django code. See Mailgun templates for more information.

With either type of template, you supply the substitution data using Anymail's normalized `merge_data` and `merge_global_data` message attributes. Anymail will figure out the correct Mailgun API parameters to use.

Here's an example defining an on-the-fly template that uses Mailgun recipient variables:

```
message = EmailMessage(
    from_email="shipping@example.com",
    # Use %recipient.___% syntax in subject and body:
    subject="Your order %recipient.order_no% has shipped",
    body="""Hi %recipient.name%,
            We shipped your order %recipient.order_no%
            on %recipient.ship_date%.""",
    to=["alice@example.com", "Bob <bob@example.com>"]
)
```

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```
# (you'd probably also set a similar html body with %recipient.___% variables)
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15"  # Anymail maps globals to all recipients
}
```

And here's an example that uses the same data with a stored template, which could refer to {{ name }}, {{ order_no }}, and {{ ship_date }} in its definition:

```
message = EmailMessage(
    from_email="shipping@example.com",
    # The message body and html_body come from from the stored template.
    # (You can still use %recipient.___% fields in the subject:)
    subject="Your order %recipient.order_no% has shipped",
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = 'shipping-notification'  # name of template in our
↪account
# The substitution data is exactly the same as in the previous example:
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15"  # Anymail maps globals to all recipients
}
```

When you supply per-recipient *merge_data*, Anymail supplies Mailgun's `recipient-variables` parameter, which puts Mailgun in batch sending mode so that each "to" recipient sees only their own email address. (Any cc's or bcc's will be duplicated for *every* to-recipient.)

If you want to use batch sending with a regular message (without a template), set merge data to an empty dict: `message.merge_data = {}`.

Mailgun does not natively support global merge data. Anymail emulates the capability by copying any *merge_global_data* values to every recipient.

Limitations with stored handlebars templates

Although Anymail tries to insulate you from Mailgun's relatively complicated API parameters for template substitutions in batch sends, there are two cases it can't handle. These *only* apply to stored handlebars templates (when you've set Anymail's *template_id* attribute).

First, metadata and template merge data substitutions use the same underlying "custom data" API parameters when a handlebars template is used. If you have any duplicate keys between your tracking metadata (*metadata*/*merge_metadata*) and your template merge data (*merge_data*/*merge_global_data*), Anymail will raise an *AnymailUnsupportedFeature* error.

Second, Mailgun's API does not allow complex data types like lists or dicts to be passed as template substitutions for a batch send (confirmed with Mailgun support 8/2019). Your Anymail *merge_data* and *merge_global_data* should

only use simple types like string or number. This means you cannot use the handlebars `{{#each item}}` block helper or dotted field notation like `{{object.field}}` with data passed through Anymail's normalized merge data attributes.

Most ESPs do not support complex merge data types, so trying to do that is not recommended anyway, for portability reasons. But if you *do* want to pass complex types to Mailgun handlebars templates, and you're only sending to one recipient at a time, here's a (non-portable!) workaround:

```python
# Using complex substitutions with Mailgun handlebars templates.
# This works only for a single recipient, and is not at all portable between
↪ESPs.
message = EmailMessage(
    from_email="shipping@example.com",
    to=["alice@example.com"],  # single recipient *only* (no batch send)
    subject="Your order has shipped",  # recipient variables *not* available
)
message.template_id = 'shipping-notification'  # name of template in our
↪account
substitutions = {
    'items': [  # complex substitution data
        {'product': "Anvil", 'quantity': 1},
        {'product': "Tacks", 'quantity': 100},
    ],
    'ship_date': "May 15",
}
# Do *not* set Anymail's message.merge_data, merge_global_data, or merge_
↪metadata.
# Instead add Mailgun custom variables directly:
message.extra_headers['X-Mailgun-Variables'] = json.dumps(substitutions)
```

Status tracking webhooks

Changed in version 4.0: Added support for Mailgun's June, 2018 (non-"legacy") webhook format.

Changed in version 6.1: Added support for a new `MAILGUN_WEBHOOK_SIGNING_KEY` setting, separate from your MAILGUN_API_KEY.

If you are using Anymail's normalized *status tracking*, enter the url in the Mailgun webhooks config for your domain. (Be sure to select the correct sending domain—Mailgun's sandbox and production domains have separate webhook settings.)

Mailgun allows you to enter a different URL for each event type: just enter this same Anymail tracking URL for all events you want to receive:

`https://random:random@yoursite.example.com/anymail/mailgun/tracking/`

- *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
- *yoursite.example.com* is your Django site

Mailgun implements a limited form of webhook signing, and Anymail will verify these signatures against your `MAILGUN_WEBHOOK_SIGNING_KEY` Anymail setting. By default, Mailgun's webhook signature provides similar security to Anymail's shared webhook secret, so it's acceptable to omit the `ANYMAIL_WEBHOOK_SECRET` setting (and "{random}:{random}@" portion of the webhook url) with Mailgun webhooks.

Mailgun will report these Anymail `event_type`s: delivered, rejected, bounced, complained, unsubscribed, opened, clicked.

The event's `esp_event` field will be the parsed Mailgun webhook payload as a Python `dict` with `"signature"` and `"event-data"` keys.

Anymail uses Mailgun's webhook `token` as its normalized `event_id`, rather than Mailgun's event-data `id` (which is only guaranteed to be unique during a single day). If you need the event-data id, it can be accessed in your webhook handler as `event.esp_event["event-data"]["id"]`. (This can be helpful for working with Mailgun's other event APIs.)

Note: Mailgun legacy webhooks

In late June, 2018, Mailgun introduced a new set of webhooks with an improved payload design, and at the same time renamed their original webhooks to "Legacy Webhooks."

Anymail v4.0 and later supports both new and legacy Mailgun webhooks, and the same Anymail webhook url works as either. Earlier Anymail versions can only be used as legacy webhook urls.

The new (non-legacy) webhooks are preferred, particularly with Anymail's `metadata` and `tags` features. But if you have already configured the legacy webhooks, there is no need to change.

If you are using Mailgun's legacy webhooks:

- The `event.esp_event` field will be a Django `QueryDict` of Mailgun event fields (the raw POST data provided by legacy webhooks).

- You should avoid using "body-plain," "h," "message-headers," "message-id" or "tag" as `metadata` keys. A design limitation in Mailgun's legacy webhooks prevents Anymail from reliably retrieving this metadata from opened, clicked, and unsubscribed events. (This is not an issue with the newer, non-legacy webhooks.)

Inbound webhook

If you want to receive email from Mailgun through Anymail's normalized *inbound* handling, follow Mailgun's Receiving, Forwarding and Storing Messages guide to set up an inbound route that forwards to Anymail's inbound webhook. Create an inbound route in Mailgun's dashboard on the Email Receiving panel, or use Mailgun's API.

Use this url as the route's "forward" destination:

`https://random:random@yoursite.example.com/anymail/mailgun/inbound_mime/`

- *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
- *yoursite.example.com* is your Django site
- `mime` at the end tells Mailgun to supply the entire message in "raw MIME" format (see note below)

You must use Mailgun's "forward" route action; Anymail does not currently support "store and notify." (For debugging, you might find it helpful to *also* enable the "store" route action to keep a copy of inbound messages on Mailgun's servers, but Anymail's inbound webhook won't work as a store-notify url.)

If you want to use Anymail's normalized `spam_detected` and `spam_score` attributes, you'll need to set your Mailgun domain's inbound spam filter to "Deliver spam, but add X-Mailgun-SFlag and X-Mailgun-SScore headers" (in the Mailgun domains config).

Anymail will verify Mailgun inbound message events using your `MAILGUN_WEBHOOK_SIGNING_KEY` Anymail setting. By default, Mailgun's webhook signature provides similar security to Anymail's shared webhook secret, so it's acceptable to omit the `ANYMAIL_WEBHOOK_SECRET` setting (and `random:random@` portion of the forwarding url) with Mailgun inbound routing.

Note: Anymail also supports Mailgun's "fully-parsed" inbound message format, but the "raw MIME" version is preferred to get the most accurate representation of any received email. Using raw MIME also avoids a limitation

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in Django's `multipart/form-data` handling that can strip attachments with certain filenames (and inline images without filenames).

To use Mailgun's fully-parsed format, change `.../inbound_mime/` to just `.../inbound/` at the end of the route forwarding url.

Changed in version 8.6: Using Mailgun's full-parsed (not raw MIME) inbound message format is no longer recommended.

1.5.5 Mailjet

Anymail integrates with the Mailjet email service, using their transactional Send API v3.1.

Changed in version 8.0: Earlier Anymail versions used Mailjet's older Send API v3. The change to v3.1 fixes some limitations of the earlier API, and should only affect your code if you use Anymail's *esp_extra* feature to set API-specific options or if you are trying to send messages with *multiple reply-to addresses*.

Settings

EMAIL_BACKEND

To use Anymail's Mailjet backend, set:

```
EMAIL_BACKEND = "anymail.backends.mailjet.EmailBackend"
```

in your settings.py.

MAILJET_API_KEY and MAILJET_SECRET_KEY

Your Mailjet API key and secret key, from your Mailjet account REST API settings under API Key Management. (Mailjet's documentation also sometimes uses "API private key" to mean the same thing as "secret key.")

```
ANYMAIL = {
    ...
    "MAILJET_API_KEY": "<your API key>",
    "MAILJET_SECRET_KEY": "<your API secret>",
}
```

You can use either the main account or a sub-account API key.

Anymail will also look for `MAILJET_API_KEY` and `MAILJET_SECRET_KEY` at the root of the settings file if neither `ANYMAIL["MAILJET_API_KEY"]` nor `ANYMAIL_MAILJET_API_KEY` is set.

MAILJET_API_URL

The base url for calling the Mailjet API.

The default is `MAILJET_API_URL = "https://api.mailjet.com/v3.1/"` (It's unlikely you would need to change this.)

esp_extra support

To use Mailjet features not directly supported by Anymail, you can set a message's `esp_extra` to a `dict` of Mailjet's Send API body parameters. Your `esp_extra` dict will be deeply merged into the Mailjet API payload, with `esp_extra` having precedence in conflicts.

(Note that it's *not* possible to merge into the `"Messages"` key; any value you supply would override `"Messages"` completely. Use `"Globals"` for options to apply to all messages.)

Example:

```python
message.esp_extra = {
    # Most "Messages" options can be included under Globals:
    "Globals": {
      "Priority": 3,  # Use Mailjet critically-high priority queue
      "TemplateErrorReporting": {"Email": "dev+mailtemplatebug@example.com"},
    },
    # A few options must be at the root:
    "SandboxMode": True,
    "AdvanceErrorHandling": True,
    # *Don't* try to set Messages:
    # "Messages": [... this would override *all* recipients, not be merged ...]
}
```

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Limitations and quirks

Single reply_to
    Mailjet's API only supports a single Reply-To email address. If your message has two or more, you'll get an *AnymailUnsupportedFeature* error—or if you've enabled *ANYMAIL_IGNORE_UNSUPPORTED_FEATURES*, Anymail will use only the first `reply_to` address.

Single tag
    Anymail uses Mailjet's campaign option for tags, and Mailjet allows only a single campaign per message. If your message has two or more *tags*, you'll get an *AnymailUnsupportedFeature* error—or if you've enabled *ANYMAIL_IGNORE_UNSUPPORTED_FEATURES*, Anymail will use only the first tag.

No delayed sending
    Mailjet does not support *send_at*.

Envelope sender may require approval
    Anymail passes *envelope_sender* to Mailjet, but this may result in an API error if you have not received special approval from Mailjet support to use custom senders.

message_id is MessageID (not MessageUUID)
    Mailjet's Send API v3.1 returns both a "legacy" MessageID and a newer MessageUUID for each successfully sent message. Anymail uses the MessageID as the *message_id* when reporting *ESP send status*, because Mailjet's other (statistics, event tracking) APIs don't yet support MessageUUID.

Older limitations

Changed in version 6.0: Earlier versions of Anymail were unable to mix cc or bcc fields and *merge_data* in the same Mailjet message. This limitation was removed in Anymail 6.0.

Changed in version 8.0: Earlier Anymail versions had special handling to work around a Mailjet v3 API bug with commas in recipient display names. Anymail 8.0 uses Mailjet's v3.1 API, which does not have the bug.

Batch sending/merge and ESP templates

Mailjet offers both *ESP stored templates* and *batch sending* with per-recipient merge data.

When you send a message with multiple to addresses, the *merge_data* determines how many distinct messages are sent:

- If *merge_data* is *not* set (the default), Anymail will tell Mailjet to send a single message, and all recipients will see the complete list of To addresses.

- If *merge_data* *is* set—even to an empty {} dict, Anymail will tell Mailjet to send a separate message for each to address, and the recipients won't see the other To addresses.

You can use a Mailjet stored transactional template by setting a message's `template_id` to the template's *numeric* template ID. (*Not* the template's name. To get the numeric template id, click on the name in your Mailjet transactional templates, then look for "Template ID" above the preview that appears.)

Supply the template merge data values with Anymail's normalized *merge_data* and *merge_global_data* message attributes.

```
message = EmailMessage(
    ...
    # omit subject and body (or set to None) to use template content
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = "176375"  # Mailjet numeric template id
message.from_email = None  # Use the From address stored with the template
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

Any `from_email` in your EmailMessage will override the template's default sender address. To use the template's sender, you must explicitly set `from_email = None` after creating the EmailMessage, as shown above. (If you omit this, Django's default `DEFAULT_FROM_EMAIL` will be used.)

Instead of creating a stored template at Mailjet, you can also refer to merge fields directly in an EmailMessage's body—the message itself is used as an on-the-fly template:

```
message = EmailMessage(
    from_email="orders@example.com",
    to=["alice@example.com", "Bob <bob@example.com>"],
    subject="Your order has shipped",  # subject doesn't support on-the-fly␣
→merge fields
    # Use [[var:FIELD]] to for on-the-fly merge into plaintext or html body:
    body="Dear [[var:name]]: Your order [[var:order_no]] shipped on [[var:ship_
```

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```
↪date]]."
)
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

(Note that on-the-fly templates use square brackets to indicate "personalization" merge fields, rather than the curly brackets used with stored templates in Mailjet's template language.)

See Mailjet's template documentation and template language docs for more information.

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, enter the url in your Mailjet account REST API settings under Event tracking (triggers):

> https://*random*:*random*@*yoursite.example.com*/anymail/mailjet/tracking/

> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

Be sure to enter the URL in the Mailjet settings for all the event types you want to receive. It's also recommended to select the "group events" checkbox for each trigger, to minimize your server load.

Mailjet will report these Anymail `event_type`s: rejected, bounced, deferred, delivered, opened, clicked, complained, unsubscribed.

The event's `esp_event` field will be a `dict` of Mailjet event fields, for a single event. (Although Mailjet calls webhooks with batches of events, Anymail will invoke your signal receiver separately for each event in the batch.)

Inbound webhook

If you want to receive email from Mailjet through Anymail's normalized *inbound* handling, follow Mailjet's Parse API inbound emails guide to set up Anymail's inbound webhook.

The parseroute Url parameter will be:

> https://*random*:*random*@*yoursite.example.com*/anymail/mailjet/inbound/

> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

Once you've done Mailjet's "basic setup" to configure the Parse API webhook, you can skip ahead to the "use your own domain" section of their guide. (Anymail normalizes the inbound event for you, so you won't need to worry about Mailjet's event and attachment formats.)

1.5.6 Mandrill

Anymail integrates with the Mandrill transactional email service from MailChimp, using their /messages/send HTTP API.

Note: Limited Mandrill Testing

Anymail is developed to the public Mandrill documentation, but unlike other supported ESPs, we are unable to regularly test against the live Mandrill APIs. (MailChimp doesn't offer ongoing testing access for open source packages like Anymail. We *do* have a limited use trial account, but we try to save that for debugging specific issues reported by Anymail users.)

If you are using only Mandrill, and unlikely to ever need a different ESP, you might prefer using MailChimp's official mailchimp-transactional-python package instead of Anymail.

Settings

EMAIL_BACKEND

To use Anymail's Mandrill backend, set:

```
EMAIL_BACKEND = "anymail.backends.mandrill.EmailBackend"
```

in your settings.py.

MANDRILL_API_KEY

Required. Your Mandrill API key:

```
ANYMAIL = {
    ...
    "MANDRILL_API_KEY": "<your API key>",
}
```

Anymail will also look for `MANDRILL_API_KEY` at the root of the settings file if neither `ANYMAIL["MANDRILL_API_KEY"]` nor `ANYMAIL_MANDRILL_API_KEY` is set.

MANDRILL_WEBHOOK_KEY

Required if using Anymail's webhooks. The "webhook authentication key" issued by Mandrill. See Authenticating webhook requests in the Mandrill docs.

MANDRILL_WEBHOOK_URL

Required only if using Anymail's webhooks *and* the hostname your Django server sees is different from the public webhook URL you provided Mandrill. (E.g., if you have a proxy in front of your Django server that forwards "https://yoursite.example.com" to "http://localhost:8000/").

If you are seeing `AnymailWebhookValidationFailure` errors from your webhooks, set this to the exact webhook URL you entered in Mandrill's settings.

MANDRILL_API_URL

The base url for calling the Mandrill API. The default is `MANDRILL_API_URL = "https://mandrillapp.com/api/1.0"`, which is the secure, production version of Mandrill's 1.0 API.

(It's unlikely you would need to change this.)

esp_extra support

To use Mandrill features not directly supported by Anymail, you can set a message's *esp_extra* to a `dict` of parameters to merge into Mandrill's /messages/send API call. Note that a few parameters go at the top level, but Mandrill expects most options within a `'message'` sub-dict—be sure to check their API docs:

```
message.esp_extra = {
    # Mandrill expects 'ip_pool' at top level...
    'ip_pool': 'Bulk Pool',
    # ... but 'subaccount' must be within a 'message' dict:
    'message': {
        'subaccount': 'Marketing Dept.'
    }
}
```

Anymail has special handling that lets you specify Mandrill's `'recipient_metadata'` as a simple, pythonic `dict` (similar in form to Anymail's *merge_data*), rather than Mandrill's more complex list of rcpt/values dicts. You can use whichever style you prefer (but either way, recipient_metadata must be in esp_extra['message']).

Similarly, Anymail allows Mandrill's `'template_content'` in esp_extra (top level) either as a pythonic `dict` (similar to Anymail's *merge_global_data*) or as Mandrill's more complex list of name/content dicts.

Limitations and quirks

Non-ASCII attachment filenames will be garbled
Mandrill's /messages/send API does not properly handle non-ASCII characters in attachment filenames. As a result, some email clients will display those characters incorrectly. The only workaround is to limit attachment filenames to ASCII when sending through Mandrill. (Verified and reported to MailChimp support 4/2022; see Anymail discussion #257 for more details.)

Envelope sender uses only domain
Anymail's *envelope_sender* is used to populate Mandrill's `'return_path_domain'`—but only the domain portion. (Mandrill always generates its own encoded mailbox for the envelope sender.)

Batch sending/merge and ESP templates

Mandrill offers both *ESP stored templates* and *batch sending* with per-recipient merge data.

You can use a Mandrill stored template by setting a message's `template_id` to the template's name. Alternatively, you can refer to merge fields directly in an EmailMessage's subject and body—the message itself is used as an on-the-fly template.

In either case, supply the merge data values with Anymail's normalized *merge_data* and *merge_global_data* message attributes.

```
# This example defines the template inline, using Mandrill's
# default MailChimp merge *|field|* syntax.
# You could use a stored template, instead, with:
#   message.template_id = "template name"
message = EmailMessage(
    ...
    subject="Your order *|order_no|* has shipped",
    body="""Hi *|name|*,
            We shipped your order *|order_no|*
            on *|ship_date|*.""",
    to=["alice@example.com", "Bob <bob@example.com>"]
)
# (you'd probably also set a similar html body with merge fields)
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

When you supply per-recipient *merge_data*, Anymail automatically forces Mandrill's `preserve_recipients` option to false, so that each person in the message's "to" list sees only their own email address.

To use the subject or from address defined with a Mandrill template, set the message's `subject` or `from_email` attribute to None.

See the Mandrill's template docs for more information.

Status tracking and inbound webhooks

If you are using Anymail's normalized *status tracking* and/or *inbound* handling, setting up Anymail's webhook URL requires deploying your Django project twice:

1. First, follow the instructions to *configure Anymail's webhooks*. You *must deploy* before adding the webhook URL to Mandrill, because Mandrill will attempt to verify the URL against your production server.

   Once you've deployed, then set Anymail's webhook URL in Mandrill, following their instructions for tracking event webhooks (be sure to check the boxes for the events you want to receive) and/or inbound route webhooks. In either case, the webhook url is:

   `https://random:random@yoursite.example.com/anymail/mandrill/`

   - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
   - *yoursite.example.com* is your Django site

- (Note: Unlike Anymail's other supported ESPs, the Mandrill webhook uses this single url for both tracking and inbound events.)

2. Mandrill will provide you a "webhook authentication key" once it verifies the URL is working. Add this to your Django project's Anymail settings under `MANDRILL_WEBHOOK_KEY`. (You may also need to set `MANDRILL_WEBHOOK_URL` depending on your server config.) Then deploy your project again.

Mandrill implements webhook signing on the entire event payload, and Anymail verifies this signature. Until the correct webhook key is set, Anymail will raise an exception for any webhook calls from Mandrill (other than the initial validation request).

Mandrill's webhook signature also covers the exact posting URL. Anymail can usually figure out the correct (public) URL where Mandrill called your webhook. But if you're getting an `AnymailWebhookValidationFailure` with a different URL than you provided Mandrill, you may need to examine your Django `SECURE_PROXY_SSL_HEADER`, `USE_X_FORWARDED_HOST`, and/or `USE_X_FORWARDED_PORT` settings. If all else fails, you can set Anymail's `MANDRILL_WEBHOOK_URL` to the same public webhook URL you gave Mandrill.

Mandrill will report these Anymail `event_type`s: sent, rejected, deferred, bounced, opened, clicked, complained, unsubscribed, inbound. Mandrill does not support delivered events. Mandrill "whitelist" and "blacklist" change events will show up as Anymail's unknown event_type.

The event's `esp_event` field will be a `dict` of Mandrill event fields, for a single event. (Although Mandrill calls webhooks with batches of events, Anymail will invoke your signal receiver separately for each event in the batch.)

Migrating from Djrill

Anymail has its origins as a fork of the Djrill package, which supported only Mandrill. If you are migrating from Djrill to Anymail – e.g., because you are thinking of switching ESPs – you'll need to make a few changes to your code.

Changes to settings

MANDRILL_API_KEY
    Will still work, but consider moving it into the `ANYMAIL` settings dict, or changing it to `ANYMAIL_MANDRILL_API_KEY`.

MANDRILL_SETTINGS
    Use `ANYMAIL_SEND_DEFAULTS` and/or `ANYMAIL_MANDRILL_SEND_DEFAULTS` (see *Global send defaults*).

    There is one slight behavioral difference between `ANYMAIL_SEND_DEFAULTS` and Djrill's `MANDRILL_SETTINGS`: in Djrill, setting `tags` or `merge_vars` on a message would completely override any global settings defaults. In Anymail, those message attributes are merged with the values from `ANYMAIL_SEND_DEFAULTS`.

MANDRILL_SUBACCOUNT
    Set *esp_extra* globally in `ANYMAIL_SEND_DEFAULTS`:

```
ANYMAIL = {
    ...
    "MANDRILL_SEND_DEFAULTS": {
        "esp_extra": {
            "message": {
                "subaccount": "<your subaccount>"
            }
        }
    }
}
```

MANDRILL_IGNORE_RECIPIENT_STATUS

Renamed to *ANYMAIL_IGNORE_RECIPIENT_STATUS* (or just IGNORE_RECIPIENT_STATUS in the *ANYMAIL* settings dict).

DJRILL_WEBHOOK_SECRET and DJRILL_WEBHOOK_SECRET_NAME

Replaced with HTTP basic auth. See *Securing webhooks*.

DJRILL_WEBHOOK_SIGNATURE_KEY

Use *ANYMAIL_MANDRILL_WEBHOOK_KEY* instead.

DJRILL_WEBHOOK_URL

Often no longer required: Anymail can normally use Django's HttpRequest.build_absolute_uri to figure out the complete webhook url that Mandrill called.

If you are experiencing webhook authorization errors, the best solution is to adjust your Django SECURE_PROXY_SSL_HEADER, USE_X_FORWARDED_HOST, and/or USE_X_FORWARDED_PORT settings to work with your proxy server. If that's not possible, you can set *ANYMAIL_MANDRILL_WEBHOOK_URL* to explicitly declare the webhook url.

Changes to EmailMessage attributes

message.send_at

If you are using an aware datetime for *send_at*, it will keep working unchanged with Anymail.

If you are using a date (without a time), or a naive datetime, be aware that these now default to Django's current_timezone, rather than UTC as in Djrill.

(As with Djrill, it's best to use an aware datetime that says exactly when you want the message sent.)

message.mandrill_response

Anymail normalizes ESP responses, so you don't have to be familiar with the format of Mandrill's JSON. See *anymail_status*.

The *raw* ESP response is attached to a sent message as anymail_status.esp_response, so the direct replacement for message.mandrill_response is:

```
mandrill_response = message.anymail_status.esp_response.json()
```

message.template_name

Anymail renames this to *template_id*.

message.merge_vars and message.global_merge_vars

Anymail renames these to *merge_data* and *merge_global_data*, respectively.

message.use_template_from and message.use_template_subject

With Anymail, set message.from_email = None or message.subject = None to use the values from the stored template.

message.return_path_domain

With Anymail, set *envelope_sender* instead. You'll need to pass a valid email address (not just a domain), but Anymail will use only the domain, and will ignore anything before the @.

Other Mandrill-specific attributes

Djrill allowed nearly all Mandrill API parameters to be set as attributes directly on an EmailMessage. With Anymail, you should instead set these in the message's *esp_extra* dict as described above.

Changed in version 10.0: These Djrill-specific attributes are no longer supported, and will be silently ignored. (Earlier versions raised a DeprecationWarning but still worked.)

You can also use the following git grep expression to find potential problems:

```
git grep -w \
  -e 'async' -e 'auto_html' -e 'auto_text' -e 'from_name' -e 'global_merge_
↪vars' \
  -e 'google_analytics_campaign' -e 'google_analytics_domains' -e 'important
↪' \
  -e 'inline_css' -e 'ip_pool' -e 'merge_language' -e 'merge_vars' \
  -e 'preserve_recipients' -e 'recipient_metadata' -e 'return_path_domain' \
  -e 'signing_domain' -e 'subaccount' -e 'template_content' -e 'template_
↪name' \
  -e 'tracking_domain' -e 'url_strip_qs' -e 'use_template_from' -e 'use_
↪template_subject' \
  -e 'view_content_link'
```

Inline images

Djrill (incorrectly) used the presence of a `Content-ID` header to decide whether to treat an image as inline. Anymail looks for `Content-Disposition: inline`.

If you were constructing MIMEImage inline image attachments for your Djrill messages, in addition to setting the Content-ID, you should also add:

```
image.add_header('Content-Disposition', 'inline')
```

Or better yet, use Anymail's new *Inline images* helper functions to attach your inline images.

Changes to webhooks

Anymail uses HTTP basic auth as a shared secret for validating webhook calls, rather than Djrill's "secret" query parameter. See *Securing webhooks*. (A slight advantage of basic auth over query parameters is that most logging and analytics systems are aware of the need to keep auth secret.)

Anymail replaces `djrill.signals.webhook_event` with `anymail.signals.tracking` for delivery tracking events, and `anymail.signals.inbound` for inbound events. Anymail parses and normalizes the event data passed to the signal receiver: see *Tracking sent mail status* and *Receiving mail*.

The equivalent of Djrill's `data` parameter is available to your signal receiver as *event.esp_event*, and for most events, the equivalent of Djrill's `event_type` parameter is `event.esp_event['event']`. But consider working with Anymail's normalized *AnymailTrackingEvent* and *AnymailInboundEvent* instead for easy portability to other ESPs.

1.5.7 Postal

Anymail integrates with the Postal self-hosted transactional email platform, using their HTTP email API.

Settings

EMAIL_BACKEND

To use Anymail's Postal backend, set:

```
EMAIL_BACKEND = "anymail.backends.postal.EmailBackend"
```

in your settings.py.

POSTAL_API_KEY

Required. A Postal API key.

```
ANYMAIL = {
    ...
    "POSTAL_API_KEY": "<your api key>",
}
```

Anymail will also look for `POSTAL_API_KEY` at the root of the settings file if neither `ANYMAIL["POSTAL_API_KEY"]` nor `ANYMAIL_POSTAL_API_KEY` is set.

POSTAL_API_URL

Required. The base url for calling the Postal API.

POSTAL_WEBHOOK_KEY

Required when using status tracking or inbound webhooks.

This should be set to the public key of the Postal instance. You can find it by running `postal default-dkim-record` on your Postal instance. Use the part that comes after `p=`, until the semicolon at the end.

esp_extra support

To use Postal features not directly supported by Anymail, you can set a message's `esp_extra` to a `dict` that will be merged into the json sent to Postal's email API.

Example:

```
message.esp_extra = {
    'HypotheticalFuturePostalParam': '2022',  # merged into send params
}
```

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Limitations and quirks

Postal does not support a few tracking and reporting additions offered by other ESPs.

Anymail normally raises an `AnymailUnsupportedFeature` error when you try to send a message using features that Postal doesn't support You can tell Anymail to suppress these errors and send the messages anyway – see *Unsupported features*.

Single tag
> Postal allows a maximum of one tag per message. If your message has two or more `tags`, you'll get an `AnymailUnsupportedFeature` error—or if you've enabled `ANYMAIL_IGNORE_UNSUPPORTED_FEATURES`, Anymail will use only the first tag.

No delayed sending
> Postal does not support `send_at`.

Toggle click-tracking and open-tracking
> By default, Postal does not enable click-tracking and open-tracking. To enable it, see their docs on click- & open-tracking. Anymail's `track_clicks` and `track_opens` settings are unsupported.

Attachments must be named
> Postal issues an `AttachmentMissingName` error when trying to send an attachment without name.

Batch sending/merge and ESP templates

Postal does not support batch sending or ESP templates.

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, set up a webhook in your Postal mail server settings, under Webhooks. The webhook URL is:

> `https://yoursite.example.com/anymail/postal/tracking/`
>
> > • *yoursite.example.com* is your Django site

Choose all the event types you want to receive.

Postal signs its webhook payloads. You need to set `ANYMAIL_POSTAL_WEBHOOK_KEY`.

If you use multiple Postal mail servers, you'll need to repeat entering the webhook settings for each of them.

Postal will report these Anymail `event_type`s: failed, bounced, deferred, queued, delivered, clicked.

The event's `esp_event` field will be a `dict` of Postal's webhook data.

Inbound webhook

If you want to receive email from Postal through Anymail's normalized *inbound* handling, follow Postal's guide to for receiving emails (Help > Receiving Emails) to create an incoming route. Then set up an `HTTP Endpoint`, pointing to Anymail's inbound webhook.

The url will be:

> `https://yoursite.example.com/anymail/postal/inbound/`
>
> > • *yoursite.example.com* is your Django site

Set `Format` to `Delivered as the raw message`.

You also need to set `ANYMAIL_POSTAL_WEBHOOK_KEY` to enable signature validation.

1.5.8 Postmark

Anymail integrates with the Postmark transactional email service, using their HTTP email API.

> **Alternatives**
>
> The postmarker package includes a Postmarker Django EmailBackend. Depending on your needs, it may be more appropriate than Anymail.

Settings

EMAIL_BACKEND

To use Anymail's Postmark backend, set:

```
EMAIL_BACKEND = "anymail.backends.postmark.EmailBackend"
```

in your settings.py.

POSTMARK_SERVER_TOKEN

Required. A Postmark server token.

```
ANYMAIL = {
    ...
    "POSTMARK_SERVER_TOKEN": "<your server token>",
}
```

Anymail will also look for `POSTMARK_SERVER_TOKEN` at the root of the settings file if neither `ANYMAIL["POSTMARK_SERVER_TOKEN"]` nor `ANYMAIL_POSTMARK_SERVER_TOKEN` is set.

You can override the server token for an individual message in its *esp_extra*.

POSTMARK_API_URL

The base url for calling the Postmark API.

The default is `POSTMARK_API_URL = "https://api.postmarkapp.com/"` (It's unlikely you would need to change this.)

esp_extra support

To use Postmark features not directly supported by Anymail, you can set a message's `esp_extra` to a `dict` that will be merged into the json sent to Postmark's email API.

Example:

```
message.esp_extra = {
    'MessageStream': 'marketing',  # send using specific message stream ID
    'server_token': '<API server token for just this message>',
}
```

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Limitations and quirks

Postmark does not support a few tracking and reporting additions offered by other ESPs.

Anymail normally raises an `AnymailUnsupportedFeature` error when you try to send a message using features that Postmark doesn't support You can tell Anymail to suppress these errors and send the messages anyway – see *Unsupported features*.

Single tag
Postmark allows a maximum of one tag per message. If your message has two or more `tags`, you'll get an `AnymailUnsupportedFeature` error—or if you've enabled `ANYMAIL_IGNORE_UNSUPPORTED_FEATURES`, Anymail will use only the first tag.

No delayed sending
Postmark does not support `send_at`.

Click-tracking
Postmark supports several link-tracking options. Anymail treats `track_clicks` as Postmark's "HtmlAndText" option when True.

If you would prefer Postmark's "HtmlOnly" or "TextOnly" link-tracking, you could either set that as a Postmark server-level default (and use `message.track_clicks = False` to disable tracking for specific messages), or use something like `message.esp_extra = {'TrackLinks':  "HtmlOnly"}` to specify a particular option.

Open-tracking
To control `track_opens` on individual messages, you must *disable* Postmark's server-level default and then set `track_opens = True` on all messages that should have open tracking. (A message-level `track_opens = False` cannot override open tracking if enabled in Postmark's server defaults.)

If most of your messages should be sent with open tracking, you can use Anymail's *global send defaults* (rather than Postmark's server-level setting):

```
# settings.py
ANYMAIL = {
    # ...
    "SEND_DEFAULTS": { "track_opens": True },
}
```

Individual messages *can* then use `track_opens = False` to override Anymail's default.

No envelope sender overrides
Postmark does not support overriding `envelope_sender` on individual messages. (You can configure custom return paths for each sending domain in the Postmark control panel.)

Batch sending/merge and ESP templates

Postmark offers both *ESP stored templates* and *batch sending* with per-recipient merge data.

Changed in version 4.2: Added Postmark `merge_data` and batch sending support. (Earlier Anymail releases only supported `merge_global_data` with Postmark.)

To use a Postmark template, set the message's `template_id` to either the numeric Postmark "TemplateID" or its string "TemplateAlias" (which is *not* the template's name). You can find a template's numeric id near the top right in Postmark's template editor, and set the alias near the top right above the name.

Changed in version 5.0: Earlier Anymail releases only allowed numeric template IDs.

Supply the Postmark "TemplateModel" variables using Anymail's normalized `merge_data` and `merge_global_data` message attributes:

```
message = EmailMessage(
    # (subject and body come from the template, so don't include those)
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = 80801  # Postmark template id or alias
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

Postmark does not allow overriding the message's subject or body with a template. (You can customize the subject by including variables in the template's subject.)

When you supply per-recipient `merge_data`, Anymail automatically switches to Postmark's batch send API, so that each "to" recipient sees only their own email address. (Any cc's or bcc's will be duplicated for *every* to-recipient.)

If you want to use batch sending with a regular message (without a template), set merge data to an empty dict: `message.merge_data = {}`.

See this Postmark blog post on templates for more information.

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, set up a webhook in your Postmark account settings, under Servers > *your server name* > Settings > Webhooks. The webhook URL is:

> https://*random:random*@*yoursite.example.com*/anymail/postmark/tracking/

> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

Choose all the event types you want to receive. Anymail doesn't care about the "include messsage content" and "post only on first open" options; whether to use them is your choice.

If you use multiple Postmark servers, you'll need to repeat entering the webhook settings for each of them.

Postmark will report these Anymail `event_type`s: rejected, failed, bounced, deferred, delivered, autoresponded, opened, clicked, complained, unsubscribed, subscribed. (Postmark does not support sent–what it calls "processed"–events through webhooks.)

The event's `esp_event` field will be a `dict` of Postmark delivery, bounce, spam-complaint, open-tracking, or click data.

Inbound webhook

To receive email from Postmark through Anymail's normalized *inbound* handling, follow Postmark's guide to Configure an inbound server that posts to Anymail's inbound webhook.

In their step 4, set the inbound webhook URL to:

> `https://random:random@yoursite.example.com/anymail/postmark/inbound/`
>
> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

We recommend enabling the "Include raw email content in JSON payload" checkbox. Anymail's inbound handling supports either choice, but raw email is preferred to get the most accurate representation of any received message. (If you are using Postmark's server API, this is the `RawEmailEnabled` option.)

Changed in version 10.0: Added handling for Postmark's "include raw email content".

You may also want to read through the "Inbound domain forwarding" and "Configure inbound blocking" sections of Postmark's Inbound Processing guide.

1.5.9 Resend

Anymail integrates Django with the Resend transactional email service, using their send-email API endpoint.

Added in version 10.2.

Installation

Anymail uses the svix package to validate Resend webhook signatures. If you will use Anymail's *status tracking* webhook with Resend, and you want to use webhook signature validation, be sure to include the `[resend]` option when you install Anymail:

```
$ python -m pip install 'django-anymail[resend]'
```

(Or separately run `python -m pip install svix`.)

The svix package pulls in several other dependencies, so its use is optional in Anymail. See *Status tracking webhooks* below for details. To avoid installing svix with Anymail, just omit the `[resend]` option.

Settings

EMAIL_BACKEND

To use Anymail's Resend backend, set:

```
EMAIL_BACKEND = "anymail.backends.resend.EmailBackend"
```

in your settings.py.

RESEND_API_KEY

Required for sending. An API key from your Resend API Keys. Anymail needs only "sending access" permission; "full access" is not recommended.

```
ANYMAIL = {
    ...
    "RESEND_API_KEY": "re_...",
}
```

Anymail will also look for `RESEND_API_KEY` at the root of the settings file if neither `ANYMAIL["RESEND_API_KEY"]` nor `ANYMAIL_RESEND_API_KEY` is set.

RESEND_SIGNING_SECRET

The Resend webhook signing secret used to verify webhook posts. Recommended if you are using activity tracking, otherwise not necessary. (This is separate from Anymail's `WEBHOOK_SECRET` setting.)

Find this in your Resend Webhooks settings: after adding a webhook, click into its management page and look for "signing secret" near the top.

```
ANYMAIL = {
    ...
    "RESEND_SIGNING_SECRET": "whsec_...",
}
```

If you provide this setting, the svix package is required. See *Installation* above.

RESEND_API_URL

The base url for calling the Resend API.

The default is `RESEND_API_URL = "https://api.resend.com/"`. (It's unlikely you would need to change this.)

Limitations and quirks

Resend does not support a few features offered by some other ESPs, and can have unexpected behavior for some common use cases.

Anymail normally raises an `AnymailUnsupportedFeature` error when you try to send a message using features that Resend doesn't support. You can tell Anymail to suppress these errors and send the messages anyway—see *Unsupported features*.

Restricted characters in ``from_email`` display names
> Resend's API does not accept many email address display names (a.k.a. "friendly names" or "real names") formatted according to the relevant standard (RFC 5322). Anymail implements a workaround for the to, cc, bcc and reply_to fields, but Resend rejects attempts to use this workaround for `from_email` display names.
>
> These characters will cause problems in a *From* address display name:
>
> - Double quotes (") and some other punctuation characters can cause a "Resend API response 422" error complaining of an "Invalid `from` field", or can result in a garbled *From* name (missing segments, additional punctuation inserted) in the resulting message.

- A question mark immediately followed by any alphabetic character (e.g., ?u) will cause a "Resend API response 451" security error complaining that "The email payload contain invalid characters". (This behavior prevents use of standard **RFC 2047** encoded words in *From* display names—which is the workaround Anymail implements for other address fields.)

There may be other character combinations that also cause problems. If you need to include punctuation in a *From* display name, be sure to verify the results. (The issues were reported to Resend in October, 2023.)

Attachment filename determines content type

Resend determines the content type of an attachment from its filename extension.

If you try to send an attachment without a filename, Anymail will substitute "attachment.*ext*" using an appropriate *.ext* for the content type.

If you try to send an attachment whose content type doesn't match its filename extension, Resend will change the content type to match the extension. (E.g., the filename "data.txt" will always be sent as "text/plain", even if you specified a "text/csv" content type.)

No inline images

Resend's API does not provide a mechanism to send inline content or to specify `Content-ID` for an attachment.

Anymail tags and metadata are exposed to recipient

Anymail implements its normalized `tags` and `metadata` features for Resend using custom email headers. That means they can be visible to recipients via their email app's "show original message" (or similar) command. **Do not include sensitive data in tags or metadata.**

Resend also offers a feature it calls "tags", which allows arbitrary key-value data to be tracked with a sent message (similar Anymail's `metadata`). Resend's native tags are *not* exposed to recipients, but they have significant restrictions on character set and length (for both keys and values).

If you want to use Resend's native tags with Anymail, you can send them using *esp_extra*, and retrieve them in a status tracking webhook using *esp_event*. (The linked sections below include examples.)

No click/open tracking overrides

Resend does not support `track_clicks` or `track_opens`. Its tracking features can only be configured at the domain level in Resend's control panel.

No delayed sending

Resend does not support `send_at`.

No envelope sender

Resend does not support specifying the `envelope_sender`.

Status tracking does not identify recipient

If you send a message with multiple recipients (to, cc, and/or bcc), Resend's status webhooks do not identify which recipient applies for an event. See the *note below*.

API rate limits

Resend provides rate limit headers with each API call response. To access them after a successful send, use (e.g.,) `message.anymail_status.esp_response.headers["ratelimit-remaining"]`.

If you exceed a rate limit, you'll get an *AnymailAPIError* with `error.status_code == 429`, and can determine how many seconds to wait from `error.response.headers["retry-after"]`.

exp_extra support

Anymail's Resend backend will pass `esp_extra` values directly to Resend's send-email API. Example:

```
message = AnymailMessage(...)
message.esp_extra = {
    # Use Resend's native "tags" feature
    # (be careful about character set restrictions):
    "tags": [
        {"name": "Co_Brand", "value": "Acme_Inc"},
        {"name": "Feature_Flag_1", "value": "test_22_a"},
    ],
}
```

Batch sending/merge and ESP templates

Added in version 10.3: Support for batch sending with `merge_metadata`.

Resend supports *batch sending* (where each *To* recipient sees only their own email address). It also supports per-recipient metadata with batch sending.

Set Anymail's normalized `merge_metadata` attribute to use Resend's batch-send API:

```
message = EmailMessage(
    to=["alice@example.com", "Bob <bob@example.com>"],
    from_email="...", subject="...", body="..."
)
message.merge_metadata = {
    'alice@example.com': {'user_id': "12345"},
    'bob@example.com': {'user_id': "54321"},
}
```

Resend does not currently offer *ESP stored templates* or merge capabilities, so does not support Anymail's `merge_data`, `merge_global_data`, or `template_id` message attributes. (Resend's current template feature is only supported in node.js, using templates that are rendered in their API client.)

(Setting `merge_data` to an empty dict will also invoke batch send, but trying to supply merge data for any recipient will raise an `AnymailUnsupportedFeature` error.)

Status tracking webhooks

Anymail's normalized *status tracking* works with Resend's webhooks.

Resend implements webhook signing, using the svix package for signature validation (see *Installation* above). You have three options for securing the status tracking webhook:

- Use Resend's webhook signature validation, by setting `RESEND_SIGNING_SECRET` (requires the svix package)
- Use Anymail's shared secret validation, by setting `WEBHOOK_SECRET` (does not require svix)
- Use both

Signature validation is recommended, unless you do not want to add svix to your dependencies.

To configure Anymail status tracking for Resend, add a new webhook endpoint to your Resend Webhooks settings:

- For the "Endpoint URL", enter one of these (where *yoursite.example.com* is your Django site).

  If are *not* using Anymail's shared webhook secret:

  `https://yoursite.example.com/anymail/resend/tracking/`

  Or if you *are* using Anymail's *WEBHOOK_SECRET*, include the *random:random* shared secret in the URL:

  `https://random:random@yoursite.example.com/resend/tracking/`

- For "Events to listen", select any or all events you want to track.

- Click the "Add" button.

Then, if you are using Resend's webhook signature validation (with svix), add the webhook signing secret to your Anymail settings:

- Still on the Resend Webhooks settings page, click into the webhook endpoint URL you added above, and copy the "signing secret" listed near the top of the page.

- Add that to your settings.py `ANYMAIL` settings as *RESEND_SIGNING_SECRET*:

```
ANYMAIL = {
    # ...
    "RESEND_SIGNING_SECRET": "whsec_..."
}
```

Resend will report these Anymail `event_type`s: sent, delivered, bounced, deferred, complained, opened, and clicked.

Note: Multiple recipients not recommended with tracking

If you send a message with multiple recipients (to, cc, and/or bcc), you will receive separate events (delivered, bounced, opened, etc.) for *every* recipient. But Resend does not identify *which* recipient applies for a particular event.

The `event.recipient` will always be the first `to` email, but the event might actually have been generated by some other recipient.

To avoid confusion, it's best to send each message to exactly one `to` address, and avoid using cc or bcc.

The status tracking event's `esp_event` field will be the parsed Resend webhook payload. For example, if you provided Resend's native "tags" via *esp_extra* when sending, you can retrieve them in your tracking signal receiver like this:

```
@receiver(tracking)
def handle_tracking(sender, event, esp_name, **kwargs):
    ...
    resend_tags = event.esp_event.get("tags", {})
    # resend_tags will be a flattened dict (not
    # the name/value list used when sending). E.g.:
    # {"Co_Brand": "Acme_Inc", "Feature_Flag_1": "test_22_a"}
```

Inbound

Resend does not currently support inbound email.

Troubleshooting

If Anymail's Resend integration isn't behaving like you expect, Resend's dashboard includes diagnostic logs that can help isolate the problem:

- Resend Logs page lists every call received by Resend's API

- Resend Emails page shows every event related to email sent through Resend

- Resend Webhooks page shows every attempt by Resend to call your webhook (click into a webhook endpoint url to see the logs for that endpoint)

See Anymail's *Troubleshooting* docs for additional suggestions.

1.5.10 SendGrid

Anymail integrates with the SendGrid email service, using their Web API v3.

Important: Troubleshooting: If your SendGrid messages aren't being delivered as expected, be sure to look for "drop" events in your SendGrid activity feed.

SendGrid detects certain types of errors only *after* the send API call appears to succeed, and reports these errors as drop events.

Settings

EMAIL_BACKEND

To use Anymail's SendGrid backend, set:

```
EMAIL_BACKEND = "anymail.backends.sendgrid.EmailBackend"
```

in your settings.py.

SENDGRID_API_KEY

A SendGrid API key with "Mail Send" permission. (Manage API keys in your SendGrid API key settings.) Required.

```
ANYMAIL = {
    ...
    "SENDGRID_API_KEY": "<your API key>",
}
```

Anymail will also look for `SENDGRID_API_KEY` at the root of the settings file if neither `ANYMAIL["SENDGRID_API_KEY"]` nor `ANYMAIL_SENDGRID_API_KEY` is set.

SENDGRID_GENERATE_MESSAGE_ID

Whether Anymail should generate a UUID for each message sent through SendGrid, to facilitate status tracking. The UUID is attached to the message as a SendGrid custom arg named "anymail_id" and made available as `anymail_status.message_id` on the sent message.

Default `True`. You can set to `False` to disable this behavior, in which case sent messages will have a `message_id` of `None`. See *Message-ID quirks* below.

SENDGRID_MERGE_FIELD_FORMAT

If you use *merge data* with SendGrid's legacy transactional templates, set this to a `str.format()` formatting string that indicates how merge fields are delimited in your legacy templates. For example, if your templates use the `-field-` hyphen delimiters suggested in some SendGrid docs, you would set:

```
ANYMAIL = {
    ...
    "SENDGRID_MERGE_FIELD_FORMAT": "-{}-",
}
```

The placeholder {} will become the merge field name. If you need to include a literal brace character, double it up. (For example, Handlebars-style {{field}} delimiters would take the format string "{{{{{}}}}}".)

The default `None` requires you include the delimiters directly in your `merge_data` keys. You can also override this setting for individual messages. See the notes on SendGrid *templates and merge* below.

This setting is not used (or necessary) with SendGrid's newer dynamic transactional templates, which always use Handlebars syntax.

SENDGRID_API_URL

The base url for calling the SendGrid API.

The default is `SENDGRID_API_URL = "https://api.sendgrid.com/v3/"` (It's unlikely you would need to change this.)

esp_extra support

To use SendGrid features not directly supported by Anymail, you can set a message's *esp_extra* to a `dict` of parameters for SendGrid's v3 Mail Send API. Your `esp_extra` dict will be deeply merged into the parameters Anymail has constructed for the send, with `esp_extra` having precedence in conflicts.

Anymail has special handling for `esp_extra["personalizations"]`. If that value is a `dict`, Anymail will merge that personalizations dict into the personalizations for each message recipient. (If you pass a `list`, that will override the personalizations Anymail normally constructs from the message, and you will need to specify each recipient in the personalizations list yourself.)

Example:

```
message.open_tracking = True
message.esp_extra = {
    "asm": {  # SendGrid subscription management
        "group_id": 1,
        "groups_to_display": [1, 2, 3],
```

```
    },
    "tracking_settings": {
        "open_tracking": {
            # Anymail will automatically set `"enable": True` here,
            # based on message.open_tracking.
            "substitution_tag": "%%OPEN_TRACKING_PIXEL%%",
        },
    },
    # Because "personalizations" is a dict, Anymail will merge "future_feature"
    # into the SendGrid personalizations array for each message recipient
    "personalizations": {
        "future_feature": {"future": "data"},
    },
}
```

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Limitations and quirks

Message-ID

> SendGrid does not return any sort of unique id from its send API call. Knowing a sent message's ID can be important for later queries about the message's status.
>
> To work around this, Anymail generates a UUID for each outgoing message, provides it to SendGrid as a custom arg named "anymail_id" and makes it available as the message's `anymail_status.message_id` attribute after sending. The same UUID will be passed to Anymail's *tracking webhooks* as `event.message_id`.
>
> To disable attaching tracking UUIDs to sent messages, set `SENDGRID_GENERATE_MESSAGE_ID` to False in your Anymail settings.
>
> Changed in version 6.0: In batch sends, Anymail generates a distinct anymail_id for *each* "to" recipient. (Previously, a single id was used for all batch recipients.) Check `anymail_status.recipients[to_email].message_id` for individual batch-send tracking ids.
>
> Changed in version 3.0: Previously, Anymail generated a custom `Message-ID` header for each sent message. But SendGrid's "smtp-id" event field does not reliably reflect this header, which complicates status tracking. (For compatibility with messages sent in earlier versions, Anymail's webhook `message_id` will fall back to "smtp-id" when "anymail_id" isn't present.)

Invalid Addresses

> SendGrid will accept *and send* just about anything as a message's `from_email`. (And email protocols are actually OK with that.)
>
> (Tested March, 2016)

Wrong character set on text attachments

> Under some conditions, SendGrid incorrectly identifies text attachments (text/plain, text/calendar, etc.) as using ISO-8859-1 encoding, and forces `charset="iso-8859-1"` into the attachments' MIME headers. This generally causes any non-ASCII characters in the attachments to be replaced with incorrect or illegal characters in the recipient's email client.
>
> The behavior is unpredictable, and may vary by SendGrid account or change over time. There is no reliable, general workaround that Anymail could implement. You may be able to counteract the issue by enabling open and/or click tracking in your SendGrid account. The only way to completely avoid the problem is switching to a non-text attachment type (e.g., application/pdf) or limiting your text attachments to use only ASCII characters. See issue 150 for more information and other possible workarounds.

If this impacts your usage, it's helpful to report it to SendGrid support, so they can quantify customers affected and prioritize a fix.

(Noted June, 2019 and December, 2019)

Arbitrary alternative parts allowed

SendGrid is one of the few ESPs that *does* support sending arbitrary alternative message parts (beyond just a single text/plain and text/html part).

AMP for Email

SendGrid supports sending AMPHTML email content. To include it, use `message.attach_alternative("...AMPHTML content...", "text/x-amp-html")` (and be sure to also include regular HTML and text bodies, too).

No envelope sender overrides

SendGrid does not support overriding `envelope_sender` on individual messages.

Batch sending/merge and ESP templates

SendGrid offers both *ESP stored templates* and *batch sending* with per-recipient merge data.

SendGrid has two types of stored templates for transactional email:

- Dynamic transactional templates, which were introduced in July, 2018, use Handlebars template syntax and allow complex logic to be coded in the template itself.

- Legacy transactional templates, which allow only simple key-value substitution and don't specify a particular template syntax.

[Legacy templates were originally just called "transactional templates," and many older references still use this terminology. But confusingly, SendGrid's dashboard and some recent articles now use "transactional templates" to mean the newer, dynamic templates.]

Changed in version 4.1: Added support for SendGrid dynamic transactional templates. (Earlier Anymail releases work only with SendGrid's legacy transactional templates.)

You can use either type of SendGrid stored template by setting a message's `template_id` to the template's unique id (*not* its name). Supply the merge data values with Anymail's normalized `merge_data` and `merge_global_data` message attributes.

```
message = EmailMessage(
    ...
    # omit subject and body (or set to None) to use template content
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = "d-5a963add2ec84305813ff860db277d7a"  # SendGrid dynamic
→id
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
}
```

When you supply per-recipient `merge_data`, Anymail automatically changes how it communicates the "to" list to SendGrid, so that each recipient sees only their own email address. (Anymail creates a separate "personalization" for each recipient in the "to" list; any cc's or bcc's will be duplicated for *every* to-recipient.)

See the SendGrid's transactional template overview for more information.

Legacy transactional templates

With *legacy* transactional templates (only), SendGrid doesn't have a pre-defined merge field syntax, so you must tell Anymail how substitution fields are delimited in your templates. There are three ways you can do this:

- Set `'merge_field_format'` in the message's `esp_extra` to a python `str.format()` string, as shown in the example below. (This applies only to that particular EmailMessage.)

- *Or* set `SENDGRID_MERGE_FIELD_FORMAT` in your Anymail settings. This is usually the best approach, and will apply to all legacy template messages sent through SendGrid. (You can still use esp_extra to override for individual messages.)

- *Or* include the field delimiters directly in *all* your `merge_data` and `merge_global_data` keys. E.g.: `{'-name-': "Alice", '-order_no-': "12345"}`. (This can be error-prone, and makes it difficult to transition to other ESPs or to SendGrid's dynamic templates.)

```
# ...
message.template_id = "5997fcf6-2b9f-484d-acd5-7e9a99f0dc1f"  # SendGrid
→legacy id
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.esp_extra = {
    # Tell Anymail this SendGrid legacy template uses "-field-" for merge
→fields.
    # (You could instead set SENDGRID_MERGE_FIELD_FORMAT in your ANYMAIL
→settings.)
    'merge_field_format': "-{}-"
}
```

SendGrid legacy templates allow you to mix your EmailMessage's `subject` and `body` with the template subject and body (by using `<%subject%>` and `<%body%>` in your SendGrid template definition where you want the message-specific versions to appear). If you don't want to supply any additional subject or body content from your Django app, set those EmailMessage attributes to empty strings or `None`.

On-the-fly templates

Rather than define a stored ESP template, you can refer to merge fields directly in an EmailMessage's subject and body, and SendGrid will treat this as an on-the-fly, legacy-style template definition. (The on-the-fly template can't contain any dynamic template logic, and like any legacy template you must specify the merge field format in either Anymail settings or esp_extra as described above.)

```
# on-the-fly template using merge fields in subject and body:
message = EmailMessage(
    subject="Your order {{order_no}} has shipped",
    body="Dear {{name}}:\nWe've shipped order {{order_no}}.",
    to=["alice@example.com", "Bob <bob@example.com>"]
)
# note: no template_id specified
message.merge_data = {
```

```
        'alice@example.com': {'name': "Alice", 'order_no': "12345"},
        'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.esp_extra = {
        # here's how to get Handlebars-style {{merge}} fields with Python's str.
↪format:
        'merge_field_format': "{{{{{}}}}}"  # "{{ {{ {} }} }}" without the spaces
}
```

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, enter the url in your SendGrid mail settings, under "Event Notification":

> https://random:random@yoursite.example.com/anymail/sendgrid/tracking/

> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

Be sure to check the boxes in the SendGrid settings for the event types you want to receive.

SendGrid will report these Anymail `event_type`s: queued, rejected, bounced, deferred, delivered, opened, clicked, complained, unsubscribed, subscribed.

The event's `esp_event` field will be a `dict` of Sendgrid event fields, for a single event. (Although SendGrid calls webhooks with batches of events, Anymail will invoke your signal receiver separately for each event in the batch.)

Inbound webhook

If you want to receive email from SendGrid through Anymail's normalized *inbound* handling, follow SendGrid's Inbound Parse Webhook guide to set up Anymail's inbound webhook.

The Destination URL setting will be:

> https://random:random@yoursite.example.com/anymail/sendgrid/inbound/

> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

You should enable SendGrid's "POST the raw, full MIME message" checkbox (see note below). And be sure the URL has a trailing slash. (SendGrid's inbound processing won't follow Django's `APPEND_SLASH` redirect.)

If you want to use Anymail's normalized `spam_detected` and `spam_score` attributes, be sure to enable the "Check incoming emails for spam" checkbox.

Note: Anymail supports either option for SendGrid's "POST the raw, full MIME message" checkbox, but enabling this setting is preferred to get the most accurate representation of any received email. Using raw MIME also avoids a limitation in Django's `multipart/form-data` handling that can strip attachments with certain filenames.

Changed in version 8.6: Leaving SendGrid's "full MIME" checkbox disabled is no longer recommended.

1.5.11 SparkPost

Anymail integrates with the SparkPost email service, using their Transmissions API.

Changed in version 8.0: Earlier Anymail versions used the official Python sparkpost API client. That library is no longer maintained, and Anymail now calls SparkPost's HTTP API directly. This change should not affect most users, but you should make sure you provide *SPARKPOST_API_KEY* in your Anymail settings (Anymail doesn't check environment variables), and if you are using Anymail's *esp_extra* you will need to update that to use Transmissions API parameters.

Settings

EMAIL_BACKEND

To use Anymail's SparkPost backend, set:

```
EMAIL_BACKEND = "anymail.backends.sparkpost.EmailBackend"
```

in your settings.py.

SPARKPOST_API_KEY

A SparkPost API key with at least the "Transmissions: Read/Write" permission. (Manage API keys in your SparkPost account API keys.)

```
ANYMAIL = {
    ...
    "SPARKPOST_API_KEY": "<your API key>",
}
```

Anymail will also look for `SPARKPOST_API_KEY` at the root of the settings file if neither `ANYMAIL["SPARKPOST_API_KEY"]` nor `ANYMAIL_SPARKPOST_API_KEY` is set.

Changed in version 8.0: This setting is required. If you store your API key in an environment variable, load it into your Anymail settings: `"SPARKPOST_API_KEY": os.environ["SPARKPOST_API_KEY"]`. (Earlier Anymail releases used the SparkPost Python library, which would look for the environment variable.)

SPARKPOST_SUBACCOUNT

Added in version 8.0.

An optional SparkPost subaccount numeric id. This can be used, along with the API key for the master account, to send mail on behalf of a subaccount. (Do not set this when using a subaccount's own API key.)

Like all Anymail settings, you can include this in the global settings.py ANYMAIL dict to apply to all sends, or supply it as a `get_connection()` keyword parameter (`connection = get_connection(subaccount=123)`) to send a particular message with a subaccount. See *Mixing email backends* for more information on using connections.

SPARKPOST_API_URL

The SparkPost API Endpoint to use. The default is `"https://api.sparkpost.com/api/v1"`.

Set this to use a SparkPost EU account, or to work with any other API endpoint including SparkPost Enterprise API and SparkPost Labs.

```
ANYMAIL = {
    ...
    "SPARKPOST_API_URL": "https://api.eu.sparkpost.com/api/v1",  # use␣
→SparkPost EU
}
```

You must specify the full, versioned API endpoint as shown above (not just the base_uri).

SPARKPOST_TRACK_INITIAL_OPEN_AS_OPENED

Added in version 8.1.

Boolean, default `False`. When using Anymail's tracking webhooks, whether to report SparkPost's "Initial Open" event as an Anymail normalized "opened" event. (SparkPost's "Open" event is always normalized to Anymail's "opened" event. See *Status tracking webhooks* below.)

esp_extra support

To use SparkPost features not directly supported by Anymail, you can set a message's `esp_extra` to a `dict` of transmissions API request body data. Anymail will deeply merge your overrides into the normal API payload it has constructed, with esp_extra taking precedence in conflicts.

Example (you probably wouldn't combine all of these options at once):

```python
message.esp_extra = {
    "options": {
        # Treat as transactional for unsubscribe and suppression:
        "transactional": True,
        # Override your default dedicated IP pool:
        "ip_pool": "transactional_pool",
    },
    # Add a description:
    "description": "Test-run for new templates",
    "content": {
        # Use draft rather than published template:
        "use_draft_template": True,
        # Use an A/B test:
        "ab_test_id": "highlight_support_links",
    },
    # Use a stored recipients list (overrides message to/cc/bcc):
    "recipients": {
        "list_id": "design_team"
    },
}
```

Note that including `"recipients"` in esp_extra will *completely* override the recipients list Anymail generates from your message's to/cc/bcc fields, along with any per-recipient `merge_data` and `merge_metadata`.

(You can also set `"esp_extra"` in Anymail's *global send defaults* to apply it to all messages.)

Limitations and quirks

Anymail's `message_id` is SparkPost's `transmission_id`

The `message_id` Anymail sets on a message's `anymail_status` and in normalized webhook `AnymailTrackingEvent` data is actually what SparkPost calls "transmission_id".

Like Anymail's message_id for other ESPs, SparkPost's transmission_id (together with the recipient email address), uniquely identifies a particular message instance in tracking events.

(The transmission_id is the only unique identifier available when you send your message. SparkPost also has something called "message_id", but that doesn't get assigned until after the send API call has completed.)

If you are working exclusively with Anymail's normalized message status and webhook events, the distinction won't matter: you can consistently use Anymail's `message_id`. But if you are also working with raw webhook esp_event data or SparkPost's events API, be sure to think "transmission_id" wherever you're speaking to SparkPost.

Single tag

Anymail uses SparkPost's "campaign_id" to implement message tagging. SparkPost only allows a single campaign_id per message. If your message has two or more `tags`, you'll get an `AnymailUnsupportedFeature` error—or if you've enabled `ANYMAIL_IGNORE_UNSUPPORTED_FEATURES`, Anymail will use only the first tag.

(SparkPost's "recipient tags" are not available for tagging *messages*. They're associated with individual *addresses* in stored recipient lists.)

AMP for Email

SparkPost supports sending AMPHTML email content. To include it, use `message.attach_alternative(".`
`..AMPHTML content...", "text/x-amp-html")` (and be sure to also include regular HTML and/or text bodies, too).

Added in version 8.0.

Envelope sender may use domain only

Anymail's `envelope_sender` is used to populate SparkPost's `'return_path'` parameter. Anymail supplies the full email address, but depending on your SparkPost configuration, SparkPost may use only the domain portion and substitute its own encoded mailbox before the @.

Multiple from_email addresses

Prior to November, 2020, SparkPost supporting sending messages with multiple *From* addresses. (This is technically allowed by email specs, but many ISPs bounce such messages.) Anymail v8.1 and earlier will pass multiple `from_email` addresses to SparkPost's API.

SparkPost has since dropped support for more than one from address, and now issues error code 7001 "No sending domain specified". To avoid confusion, Anymail v8.2 treats multiple from addresses as an unsupported feature in the SparkPost backend.

Changed in version 8.2.

Batch sending/merge and ESP templates

SparkPost offers both *ESP stored templates* and *batch sending* with per-recipient merge data.

You can use a SparkPost stored template by setting a message's `template_id` to the template's unique id. (When using a stored template, SparkPost prohibits setting the EmailMessage's subject, text body, or html body.)

Alternatively, you can refer to merge fields directly in an EmailMessage's subject, body, and other fields—the message itself is used as an on-the-fly template.

In either case, supply the merge data values with Anymail's normalized *merge_data* and *merge_global_data* message attributes.

```python
message = EmailMessage(
    ...
    to=["alice@example.com", "Bob <bob@example.com>"]
)
message.template_id = "11806290401558530"  # SparkPost id
message.merge_data = {
    'alice@example.com': {'name': "Alice", 'order_no': "12345"},
    'bob@example.com': {'name': "Bob", 'order_no': "54321"},
}
message.merge_global_data = {
    'ship_date': "May 15",
    # Can use SparkPost's special "dynamic" keys for nested substitutions (see
↪notes):
    'dynamic_html': {
        'status_html': "<a href='https://example.com/order/{{order_no}}'>Status
↪</a>",
    },
    'dynamic_plain': {
        'status_plain': "Status: https://example.com/order/{{order_no}}",
    },
}
```

See SparkPost's substitutions reference for more information on templates and batch send with SparkPost. If you need the special "dynamic" keys for nested substitutions, provide them in Anymail's `merge_global_data` as shown in the example above. And if you want `use_draft_template` behavior, specify that in *esp_extra*.

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, set up the webhook in your SparkPost configuration under "Webhooks":

- Target URL: `https://yoursite.example.com/anymail/sparkpost/tracking/`

- Authentication: choose "Basic Auth." For username and password enter the two halves of the *random:random* shared secret you created for your `ANYMAIL_WEBHOOK_SECRET` Django setting. (Anymail doesn't support OAuth webhook auth.)

- Events: you can leave "All events" selected, or choose "Select individual events" to pick the specific events you're interested in tracking.

SparkPost will report these Anymail `event_type`s: queued, rejected, bounced, deferred, delivered, opened, clicked, complained, unsubscribed, subscribed.

By default, Anymail reports SparkPost's "Open"—but *not* its "Initial Open"—event as Anymail's normalized "opened" `event_type`. This avoids duplicate "opened" events when both SparkPost types are enabled.

Added in version 8.1: To receive SparkPost "Initial Open" events as Anymail's "opened", set `"SPARKPOST_TRACK_INITIAL_OPEN_AS_OPENED": True` in your ANYMAIL settings dict. You will probably want to disable SparkPost "Open" events when using this setting.

Changed in version 8.1: SparkPost's "AMP Click" and "AMP Open" are reported as Anymail's "clicked" and "opened" events. If you enable the SPARKPOST_TRACK_INITIAL_OPEN_AS_OPENED setting, "AMP Initial Open" will also map to "opened." (Earlier Anymail releases reported all AMP events as "unknown".)

The event's `esp_event` field will be a single, raw SparkPost event. (Although SparkPost calls webhooks with batches of events, Anymail will invoke your signal receiver separately for each event in the batch.) The esp_event is the raw, wrapped json event structure as provided by SparkPost: `{'msys': {'<event_category>': {...<actual event data>...}}}`.

Inbound webhook

If you want to receive email from SparkPost through Anymail's normalized *inbound* handling, follow SparkPost's Enabling Inbound Email Relaying guide to set up Anymail's inbound webhook.

The target parameter for the Relay Webhook will be:

> `https://random:random@yoursite.example.com/anymail/sparkpost/inbound/`
>
> - *random:random* is an `ANYMAIL_WEBHOOK_SECRET` shared secret
> - *yoursite.example.com* is your Django site

1.5.12 Unisender Go

Anymail supports sending email from Django through the Unisender Go email service, using their Web API v1.

Settings

EMAIL_BACKEND

To use Anymail's Unisender Go backend, set:

```
EMAIL_BACKEND = "anymail.backends.unisender_go.EmailBackend"
```

in your settings.py.

UNISENDER_GO_API_KEY, UNISENDER_GO_API_URL

Required—the API key and API endpoint for your Unisender Go account or project:

```
ANYMAIL = {
    "UNISENDER_GO_API_KEY": "<your API key>",
    # Pick ONE of these, depending on your account (go1 vs. go2):
    "UNISENDER_GO_API_URL": "https://go1.unisender.ru/ru/transactional/api/v1/
↪",
    "UNISENDER_GO_API_URL": "https://go2.unisender.ru/ru/transactional/api/v1/
↪",
}
```

Get the API key from Unisender Go's dashboard under Account > Security > API key (> > API-). Or for a project-level API key, under Settings > Projects (>).

The correct API URL depends on which Unisender Go data center registered your account. You must specify the full, versioned Unisender Go API endpoint as shown above (not just the base uri).

If trying to send mail raises an API Error "User with id ... not found" (code 114), the likely cause is using the wrong API URL for your account. (To find which server handles your account, log into Unisender Go's dashboard and then check hostname in your browser's URL.)

Anymail will also look for `UNISENDER_GO_API_KEY` at the root of the settings file if neither `ANYMAIL["UNISENDER_GO_API_KEY"]` nor `ANYMAIL_UNISENDER_GO_API_KEY` is set.

UNISENDER_GO_GENERATE_MESSAGE_ID

Whether Anymail should generate a separate UUID for each recipient when sending messages through Unisender Go, to facilitate status tracking. The UUIDs are attached to the message as recipient metadata named "anymail_id" and available in `anymail_status.recipients[recipient_email].message_id` on the message after it is sent.

Default `True`. You can set to `False` to disable generating UUIDs:

```
ANYMAIL = {
    ...
    "UNISENDER_GO_GENERATE_MESSAGE_ID": False
}
```

When disabled, each sent message will use Unisender Go's "job_id" as the (single) `message_id` for all recipients. (The job_id alone may be sufficient for your tracking needs, particularly if you only send to one recipient per message.)

Additional sending options and esp_extra

Unisender Go offers a number of additional options you may want to use when sending a message. You can set these for individual messages using Anymail's `esp_extra`. See the full list of options in Unisender Go's email/send.json API documentation.

For example:

```
message = EmailMessage(...)
message.esp_extra = {
    "global_language": "en",  # Use English text for unsubscribe link
    "bypass_global": 1,  # Ignore system level blocked address list
    "bypass_unavailable": 1,  # Ignore account level blocked address list
    "options": {
        # Custom unsubscribe link (can use merge_data {{substitutions}}):
        "unsubscribe_url": "https://example.com/unsub?u={{subscription_id}}",
        "custom_backend_id": 22,  # ID of dedicated IP address
    }
}
```

(Note that you do *not* include the API's root level `"message"` key in `esp_extra`, but you must include any nested keys—like `"options"` in the example above—to match Unisender Go's API structure.)

To set default `esp_extra` options for all messages, use Anymail's *global send defaults* in your settings.py. Example:

```
ANYMAIL = {
    ...,
    "UNISENDER_GO_SEND_DEFAULTS": {
        "esp_extra": {
            # Omit the unsubscribe link for all sent messages:
            "skip_unsubscribe": 1
        }
    }
}
```

Any options set in an individual message's `esp_extra` take precedence over the global send defaults.

For many of these additional options, you will need to contact Unisender Go tech support for approval before being able to use them.

Limitations and quirks

Attachment filename restrictions
> Unisender Go does not permit the slash character (/) in attachment filenames. Trying to send one will result in an *AnymailAPIError*.

Restrictions on to, cc and bcc
> For non-batch sends, Unisender Go has a limit of 10 recipients each for `to`, `cc` and `bcc`. Unisender Go does not support cc-only or bcc-only messages. All bcc recipients must be in a domain you have verified with Unisender Go.
>
> For *batch sending* (with Anymail's `merge_data` or `merge_metadata`), Unisender Go has a limit of 500 `to` recipients in a single message.
>
> Unisender Go's API does not support `cc` with batch sending. Trying to include cc recipients in a batch send will raise an *AnymailUnsupportedFeature* error. (If you've enabled *ANYMAIL_IGNORE_UNSUPPORTED_FEATURES*, Anymail will handle `cc` in a Unisender Go batch send as additional `to` recipients.)
>
> With batch sending, Unisender Go effectively treats `bcc` recipients as additional `to` recipients, which may not behave as you'd expect. Each bcc in a batch send will be sent a *single* copy of the message, with the bcc's email in the *To* header, and personalized using `merge_data` for their own email address, if any. (Unlike some other ESPs, bcc recipients in a batch send *won't* receive a separate copy of the message personalized for each `to` email.)

AMP for Email
> Unisender Go supports sending AMPHTML email content. To include it, use `message.attach_alternative("...AMPHTML content...", "text/x-amp-html")` (and be sure to also include regular HTML and text bodies, too).

Use metadata for campaign_id
> If you want to use Unisender Go's `campaign_id`, set it in Anymail's *metadata*.

Duplicate emails ignored
> Unisender Go only allows an email address to be included once in a message's combined `to`, `cc` and `bcc` lists. If the same email appears multiple times, the additional instances are ignored. (Unisender Go reports them as duplicates, but Anymail does not treat this as an error.)
>
> Note that email addresses are case-insensitive.

Anymail's message_id is passed in recipient metadata
> By default, Anymail generates a unique identifier for each `to` recipient in a message, and (effectively) adds this to the recipients' *merge_metadata* with the key `"anymail_id"`.

> This feature consumes one of Unisender Go's 10 available metadata slots. To disable it, see the *UNISENDER_GO_GENERATE_MESSAGE_ID* setting.

Recipient display names are set in merge_data
> To include a display name ("friendly name") with a `to` email address, Unisender Go's Web API uses an entry in their per-recipient template "substitutions," which are also used for Anymail's *merge_data*.
>
> To avoid conflicts, do not use `"to_name"` as a key in *merge_data* or *merge_global_data*.

No envelope sender overrides
> Unisender Go does not support overriding a message's *envelope_sender*.

Batch sending/merge and ESP templates

Unisender Go supports *ESP stored templates*, on-the-fly templating, and *batch sending* with per-recipient merge data substitutions.

To send using a template you have created in your Unisender Go account, set the message's *template_id* to the template's ID. (This is a UUID found at the top of the template's "Properties" page—*not* the template name.)

To supply template substitution data, use Anymail's normalized *merge_data* and *merge_global_data* message attributes. You can also use *merge_metadata* to supply custom tracking data for each recipient.

Here is an example using a template that has slots for `{{name}}`, `{{order_no}}`, and `{{ship_date}}` substitution data:

```python
message = EmailMessage(
    to=["alice@example.com", "Bob <bob@example.com>"],
)
message.from_email = None  # Use template From email and name
message.template_id = "0000aaaa-1111-2222-3333-4444bbbbcccc"
message.merge_data = {
    "alice@example.com": {"name": "Alice", "order_no": "12345"},
    "bob@example.com": {"name": "Bob", "order_no": "54321"},
}
message.merge_global_data = {
    "ship_date": "15-May",
}
message.send()
```

Any `subject` provided will override the one defined in the template. The message's `from_email` (which defaults to your `DEFAULT_FROM_EMAIL` setting) will override the template's default sender. If you want to use the *From* email and name defined with the template, be sure to set `from_email` to None *after* creating the message, as shown above.

Unisender Go also supports inline, on-the-fly templates. Here is the same example using inline templates:

```python
message = EmailMessage(
    from_email="shipping@example.com",
    to=["alice@example.com", "Bob <bob@example.com>"],
    # Use {{substitution}} variables in subject and body:
    subject="Your order {{order_no}} has shipped",
    body="""Hi {{name}},
            We shipped your order {{order_no}}
            on {{ship_date}}.""",
)
# (You'd probably also want to add an HTML body here.)
```

```
# The substitution data is exactly the same as in the previous example:
message.merge_data = {
    "alice@example.com": {"name": "Alice", "order_no": "12345"},
    "bob@example.com": {"name": "Bob", "order_no": "54321"},
}
message.merge_global_data = {
    "ship_date": "May 15",
}
message.send()
```

Note that Unisender Go doesn't allow whitespace in the substitution braces: {{order_no}} works, but {{ order_no }} causes an error.

There are two available Unisender Go template engines: "simple" and "velocity." For templates stored in your account, you select the engine in the template's properties. Inline templates use the simple engine by default; you can select "velocity" using *esp_extra*:

```
message.esp_extra = {
    "template_engine": "velocity",
}
message.subject = "Your order $order_no has shipped"  # Velocity syntax
```

When you set per-recipient `merge_data` or `merge_metadata`, Anymail will use *batch sending* mode so that each `to` recipient sees only their own email address. You can set either of these attributes to an empty dict (`message.merge_data = {}`) to force batch sending for a message that wouldn't otherwise use it.

Be sure to review the *restrictions above* before trying to use `cc` or `bcc` with Unisender Go batch sending.

Status tracking webhooks

If you are using Anymail's normalized *status tracking*, add the url in Unisender Go's dashboard. Where to set the webhook depends on where you got your `UNISENDER_GO_API_KEY`:

- If you are using an account-level API key, configure the webhook under Settings > Webhooks (>).

- If you are using a project-level API key, configure the webhook under Settings > Projects (>).

(If you try to mix account-level and project-level API keys and webhooks, webhook signature validation will fail, and you'll get `AnymailWebhookValidationFailure` errors.)

Enter these settings for the webhook:

- **Notification Url:**

    `https://`*yoursite.example.com*`/anymail/unisender_go/tracking/`

    where *yoursite.example.com* is your Django site.

- **Status:** set to "Active" if you have already deployed your Django project with Anymail installed. Otherwise set to "Inactive" and update after you deploy.

    (Unisender Go performs a GET request to verify the webhook URL when it is marked active.)

- **Event format:** "json_post"

    (If your gateway handles decompressing incoming request bodies—e.g., Apache with a mod_deflate *input* filter—you could also use "json_post_compressed." Most web servers do not handle compressed input by default.)

- **Events:** your choice. Anymail supports any combination of `sent`, `delivered`, `soft_bounced`, `hard_bounced`, `opened`, `clicked`, `unsubscribed`, `subscribed`, `spam`.

  Anymail does not support Unisender Go's `spam_block` events (but will ignore them if you accidentally include it).

- **Number of simultaneous requests:** depends on your web server's capacity

  Most deployments should be able to handle the default 10. But you may need to use a smaller number if your tracking signal receiver uses a lot of resources (or monopolizes your database), or if your web server isn't configured to handle that many simultaneous requests (including requests from your site users).

- **Use single event:** the default "No" is recommended

  Anymail can process multiple events in a single webhook call. It invokes your signal receiver separately for each event. But all of the events in the call (up to 100 when set to "No") must be handled within 3 seconds total, or Unisender Go will think the request failed and resend it.

  If your tracking signal receiver takes a long time to process each event, you may need to change "Use single event" to "Yes" (one event per webhook call).

- **Additional information about delivery:** "Yes" is recommended

  (If you set this to "No", your tracking events won't include `mta_response`, `user_agent` or `click_url`.)

Note that Unisender Go does not deliver tracking events for recipient addresses that are blocked at send time. You must check the message's `anymail_status.recipients[recipient_email].message_id` immediately after sending to detect rejected recipients.

Unisender Go implements webhook signing on the entire event payload, and Anymail verifies this signature using your `UNISENDER_GO_API_KEY`. It is not necessary to use an `ANYMAIL_WEBHOOK_SECRET` with Unisender Go, but if you have set one, you must include the *random:random* shared secret in the Notification URL like this:

> `https://random:random@yoursite.example.com/anymail/unisender_go/tracking/`

In your tracking signal receiver, the event's `esp_event` field will be the `"event_data"` object from a single, raw "transactional_email_status" event. For example, you could get the IP address that opened a message using `event.esp_event["delivery_info"]["ip"]`.

(Anymail does not handle Unisender Go's "transactional_spam_block" events, and will filter these without calling your tracking signal handler.)

Inbound webhook

Unisender Go does not currently offer inbound email.

(If this changes in the future, please open an issue so we can add support in Anymail.)

1.5.13 Anymail feature support

The table below summarizes the Anymail features supported for each ESP. (Scroll it to the left and right to see all ESPs.)

Email Service Provider	Amazon SES	Brevo	MailerSend	Mailgun	Mailjet	Mandrill	Postal	Postmark	Resend	SendGrid	SparkPost	Unisender Go
Anymail send options												
`envelope_sender`	Yes	No	No	Domain only	Yes	Domain only	Yes	No	No	No	Yes	No
`metadata`	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
`merge_metadata`	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
`send_at`	No	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes
`tags`	Yes	Yes	Yes	Yes	Max 1 tag	Yes	Max 1 tag	Max 1 tag	Yes	Yes	Max 1 tag	Yes
`track_clicks`	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
`track_opens`	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
AMP Email	Yes	No	No	Yes	No	No	No	No	No	Yes	Yes	Yes
Batch sending/merge and ESP templates												
`template_id`	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
`merge_data`	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
`merge_global_data`	Yes	Yes	(emulated)	(emulated)	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Status and event tracking												
`anymail_status`	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
`AnymailTrackingEvent` from webhooks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inbound handling												
`AnymailInboundEvent` from webhooks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No

Trying to choose an ESP? Please **don't** start with this table. It's far more important to consider things like an ESP's deliverability stats, latency, uptime, and support for developers. The *number* of extra features an ESP offers is almost meaningless. (And even specific features don't matter if you don't plan to use them.)

1.5.14 Other ESPs

Don't see your favorite ESP here? Anymail is designed to be extensible. You can suggest that Anymail add an ESP, or even contribute your own implementation to Anymail. See *Contributing*.

1.6 Tips, tricks, and advanced usage

Some suggestions and recipes for getting things done with Anymail:

1.6.1 Handling transient errors

Applications using Anymail need to be prepared to deal with connectivity issues and other transient errors from your ESP's API (as with any networked API).

Because Django doesn't have a built-in way to say "try this again in a few moments," Anymail doesn't have its own logic to retry network errors. The best way to handle transient ESP errors depends on your Django project:

- If you already use something like celery or Django channels for background task scheduling, that's usually the best choice for handling Anymail sends. Queue a task for every send, and wait to mark the task complete until the send succeeds (or repeatedly fails, according to whatever logic makes sense for your app).

- Another option is the Pinax django-mailer package, which queues and automatically retries failed sends for any Django EmailBackend, including Anymail. django-mailer maintains its send queue in your regular Django DB, which is a simple way to get started but may not scale well for very large volumes of outbound email.

In addition to handling connectivity issues, either of these approaches also has the advantage of moving email sending to a background thread. This is a best practice for sending email from Django, as it allows your web views to respond faster.

Automatic retries

Backends that use requests for network calls can configure its built-in retry functionality. Subclass the Anymail backend and mount instances of `HTTPAdapter` and `Retry` configured with your settings on the `Session` object in `create_session()`.

Automatic retries aren't a substitute for sending emails in a background thread, they're a way to simplify your retry logic within the worker. Be aware that retrying `read` and `other` failures may result in sending duplicate emails. Requests will only attempt to retry idempotent HTTP verbs by default, you may need to whitelist the verbs used by your backend's API in `allowed_methods` to actually get any retries. It can also automatically retry error HTTP status codes for you but you may need to configure `status_forcelist` with the error HTTP status codes used by your backend provider.

```python
import anymail.backends.mandrill
from django.conf import settings
import requests.adapters


class RetryableMandrillEmailBackend(anymail.backends.mandrill.EmailBackend):
    def __init__(self, *args, **kwargs):
        super().__init__(*args, **kwargs)
        retry = requests.adapters.Retry(
            total=settings.EMAIL_TOTAL_RETRIES,
            connect=settings.EMAIL_CONNECT_RETRIES,
            read=settings.EMAIL_READ_RETRIES,
```

<div align="right">(continues on next page)</div>

```
            status=settings.EMAIL_HTTP_STATUS_RETRIES,
            other=settings.EMAIL_OTHER_RETRIES,
            allowed_methods=False,  # Retry all HTTP verbs
            status_forcelist=settings.EMAIL_HTTP_STATUS_RETRYABLE,
            backoff_factor=settings.EMAIL_RETRY_BACKOFF_FACTOR,
        )
        self.retryable_adapter = requests.adapters.HTTPAdapter(max_
↪retries=retry)

    def create_session(self):
        session = super().create_session()
        session.mount("https://", self.retryable_adapter)
        return session
```

1.6.2 Mixing email backends

Since you are replacing Django's global `EMAIL_BACKEND`, by default Anymail will handle **all** outgoing mail, sending everything through your ESP.

You can use Django mail's optional `connection` argument to send some mail through your ESP and others through a different system.

This could be useful, for example, to deliver customer emails with the ESP, but send admin emails directly through an SMTP server:

```python
from django.core.mail import send_mail, get_connection

# send_mail connection defaults to the settings EMAIL_BACKEND, which
# we've set to Anymail's Mailgun EmailBackend. This will be sent using Mailgun:
send_mail("Thanks", "We sent your order", "sales@example.com", ["customer@example.com"])

# Get a connection to an SMTP backend, and send using that instead:
smtp_backend = get_connection('django.core.mail.backends.smtp.EmailBackend')
send_mail("Uh-Oh", "Need your attention", "admin@example.com", ["alert@example.com"],
          connection=smtp_backend)

# You can even use multiple Anymail backends in the same app:
sendgrid_backend = get_connection('anymail.backends.sendgrid.EmailBackend')
send_mail("Password reset", "Here you go", "noreply@example.com", ["user@example.com"],
          connection=sendgrid_backend)

# You can override settings.py settings with kwargs to get_connection.
# This example supplies credentials for a different Mailgun sub-acccount:
alt_mailgun_backend = get_connection('anymail.backends.mailgun.EmailBackend',
                                     api_key=MAILGUN_API_KEY_FOR_MARKETING)
send_mail("Here's that info", "you wanted", "info@marketing.example.com", [
↪"prospect@example.org"],
          connection=alt_mailgun_backend)
```

You can supply a different connection to Django's `send_mail()` and `send_mass_mail()` helpers, and in the constructor for an `EmailMessage` or `EmailMultiAlternatives`.

(See the `django.utils.log.AdminEmailHandler` docs for more information on Django's admin error logging.)

You could expand on this concept and create your own EmailBackend that dynamically switches between other Anymail backends—based on properties of the message, or other criteria you set. For example, this gist shows an EmailBackend that checks ESPs' status-page APIs, and automatically falls back to a different ESP when the first one isn't working.

1.6.3 Using Django templates for email

ESP's templating languages and merge capabilities are generally not compatible with each other, which can make it hard to move email templates between them.

But since you're working in Django, you already have access to the extremely-full-featured Django templating system. You don't even have to use Django's template syntax: it supports other template languages (like Jinja2).

You're probably already using Django's templating system for your HTML pages, so it can be an easy decision to use it for your email, too.

To compose email using *Django* templates, you can use Django's `render_to_string()` template shortcut to build the body and html.

Example that builds an email from the templates `message_subject.txt`, `message_body.txt` and `message_body.html`:

```python
from django.core.mail import EmailMultiAlternatives
from django.template.loader import render_to_string

merge_data = {
    'ORDERNO': "12345", 'TRACKINGNO': "1Z987"
}

subject = render_to_string("message_subject.txt", merge_data).strip()
text_body = render_to_string("message_body.txt", merge_data)
html_body = render_to_string("message_body.html", merge_data)

msg = EmailMultiAlternatives(subject=subject, from_email="store@example.com",
                             to=["customer@example.com"], body=text_body)
msg.attach_alternative(html_body, "text/html")
msg.send()
```

Tip: use Django's `{% autoescape off %}` template tag in your plaintext `.txt` templates to avoid inappropriate HTML escaping.

Helpful add-ons

These (third-party) packages can be helpful for building your email in Django:

- django-templated-mail, django-mail-templated, or django-mail-templated-simple for building messages from sets of Django templates.
- premailer for inlining css before sending
- BeautifulSoup, lxml, or html2text for auto-generating plaintext from your html

1.6.4 Securing webhooks

If not used carefully, webhooks can create security vulnerabilities in your Django application.

At minimum, you should **use https** and a **shared authentication secret** for your Anymail webhooks. (Really, for *any* webhooks.)

Does this really matter?

Short answer: yes!

Do you allow unauthorized access to your APIs? Would you want someone eavesdropping on API calls? Of course not. Well, a webhook is just another API.

Think about the data your ESP sends and what your app does with it. If your webhooks aren't secured, an attacker could...

- accumulate a list of your customers' email addresses

- fake bounces and spam reports, so you block valid user emails

- see the full contents of email from your users

- convincingly forge incoming mail, tricking your app into publishing spam or acting on falsified commands

- overwhelm your DB with garbage data (do you store tracking info? incoming attachments?)

... or worse. Why take a chance?

Use https

For security, your Django site must use https. The webhook URLs you give your ESP need to start with *https* (not *http*).

Without https, the data your ESP sends your webhooks is exposed in transit. This can include your customers' email addresses, the contents of messages you receive through your ESP, the shared secret used to authorize calls to your webhooks (described in the next section), and other data you'd probably like to keep private.

Configuring https is beyond the scope of Anymail, but there are many good tutorials on the web. If you've previously dismissed https as too expensive or too complicated, please take another look. Free https certificates are available from Let's Encrypt, and many hosting providers now offer easy https configuration using Let's Encrypt or their own no-cost option.

If you aren't able to use https on your Django site, then you should not set up your ESP's webhooks.

Use a shared authentication secret

A webhook is an ordinary URL—anyone can post anything to it. To avoid receiving random (or malicious) data in your webhook, you should use a shared random secret that your ESP can present with webhook data, to prove the post is coming from your ESP.

Most ESPs recommend using HTTP basic authentication as this shared secret. Anymail includes support for this, via the `ANYMAIL_WEBHOOK_SECRET` setting. Basic usage is covered in the *webhooks configuration* docs.

If something posts to your webhooks without the required shared secret as basic auth in the HTTP *Authorization* header, Anymail will raise an `AnymailWebhookValidationFailure` error, which is a subclass of Django's `SuspiciousOperation`. This will result in an HTTP 400 "bad request" response, without further processing the data or calling your signal receiver function.

In addition to a single "random:random" string, you can give a list of authentication strings. Anymail will permit webhook calls that match any of the authentication strings:

```
ANYMAIL = {
    ...
    'WEBHOOK_SECRET': [
        'abcdefghijklmnop:qrstuvwxyz0123456789',
        'ZYXWVUTSRQPONMLK:JIHGFEDCBA9876543210',
    ],
}
```

This facilitates credential rotation: first, append a new authentication string to the list, and deploy your Django site. Then, update the webhook URLs at your ESP to use the new authentication. Finally, remove the old (now unused) authentication string from the list and re-deploy.

> **Warning:** If your webhook URLs don't use https, this shared authentication secret won't stay secret, defeating its purpose.

Signed webhooks

Some ESPs implement webhook signing, which is another method of verifying the webhook data came from your ESP. Anymail will verify these signatures for ESPs that support them. See the docs for your *specific ESP* for more details and configuration that may be required.

Even with signed webhooks, it doesn't hurt to also use a shared secret.

Additional steps

Webhooks aren't unique to Anymail or to ESPs. They're used for many different types of inter-site communication, and you can find additional recommendations for improving webhook security on the web.

For example, you might consider:

- Tracking `event_id`, to avoid accidental double-processing of the same events (or replay attacks)

- Checking the webhook's `timestamp` is reasonably close the current time

- Configuring your firewall to reject webhook calls that come from somewhere other than your ESP's documented IP addresses (if your ESP provides this information)

- Rate-limiting webhook calls in your web server or using something like django-ratelimit

But you should start with using https and a random shared secret via HTTP auth.

1.6.5 Testing your app

Testing sending mail

Django's documentation covers the basics of testing email sending in Django. Everything in their examples will work with projects using Anymail.

Django's test runner makes sure your test cases don't actually send email, by loading a dummy "locmem" EmailBackend that accumulates messages in memory rather than sending them. You may not need anything more complicated for verifying your app.

Anymail also includes its own "test" EmailBackend. This is intended primarily for Anymail's internal testing, but you may find it useful for some of your test cases, too:

- Like Django's locmem EmailBackend, Anymail's test EmailBackend collects sent messages in `django.core.mail.outbox`. Django clears the outbox automatically between test cases.

- Unlike the locmem backend, Anymail's test backend processes the messages as though they would be sent by a generic ESP. This means every sent EmailMessage will end up with an `anymail_status` attribute after sending, and some common problems like malformed addresses may be detected. (But no ESP-specific checks are run.)

- Anymail's test backend also adds an `anymail_test_params` attribute to each EmailMessage as it sends it. This is a dict of the actual params that would be used to send the message, including both Anymail-specific attributes from the EmailMessage and options that would come from Anymail settings defaults.

Here's an example:

```python
from django.core import mail
from django.test import TestCase
from django.test.utils import override_settings


@override_settings(EMAIL_BACKEND='anymail.backends.test.EmailBackend')
class SignupTestCase(TestCase):
    # Assume our app has a signup view that accepts an email address...
    def test_sends_confirmation_email(self):
        self.client.post("/account/signup/", {"email": "user@example.com"})

        # Test that one message was sent:
        self.assertEqual(len(mail.outbox), 1)

        # Verify attributes of the EmailMessage that was sent:
        self.assertEqual(mail.outbox[0].to, ["user@example.com"])
        self.assertEqual(mail.outbox[0].tags, ["confirmation"])  # an Anymail custom attr

        # Or verify the Anymail params, including any merged settings defaults:
        self.assertTrue(mail.outbox[0].anymail_test_params["track_clicks"])
```

Note that `django.core.mail.outbox` is an "outbox," not an attempt to represent end users' *inboxes*. When using Django's default locmem EmailBackend, each outbox item represents a single call to an SMTP server. With Anymail's test EmailBackend, each outbox item represents a single call to an ESP's send API. (Anymail does not try to simulate how an ESP might further process the message for that API call: Anymail can't render *ESP stored templates*, and it keeps a *batch send* message as a single outbox item, representing the single ESP API call that will send multiple messages. You can check `outbox[n].anymail_test_params['is_batch_send']` to see if a message would fall under Anymail's batch send logic.)

Testing tracking webhooks

If you are using Anymail's *event tracking webhooks*, you'll likely want to test your signal receiver code that processes those events.

One easy approach is to create a simulated *AnymailTrackingEvent* in your test case, then call `anymail.signals.tracking.send()` to deliver it to your receiver function(s). Here's an example:

```python
from anymail.signals import AnymailTrackingEvent, tracking
from django.test import TestCase
```

```python
class EmailTrackingTests(TestCase):
    def test_delivered_event(self):
        # Build an AnymailTrackingEvent with event_type (required)
        # and any other attributes your receiver cares about. E.g.:
        event = AnymailTrackingEvent(
            event_type="delivered",
            recipient="to@example.com",
            message_id="test-message-id",
        )

        # Invoke all registered Anymail tracking signal receivers:
        tracking.send(sender=object(), event=event, esp_name="TestESP")

        # Verify expected behavior of your receiver. What to test here
        # depends on how your code handles the tracking events. E.g., if
        # you create a Django model to store the event, you might check:
        from myapp.models import MyTrackingModel
        self.assertTrue(MyTrackingModel.objects.filter(
            email="to@example.com", event="delivered",
            message_id="test-message-id",
        ).exists())

    def test_bounced_event(self):
        # ... as above, but with `event_type="bounced"`
        # etc.
```

This example uses Django's `Signal.send`, so the test also verifies your receiver was registered properly, and it will call multiple receiver functions if your code uses them.

Your test cases could instead import your tracking receiver function and call it directly with the simulated event data. (Either approach is effective, and which to use is largely a matter of personal taste.)

Testing receiving mail

If your project handles *receiving inbound mail*, you can test that with an approach similar to the one used for event tracking webhooks above.

First build a simulated *AnymailInboundEvent* containing a simulated *AnymailInboundMessage*. Then dispatch to your inbound receiver function(s) with `anymail.signals.inbound.send()`. Like this:

```python
from anymail.inbound import AnymailInboundMessage
from anymail.signals import AnymailInboundEvent, inbound
from django.test import TestCase

class EmailReceivingTests(TestCase):
    def test_inbound_event(self):
        # Build a simple AnymailInboundMessage and AnymailInboundEvent
        # (see tips for more complex messages after the example):
        message = AnymailInboundMessage.construct(
            from_email="user@example.com", to="comments@example.net",
            subject="subject", text="text body", html="html body")
        event = AnymailInboundEvent(message=message)
```

```python
        # Invoke all registered Anymail inbound signal receivers:
        inbound.send(sender=object(), event=event, esp_name="TestESP")

        # Verify expected behavior of your receiver. What to test here
        # depends on how your code handles the inbound message. E.g., if
        # you create a user comment from the message, you might check:
        from myapp.models import MyCommentModel
        comment = MyCommentModel.objects.get(poster="user@example.com")
        self.assertEqual(comment.text, "text body")
```

For examples of various ways to build an *AnymailInboundMessage*, set headers, add attachments, etc., see test_inbound.py in Anymail's tests. In particular, you may find `AnymailInboundMessage.parse_raw_mime(str)` or `AnymailInboundMessage.parse_raw_mime_file(fp)` useful for loading complex, real-world email messages into test cases.

1.6.6 Batch send performance

If you are sending batches of hundreds of emails at a time, you can improve performance slightly by reusing a single HTTP connection to your ESP's API, rather than creating (and tearing down) a new connection for each message.

Most Anymail EmailBackends automatically reuse their HTTP connections when used with Django's batch-sending functions `send_mass_mail()` or `connection.send_messages()`. See Sending multiple emails in the Django docs for more info and an example.

If you need even more performance, you may want to consider your ESP's batch-sending features. When supported by your ESP, Anymail can send multiple messages with a single API call. See *Batch sending with merge data* for details, and be sure to check the *ESP-specific info* because batch sending capabilities vary significantly between ESPs.

1.7 Help

1.7.1 Getting support

Anymail is supported and maintained by the people who use it—like you! Our contributors volunteer their time (and most are not employees of any ESP).

Here's how to contact the Anymail community:

"How do I…?"

> If searching the docs doesn't find an answer, ask a question in the GitHub Anymail discussions forum.

"I'm getting an error or unexpected behavior…"

> First, try the *troubleshooting tips* in the next section. If those don't help, ask a question in the GitHub Anymail discussions forum. Be sure to include:
>
> - which ESP you're using (Mailgun, SendGrid, etc.)
>
> - what versions of Anymail, Django, and Python you're running
>
> - the relevant portions of your code and settings
>
> - the text of any error messages
>
> - any exception stack traces

- the results of your *troubleshooting* (e.g., any relevant info from your ESP's activity log)

- if it's something that was working before, when it last worked, and what (if anything) changed since then

... plus anything else you think might help someone understand what you're seeing.

"I found a bug..."

Open a GitHub issue. Be sure to include the versions and other information listed above. (And if you know what the problem is, we always welcome *contributions* with a fix!)

"I found a security issue!"

Contact the Anymail maintainers by emailing *security<at>anymail<dot>dev*. (Please don't open a GitHub issue or post publicly about potential security problems.)

"Could Anymail support this ESP or feature...?"

If the idea has already been suggested in the GitHub Anymail discussions forum, express your support using GitHub's thumbs up reaction. If not, add the idea as a new discussion topic. And either way, if you'd be able to help with development or testing, please add a comment saying so.

1.7.2 Troubleshooting

If Anymail's not behaving like you expect, these troubleshooting tips can often help you pinpoint the problem...

Check the error message

Look for an Anymail error message in your console (running Django in dev mode) or in your server error logs. If you see something like "invalid API key" or "invalid email address", that's often a big first step toward being able to solve the problem.

Check your ESPs API logs

Most ESPs offer some sort of API activity log in their dashboards. Check their logs to see if the data you thought you were sending actually made it to your ESP, and if they recorded any errors there.

Double-check common issues

- Did you add any required settings for your ESP to the `ANYMAIL` dict in your settings.py? (E.g., `"SENDGRID_API_KEY"` for SendGrid.) Check the instructions for the ESP you're using under *Supported ESPs*.

- Did you add `'anymail'` to the list of `INSTALLED_APPS` in settings.py?

- Are you using a valid *from* address? Django's default is "webmaster@localhost", which most ESPs reject. Either specify the `from_email` explicitly on every message you send, or add `DEFAULT_FROM_EMAIL` to your settings.py.

Try it without Anymail

If you think Anymail might be causing the problem, try switching your `EMAIL_BACKEND` setting to Django's File backend and then running your email-sending code again. If that causes errors, you'll know the issue is somewhere other than Anymail. And you can look through the `EMAIL_FILE_PATH` file contents afterward to see if you're generating the email you want.

Examine the raw API communication

Sometimes you just want to see exactly what Anymail is telling your ESP to do and how your ESP is responding. In a dev environment, enable the Anymail setting *DEBUG_API_REQUESTS* to show the raw HTTP requests and responses from (most) ESP APIs. (This is not recommended in production, as it can leak sensitive data into your logs.)

1.8 Contributing

Anymail is maintained by its users. Your contributions are encouraged!

The Anymail source code is on GitHub.

1.8.1 Contributors

See the contributor chart for a list of some of the people who have helped improve Anymail.

Anymail evolved from the Djrill project. Special thanks to the folks from brack3t who developed the original version of Djrill.

1.8.2 Bugs

You can report problems or request features in Anymail's GitHub issue tracker. (For a security-related issue that should not be disclosed publicly, instead email Anymail's maintainers at *security<at>anymail<dot>dev*.)

We also have some *Troubleshooting* information that may be helpful.

1.8.3 Pull requests

Pull requests are always welcome to fix bugs and improve support for ESP and Django features.

- Please include test cases.
- We try to follow the Django coding style.
- If you install pre-commit, most of the style guidelines will be handled automatically.
- By submitting a pull request, you're agreeing to release your changes under under the same BSD license as the rest of this project.
- Documentation is appreciated, but not required. (Please don't let missing or incomplete documentation keep you from contributing code.)

1.8.4 Testing

Anymail is tested via GitHub Actions against several combinations of Django and Python versions. Tests are run at least once a week, to check whether ESP APIs and other dependencies have changed out from under Anymail.

To run the tests locally, use tox:

```
## install tox and other development requirements:
$ python -m pip install -r requirements-dev.txt

## test a representative combination of Python and Django versions:
$ tox -e lint,django42-py311-all,django30-py37-all,docs

## you can also run just some test cases, e.g.:
$ tox -e django42-py311-all tests.test_mailgun_backend tests.test_utils

## to test more Python/Django versions:
$ tox --parallel auto  # ALL 20+ envs! (in parallel if possible)
```

(If your system doesn't come with the necessary Python versions, pyenv is helpful to install and manage them. Or use the `--skip-missing-interpreters` tox option.)

If you don't want to use tox (or have trouble getting it working), you can run the tests in your current Python environment:

```
## install the testing requirements (if any):
$ python -m pip install -r tests/requirements.txt

## run the tests:
$ python runtests.py

## this command can also run just a few test cases, e.g.:
$ python runtests.py tests.test_mailgun_backend tests.test_mailgun_webhooks
```

Most of the included tests verify that Anymail constructs the expected ESP API calls, without actually calling the ESP's API or sending any email. (So these tests don't require any API keys.)

In addition to the mocked tests, Anymail has integration tests which *do* call live ESP APIs. These tests are normally skipped; to run them, set environment variables with the necessary API keys or other settings. For example:

```
$ export ANYMAIL_TEST_MAILGUN_API_KEY='your-Mailgun-API-key'
$ export ANYMAIL_TEST_MAILGUN_DOMAIN='mail.example.com'  # sending domain for
↪that API key
$ tox -e django42-py311-all tests.test_mailgun_integration
```

Check the `*_integration_tests.py` files in the tests source to see which variables are required for each ESP. Depending on the supported features, the integration tests for a particular ESP send around 5-15 individual messages. For ESPs that don't offer a sandbox, these will be real sends charged to your account (again, see the notes in each test case). Be sure to specify a particular testenv with tox's `-e` option, or tox will repeat the tests for all 20+ supported combinations of Python and Django, sending hundreds of messages.

1.8.5 Documentation

As noted above, Anymail welcomes pull requests with missing or incomplete documentation. (Code without docs is better than no contribution at all.) But documentation—even needing edits—is always appreciated, as are pull requests simply to improve the docs themselves.

Like many Python packages, Anymail's docs use Sphinx. If you've never worked with Sphinx or reStructuredText, Django's Writing Documentation can get you started.

It's easiest to build Anymail's docs using tox:

```
$ python -m pip install -r requirements-dev.txt
$ tox -e docs  # build the docs using Sphinx
```

You can run Python's simple HTTP server to view them:

```
$ (cd .tox/docs/_html; python -m http.server 8123 --bind 127.0.0.1)
```

… and then open http://localhost:8123/ in a browser. Leave the server running, and just re-run the tox command and refresh your browser as you make changes.

If you've edited the main README.rst, you can preview an approximation of what will end up on PyPI at http://localhost:8123/readme.html.

Anymail's Sphinx conf sets up a few enhancements you can use in the docs:

- Loads intersphinx mappings for Python 3, Django (stable), and Requests. Docs can refer to things like `:ref:`django:topics-testing-email`` or `:class:`django.core.mail.EmailMessage``.

- Supports much of Django's added markup, notably `:setting:` for documenting or referencing Django and Anymail settings.

- Allows linking to Python packages with `:pypi:`package-name`` (via extlinks).

1.9 Changelog

Anymail releases follow semantic versioning. Among other things, this means that minor updates (1.x to 1.y) should always be backwards-compatible, and breaking changes will always increment the major version number (1.x to 2.0).

1.9.1 Release history

vNext

Unreleased changes

Breaking changes

- **Amazon SES:** Drop support for the Amazon SES v1 API. If your `EMAIL_BACKEND` setting uses `amazon_sesv1`, or if you are upgrading from Anymail 9.x or earlier directly to 11.0 or later, see Migrating to the SES v2 API. (Anymail 10.0 switched to the SES v2 API by default. If your `EMAIL_BACKEND` setting has `amazon_sesv2`, change that to just `amazon_ses`.)

v10.3

2024-03-12

Features

- **Brevo:** Add support for batch sending (docs).

- **Resend:** Add support for batch sending (docs).

- **Unisender Go:** Newly supported ESP (docs). (Thanks to @Arondit for the implementation.)

Fixes

- **Mailgun:** Avoid an error when Mailgun posts null delivery-status to the event tracking webhook. (Thanks to @izimobil for the fix.)

Deprecations

- **Brevo (SendinBlue):** Rename "SendinBlue" to "Brevo" throughout Anymail's code, reflecting their rebranding. This affects the email backend path, settings names, and webhook URLs. The old names will continue to work for now, but are deprecated. See Updating code from SendinBlue to Brevo for details.

v10.2

2023-10-25

Features

- **Resend**: Add support for this ESP (docs).

Fixes

- Correctly merge global `SEND_DEFAULTS` with message `esp_extra` for ESP APIs that use a nested structure (including Mandrill and SparkPost). Clarify intent of global defaults merging code for other message properties. (Thanks to @mounirmesselmeni for reporting the issue.)

Other

- **Mailgun (docs):** Clarify account-level "Mailgun API keys" vs. domain-level "sending API keys." (Thanks to @sdarwin for reporting the issue.)
- Test against prerelease versions of Django 5.0 and Python 3.12.

v10.1

2023-07-31

Features

- **Inbound:** Improve `AnymailInboundMessage`'s handling of inline content:
  - Rename `inline_attachments` to `content_id_map`, more accurately reflecting its function.
  - Add new `inlines` property that provides a complete list of inline content, whether or not it includes a *Content-ID*. This is helpful for accessing inline images that appear directly in a *multipart/mixed* body, such as those created by the Apple Mail app.
  - Rename `is_inline_attachment()` to just `is_inline()`.

  The renamed items are still available, but deprecated, under their old names. See docs. (Thanks to @martine-zleoml.)

- **Inbound:** `AnymailInboundMessage` now derives from Python's `email.message.EmailMessage`, which provides improved compatibility with email standards. (Thanks to [@martinezleoml](#).)

- **Brevo (Sendinblue):** Sendinblue has rebranded to "Brevo." Change default API endpoint to `api.brevo.com`, and update docs to reflect new name. Anymail still uses `sendinblue` in the backend name, for settings, etc., so there should be no impact on your code. (Thanks to [@sblondon](#).)

- **Brevo (Sendinblue):** Add support for inbound email. (See [docs](#).)

- **SendGrid:** Support multiple `reply_to` addresses. (Thanks to [@gdvalderrama](#) for pointing out the new API.)

Deprecations

- **Inbound:** `AnymailInboundMessage.inline_attachments` and `.is_inline_attachment()` have been renamed—see above.

v10.0

2023-05-07

Breaking changes

- **Amazon SES:** The Amazon SES backend now sends using the SES v2 API. Most projects should not require code changes, but you may need to update your IAM permissions. See [Migrating to the SES v2 API](#).

  If you were using SES v2 under Anymail 9.1 or 9.2, change your `EMAIL_BACKEND` setting from `amazon_sesv2` to just `amazon_ses`.

  (If you are not ready to migrate to SES v2, an `amazon_sesv1` EmailBackend is available. But Anymail will drop support for that later this year. See [Using SES v1 (deprecated)](#).)

- **Amazon SES:** The "extra name" for installation must now be spelled with a hyphen rather than an underscore: `django-anymail[amazon-ses]`. Be sure to update any dependencies specification (pip install, requirements.txt, etc.) that had been using `[amazon_ses]`. (This change is due to package name normalization rules enforced by modern Python packaging tools.)

- **Mandrill:** Remove support for Mandrill-specific message attributes left over from Djrill. These attributes have raised DeprecationWarnings since Anymail 0.3 (in 2016), but are now silently ignored. See [Migrating from Djrill](#).

- Require Python 3.7 or later.

- Require urllib3 1.25 or later. (Drop a workaround for older urllib3 releases. urllib3 is a requests dependency; version 1.25 was released 2019-04-29. Unless you are pinning an earlier urllib3, this change should have no impact.)

Features

- **Postmark inbound:**

    - Handle Postmark's "Include raw email content in JSON payload" inbound option. We recommend enabling this in Postmark's dashboard to get the most accurate representation of received email.

    - Obtain `envelope_sender` from *Return-Path* Postmark now provides. (Replaces potentially faulty *Received-SPF* header parsing.)

    - Add *Bcc* header to inbound message if provided. Postmark adds bcc when the delivered-to address does not appear in the *To* header.

Other

- Modernize packaging. (Change from setup.py and setuptools to pyproject.toml and hatchling.) Other than the `amazon-ses` naming normalization noted above, the new packaging should have no impact. If you have trouble installing django-anymail v10 where v9 worked, please report an issue including the exact install command and pip version you are using.

v9.2

2023-05-02

Fixes

- Fix misleading error messages when sending with `fail_silently=True` and session creation fails (e.g., with Amazon SES backend and missing credentials). (Thanks to @technolingo.)

- **Postmark inbound:** Fix spurious AnymailInvalidAddress in `message.cc` when inbound message has no Cc recipients. (Thanks to @Ecno92.)

- **Postmark inbound:** Add workaround for malformed test data sent by Postmark's inbound webhook "Check" button. (See #304. Thanks to @Ecno92.)

Deprecations

- This will be the last Anymail release to support Python 3.6 (which reached end-of-life on 2021-12-23).

Other

- Test against Django 4.2 release.

v9.1

2023-03-11

Features

- **Amazon SES:** Add support for sending through the Amazon SES v2 API (not yet enabled by default; see Deprecations below; docs).

- **MailerSend:** Add support for this ESP (docs).

Deprecations

- **Amazon SES:** Anymail will be switching to the Amazon SES v2 API. Support for the original SES v1 API is now deprecated, and will be dropped in a future Anymail release (likely in late 2023). Many projects will not require code changes, but you may need to update your IAM permissions. See Migrating to the SES v2 API.

Other

- Test against Django 4.2 prerelease, Python 3.11 (with Django 4.2), and PyPy 3.9.

- Use black, isort and doc8 to format code, enforced via pre-commit. (Thanks to @tim-schilling.)

v9.0

2022-12-18

Breaking changes

- Require **Django 3.0 or later** and Python 3.6 or later. (For compatibility with Django 2.x or Python 3.5, stay on the Anymail *v8.6 LTS* extended support branch by setting your requirements to `django-anymail~=8.6`.)

Features

- **Sendinblue:** Support delayed sending using Anymail's `send_at` option. (Thanks to @dimitrisor for noting Sendinblue's public beta release of this capability.)

- Support customizing the requests.Session for requests-based backends, and document how this can be used to mount an adapter that simplifies automatic retry logic. (Thanks to @dgilmanAIDENTIFIED.)

- Confirm support for Django 4.1 and resolve deprecation warning regarding `django.utils.timezone.utc`. (Thanks to @tim-schilling.)

Fixes

- **Postmark:** Handle Postmark's SubscriptionChange events as Anymail unsubscribe, subscribe, or bounce tracking events, rather than "unknown". (Thanks to @puru02 for the fix.)

- **Sendinblue:** Work around recent (unannounced) Sendinblue API change that caused "Invalid headers" API error with non-string custom header values. Anymail now converts int and float header values to strings.

Other

- Test on Python 3.11 with Django development (Django 4.2) branch.

v8.6 LTS

2022-05-15

This is an extended support release. Anymail v8.6 will receive security updates and fixes for any breaking ESP API changes through at least May, 2023.

Fixes

- **Mailgun and SendGrid inbound:** Work around a Django limitation that drops attachments with certain filenames. The missing attachments are now simply omitted from the resulting inbound message. (In earlier releases, they would cause a MultiValueDictKeyError in Anymail's inbound webhook.)

  Anymail documentation now recommends using Mailgun's and SendGrid's "raw MIME" inbound options, which avoid the problem and preserve all attachments.

  See Mailgun inbound and SendGrid inbound for details. (Thanks to @erikdrums for reporting and helping investigate the problem.)

Other

- **Mailgun:** Document Mailgun's incorrect handling of display names containing both non-ASCII characters and punctuation. (Thanks to @Flexonze for spotting and reporting the issue, and to Mailgun's @b0d0nne11 for investigating.)

- **Mandrill:** Document Mandrill's incorrect handling of non-ASCII attachment filenames. (Thanks to @Thorbenl for reporting the issue and following up with MailChimp.)

- Documentation (for all releases) is now hosted at anymail.dev (moved from anymail.info).

Deprecations

- This will be the last Anymail release to support Django 2.0–2.2 and Python 3.5.

If these deprecations affect you and you cannot upgrade, set your requirements to `django-anymail~=8.6` (a "compatible release" specifier, equivalent to `>=8.6,==8.*`).

v8.5

2022-01-19

Fixes

- Allow `attach_alternative("content", "text/plain")` in place of setting an EmailMessage's `body`, and generally improve alternative part handling for consistency with Django's SMTP EmailBackend. (Thanks to @cjsoftuk for reporting the issue.)

- Remove "sending a message from *sender* to *recipient*" from `AnymailError` text, as this can unintentionally leak personal information into logs. [Note that `AnymailError` *does* still include any error description from your ESP, and this often contains email addresses and other content from the sent message. If this is a concern, you can adjust Django's logging config to limit collection from Anymail or implement custom PII filtering.] (Thanks to @coupa-anya for reporting the issue.)

Other

- **Postmark:** Document limitation on `track_opens` overriding Postmark's server-level setting. (See docs.)

- Expand testing documentation to cover tracking events and inbound handling, and to clarify test EmailBackend behavior.

- In Anymail's test EmailBackend, add `is_batch_send` boolean to `anymail_test_params` to help tests check whether a sent message would fall under Anymail's batch-send logic.

v8.4

2021-06-15

Features

- **Postal:** Add support for this self-hosted ESP (docs). Thanks to @tiltec for researching, implementing, testing and documenting Postal support.

v8.3

2021-05-19

Fixes

- **Amazon SES:** Support receiving and tracking mail in non-default (or multiple) AWS regions. Anymail now always confirms an SNS subscription in the region where the SNS topic exists, which may be different from the boto3 default. (Thanks to @mark-mishyn for reporting this.)

- **Postmark:** Fix two different errors when sending with a template but no merge data. (Thanks to @kareemcoding and @Tobeyforce for reporting them.)

- **Postmark:** Fix silent failure when sending with long metadata keys and some other errors Postmark detects at send time. Report invalid 'cc' and 'bcc' addresses detected at send time the same as 'to' recipients. (Thanks to @chrisgrande for reporting the problem.)

---

v8.2

2021-01-27

Features

- **Mailgun:** Add support for AMP for Email (via `message.attach_alternative(..., "text/x-amp-html")`).

Fixes

- **SparkPost:** Drop support for multiple `from_email` addresses. SparkPost has started issuing a cryptic "No sending domain specified" error for this case; with this fix, Anymail will now treat it as an unsupported feature.

Other

- **Mailgun:** Improve error messages for some common configuration issues.
- Test against Django 3.2 prerelease (including support for Python 3.9)
- Document how to send AMP for Email with Django, and note which ESPs support it. (See docs.)
- Move CI testing to GitHub Actions (and stop using Travis-CI).
- Internal: catch invalid recipient status earlier in ESP response parsing

v8.1

2020-10-09

Features

- **SparkPost:** Add option for event tracking webhooks to map SparkPost's "Initial Open" event to Anymail's normalized "opened" type. (By default, only SparkPost's "Open" is reported as Anymail "opened", and "Initial Open" maps to "unknown" to avoid duplicates. See docs. Thanks to @slinkymanbyday.)
- **SparkPost:** In event tracking webhooks, map AMP open and click events to the corresponding Anymail normalized event types. (Previously these were treated as as "unknown" events.)

v8.0

2020-09-11

Breaking changes

- Require **Django 2.0 or later** and Python 3. (For compatibility with Django 1.11 and Python 2.7, stay on the Anymail *v7.2 LTS* extended support branch by setting your requirements to `django-anymail~=7.2`.)

- **Mailjet:** Upgrade to Mailjet's newer v3.1 send API. Most Mailjet users will not be affected by this change, with two exceptions: (1) Mailjet's v3.1 API does not allow multiple reply-to addresses, and (2) if you are using Anymail's `esp_extra`, you will need to update it for compatibility with the new API. (See docs.)

- **SparkPost:** Call the SparkPost API directly, without using the (now unmaintained) Python SparkPost client library. The "sparkpost" package is no longer necessary and can be removed from your project requirements. Most SparkPost users will not be affected by this change, with two exceptions: (1) You must provide a `SPARKPOST_API_KEY` in your Anymail settings (Anymail does not check environment variables); and (2) if you use Anymail's `esp_extra` you will need to update it with SparkPost Transmissions API parameters.

  As part of this change esp_extra now allows use of several SparkPost features, such as A/B testing, that were unavailable through the Python SparkPost library. (See docs.)

- Remove Anymail internal code related to supporting Python 2 and older Django versions. This does not change the documented API, but may affect you if your code borrowed from Anymail's undocumented internals. (You should be able to switch to the Python standard library equivalents, as Anymail has done.)

- AnymailMessageMixin now correctly subclasses Django's EmailMessage. If you use it as part of your own custom EmailMessage-derived class, and you start getting errors about "consistent method resolution order," you probably need to change your class's inheritance. (For some helpful background, see this comment about mixin superclass ordering.)

Features

- **SparkPost:** Add support for subaccounts (new `"SPARKPOST_SUBACCOUNT"` Anymail setting), AMP for Email (via `message.attach_alternative(..., "text/x-amp-html")`), and A/B testing and other SparkPost sending features (via `esp_extra`). (See docs.)

v7.2.1

2020-08-05

Fixes

- **Inbound:** Fix a Python 2.7-only UnicodeEncodeError when attachments have non-ASCII filenames. (Thanks to @kika115 for reporting it.)

v7.2 LTS

2020-07-25

This is an extended support release. Anymail v7.2 will receive security updates and fixes for any breaking ESP API changes through at least July, 2021.

Fixes

- **Amazon SES:** Fix bcc, which wasn't working at all on non-template sends. (Thanks to @mwheels for reporting the issue.)

- **Mailjet:** Fix TypeError when sending to or from addresses with display names containing commas (introduced in Django 2.2.15, 3.0.9, and 3.1).

- **SendGrid:** Fix UnicodeError in inbound webhook, when receiving message using charsets other than utf-8, and *not* using SendGrid's "post raw" inbound parse option. Also update docs to recommend "post raw" with SendGrid inbound. (Thanks to @tcourtqtm for reporting the issue.)

Features

- Test against Django 3.1 release candidates

Deprecations

- This will be the last Anymail release to support Django 1.11 and Python 2.7.

If these deprecations affect you and you cannot upgrade, set your requirements to `django-anymail~=7.2` (a "compatible release" specifier, equivalent to `>=7.2,==7.*`).

v7.1

2020-04-13

Fixes

- **Postmark:** Fix API error when sending with template to single recipient. (Thanks to @jc-ee for finding and fixing the issue.)

- **SendGrid:** Allow non-batch template send to multiple recipients when `merge_global_data` is set without `merge_data`. (Broken in v6.0. Thanks to @vgrebenschikov for the bug report.)

Features

- Add `DEBUG_API_REQUESTS` setting to dump raw ESP API requests, which can assist in debugging or reporting problems to ESPs. (See docs. This setting has was quietly added in Anymail v4.3, and is now officially documented.)

- **Sendinblue:** Now supports file attachments on template sends, when using their new template language. (Sendinblue removed this API limitation on 2020-02-18; the change works with Anymail v7.0 and later. Thanks to @sebashwa for noting the API change and updating Anymail's docs.)

Other

- Test against released Django 3.0.

- **SendGrid:** Document unpredictable behavior in the SendGrid API that can cause text attachments to be sent with the wrong character set. (See docs under "Wrong character set on text attachments." Thanks to @nuschk and @swrobel for helping track down the issue and reporting it to SendGrid.)

- Docs: Fix a number of typos and some outdated information. (Thanks @alee and @Honza-m.)

v7.0

2019-09-07

Breaking changes

- **Sendinblue templates:** Support Sendinblue's new (ESP stored) Django templates and new API for template sending. This removes most of the odd limitations in the older (now-deprecated) SendinBlue template send API, but involves two breaking changes:

  - You *must* convert each old Sendinblue template to the new language as you upgrade to Anymail v7.0, or certain features may be silently ignored on template sends (notably `reply_to` and recipient display names).

  - Sendinblue's API no longer supports sending attachments when using templates. [Note: Sendinblue removed this API limitation on 2020-02-18.]

  Ordinary, non-template sending is not affected by these changes. See docs for more info and alternatives. (Thanks @Thorbenl.)

Features

- **Mailgun:** Support Mailgun's new (ESP stored) handlebars templates via `template_id`. See docs. (Thanks @anstosa.)

- **Sendinblue:** Support multiple `tags`. (Thanks @Thorbenl.)

Other

- **Mailgun:** Disable Anymail's workaround for a Requests/urllib3 issue with non-ASCII attachment filenames when a newer version of urllib3–which fixes the problem–is installed. (Workaround was added in Anymail v4.3; fix appears in urllib3 v1.25.)

v6.1

2019-07-07

Features

- **Mailgun:** Add new `MAILGUN_WEBHOOK_SIGNING_KEY` setting for verifying tracking and inbound webhook calls. Mailgun's webhook signing key can become different from your `MAILGUN_API_KEY` if you have ever rotated either key. See docs. (More in #153. Thanks to @dominik-lekse for reporting the problem and Mailgun's @mbk-ok for identifying the cause.)

v6.0.1

2019-05-19

Fixes

- Support using `AnymailMessage` with django-mailer and similar packages that pickle messages. (See #147. Thanks to @ewingrj for identifying the problem.)

- Fix UnicodeEncodeError error while reporting invalid email address on Python 2.7. (See #148. Thanks to @fdemmer for reporting the problem.)

v6.0

2019-02-23

Breaking changes

- **Postmark:** Anymail's `message.anymail_status.recipients[email]` no longer lowercases the recipient's email address. For consistency with other ESPs, it now uses the recipient email with whatever case was used in the sent message. If your code is doing something like `message.anymail_status.recipients[email.lower()]`, you should remove the `.lower()`

- **SendGrid:** In batch sends, Anymail's SendGrid backend now assigns a separate `message_id` for each "to" recipient, rather than sharing a single id for all recipients. This improves accuracy of tracking and statistics (and matches the behavior of many other ESPs).

  If your code uses batch sending (merge_data with multiple to-addresses) and checks `message.anymail_status.message_id` after sending, that value will now be a *set* of ids. You can obtain each recipient's individual message_id with `message.anymail_status.recipients[to_email].message_id`. See docs.

Features

- Add new `merge_metadata` option for providing per-recipient metadata in batch sends. Available for all supported ESPs *except* Amazon SES and SendinBlue. See docs. (Thanks @janneThoft for the idea and SendGrid implementation.)

- **Mailjet:** Remove limitation on using `cc` or `bcc` together with `merge_data`.

Fixes

- **Mailgun:** Better error message for invalid sender domains (that caused a cryptic "Mailgun API response 200: OK Mailgun Magnificent API" error in earlier releases).

- **Postmark:** Don't error if a message is sent with only Cc and/or Bcc recipients (but no To addresses). Also, `message.anymail_status.recipients[email]` now includes send status for Cc and Bcc recipients. (Thanks to [@ailionx](#) for reporting the error.)

- **SendGrid:** With legacy templates, stop (ab)using "sections" for merge_global_data. This avoids potential conflicts with a template's own use of SendGrid section tags.

v5.0

2018-11-07

Breaking changes

- **Mailgun:** Anymail's status tracking webhooks now report Mailgun "temporary failure" events as Anymail's normalized "deferred" `event_type`. (Previously they were reported as "bounced", lumping them in with permanent failures.) The new behavior is consistent with how Anymail handles other ESP's tracking notifications. In the unlikely case your code depended on "temporary failure" showing up as "bounced" you will need to update it. (Thanks [@costela](#).)

Features

- **Postmark:** Allow either template alias (string) or numeric template id for Anymail's `template_id` when sending with Postmark templates.

Fixes

- **Mailgun:** Improve error reporting when an inbound route is accidentally pointed at Anymail's tracking webhook url or vice versa.

v4.3

2018-10-11

Features

- Treat MIME attachments that have a *Content-ID* but no explicit *Content-Disposition* header as inline, matching the behavior of many email clients. For maximum compatibility, you should always set both (or use Anymail's inline helper functions). (Thanks [@costela](#).)

Fixes

- **Mailgun:** Raise `AnymailUnsupportedFeature` error when attempting to send an attachment without a filename (or inline attachment without a *Content-ID*), because Mailgun silently drops these attachments from the sent message. (See docs. Thanks @costela for identifying this undocumented Mailgun API limitation.)

- **Mailgun:** Fix problem where attachments with non-ASCII filenames would be lost. (Works around Requests/urllib3 issue encoding multipart/form-data filenames in a way that isn't RFC 7578 compliant. Thanks to @decibyte for catching the problem.)

Other

- Add (undocumented) DEBUG_API_REQUESTS Anymail setting. When enabled, prints raw API request and response during send. Currently implemented only for Requests-based backends (all but Amazon SES and SparkPost). Because this can expose API keys and other sensitive info in log files, it should not be used in production.

v4.2

2018-09-07

Features

- **Postmark:** Support per-recipient template `merge_data` and batch sending. (Batch sending can be used with or without a template. See docs.)

Fixes

- **Postmark:** When using `template_id`, ignore empty subject and body. (Postmark issues an error if Django's default empty strings are used with template sends.)

v4.1

2018-08-27

Features

- **SendGrid:** Support both new "dynamic" and original "legacy" transactional templates. (See docs.)

- **SendGrid:** Allow merging `esp_extra["personalizations"]` dict into other message-derived personalizations. (See docs.)

v4.0

2018-08-19

Breaking changes

- Drop support for Django versions older than Django 1.11. (For compatibility back to Django 1.8, stay on the Anymail *v3.0* extended support branch.)

- **SendGrid:** Remove the legacy SendGrid *v2* EmailBackend. (Anymail's default since v0.8 has been SendGrid's newer v3 API.) If your settings.py `EMAIL_BACKEND` still references "sendgrid_v2," you must upgrade to v3.

Features

- **Mailgun:** Add support for new Mailgun webhooks. (Mailgun's original "legacy webhook" format is also still supported. See docs.)

- **Mailgun:** Document how to use new European region. (This works in earlier Anymail versions, too.)

- **Postmark:** Add support for Anymail's normalized `metadata` in sending and webhooks.

Fixes

- Avoid problems with Gmail blocking messages that have inline attachments, when sent from a machine whose local hostname ends in *.com*. Change Anymail's `attach_inline_image()` default *Content-ID* domain to the literal text "inline" (rather than Python's default of the local hostname), to work around a limitation of some ESP APIs that don't permit distinct content ID and attachment filenames (Mailgun, Mailjet, Mandrill and SparkPost). See #112 for more details.

- **Amazon SES:** Work around an Amazon SES bug that can corrupt non-ASCII message bodies if you are using SES's open or click tracking. (See #115 for more details. Thanks to @varche1 for isolating the specific conditions that trigger the bug.)

Other

- Maintain changelog in the repository itself (rather than in GitHub release notes).

- Test against released versions of Python 3.7 and Django 2.1.

v3.0

2018-05-30

This is an extended support release. Anymail v3.x will receive security updates and fixes for any breaking ESP API changes through at least April, 2019.

Breaking changes

- Drop support for Python 3.3 (see #99).
- **SendGrid:** Fix a problem where Anymail's status tracking webhooks didn't always receive the same `event.message_id` as the sent `message.anymail_status.message_id`, due to unpredictable behavior by SendGrid's API. Anymail now generates a UUID for each sent message and attaches it as a SendGrid custom arg named anymail_id. For most users, this change should be transparent. But it could be a breaking change if you are relying on a specific message_id format, or relying on message_id matching the *Message-ID* mail header or SendGrid's "smtp-id" event field. (More details in the docs; also see #108.) Thanks to @joshkersey for the report and the fix.

Features

- Support Django 2.1 prerelease.

Fixes

- **Mailjet:** Fix tracking webhooks to work correctly when Mailjet "group events" option is disabled (see #106).

Deprecations

- This will be the last Anymail release to support Django 1.8, 1.9, and 1.10 (see #110).
- This will be the last Anymail release to support the legacy SendGrid v2 EmailBackend (see #111). (SendGrid's newer v3 API has been the default since Anymail v0.8.)

If these deprecations affect you and you cannot upgrade, set your requirements to `django-anymail~=3.0` (a "compatible release" specifier, equivalent to `>=3.0,==3.*`).

v2.2

2018-04-16

Fixes

- Fix a breaking change accidentally introduced in v2.1: The boto3 package is no longer required if you aren't using Amazon SES.

v2.1

2018-04-11

NOTE: v2.1 accidentally introduced a **breaking change:** enabling Anymail webhooks with `include('anymail.urls')` causes an error if boto3 is not installed, even if you aren't using Amazon SES. This is fixed in v2.2.

Features

- **Amazon SES:** Add support for this ESP (docs).

- **SparkPost:** Add SPARKPOST_API_URL setting to support SparkPost EU and SparkPost Enterprise (docs).

- **Postmark:** Update for Postmark "modular webhooks." This should not impact client code. (Also, older versions of Anymail will still work correctly with Postmark's webhook changes.)

Fixes

- **Inbound:** Fix several issues with inbound messages, particularly around non-ASCII headers and body content. Add workarounds for some limitations in older Python email packages.

Other

- Use tox to manage Anymail test environments (see contributor docs).

Deprecations

- This will be the last Anymail release to support Python 3.3. See #99 for more information.

v2.0

2018-03-08

Breaking changes

- Drop support for deprecated WEBHOOK_AUTHORIZATION setting. If you are using webhooks and still have this Anymail setting, you must rename it to WEBHOOK_SECRET. See the *v1.4* release notes.

- Handle *Reply-To, From,* and *To* in EmailMessage `extra_headers` the same as Django's SMTP EmailBackend if supported by your ESP, otherwise raise an unsupported feature error. Fixes the SparkPost backend to be consistent with other backends if both `headers["Reply-To"]` and `reply_to` are set on the same message. If you are setting a message's `headers["From"]` or `headers["To"]` (neither is common), the new behavior is likely a breaking change. See docs and #91.

- Treat EmailMessage `extra_headers` keys as case-*insensitive* in all backends, for consistency with each other (and email specs). If you are specifying duplicate headers whose names differ only in case, this may be a breaking change. See docs.

Features

- **SendinBlue:** Add support for this ESP ([docs](#)). Thanks to [@RignonNoel](#) for the implementation.
- Add EmailMessage `envelope_sender` attribute, which can adjust the message's *Return-Path* if supported by your ESP ([docs](#)).
- Add universal wheel to PyPI releases for faster installation.

Other

- Update setup.py metadata, clean up implementation. (Hadn't really been touched since original Djrill version.)
- Prep for Python 3.7.

v1.4

2018-02-08

Security

- Fix a low severity security issue affecting Anymail v0.2–v1.3: rename setting WEBHOOK_AUTHORIZATION to WEBHOOK_SECRET to prevent inclusion in Django error reporting. ([CVE-2018-1000089](#))

More information

Django error reporting includes the value of your Anymail WEBHOOK_AUTHORIZATION setting. In a properly-configured deployment, this should not be cause for concern. But if you have somehow exposed your Django error reports (e.g., by mis-deploying with DEBUG=True or by sending error reports through insecure channels), anyone who gains access to those reports could discover your webhook shared secret. An attacker could use this to post fabricated or malicious Anymail tracking/inbound events to your app, if you are using those Anymail features.

The fix renames Anymail's webhook shared secret setting so that Django's error reporting mechanism will [sanitize](#) it.

If you are using Anymail's event tracking and/or inbound webhooks, you should upgrade to this release and change "WEBHOOK_AUTHORIZATION" to "WEBHOOK_SECRET" in the ANYMAIL section of your settings.py. You may also want to [rotate the shared secret](#) value, particularly if you have ever exposed your Django error reports to untrusted individuals.

If you are only using Anymail's EmailBackends for sending email and have not set up Anymail's webhooks, this issue does not affect you.

The old WEBHOOK_AUTHORIZATION setting is still allowed in this release, but will issue a system-check warning when running most Django management commands. It will be removed completely in a near-future release, as a breaking change.

Thanks to Charlie DeTar ([@yourcelf](#)) for responsibly reporting this security issue through private channels.

v1.3

2018-02-02

Security

- v1.3 includes the v1.2.1 security fix released at the same time. Please review the *v1.2.1* release notes, below, if you are using Anymail's tracking webhooks.

Features

- **Inbound handling:** Add normalized inbound message event, signal, and webhooks for all supported ESPs. (See new Receiving mail docs.) This hasn't been through much real-world testing yet; bug reports and feedback are very welcome.

- **API network timeouts:** For Requests-based backends (all but SparkPost), use a default timeout of 30 seconds for all ESP API calls, to avoid stalling forever on a bad connection. Add a REQUESTS_TIMEOUT Anymail setting to override. (See #80.)

- **Test backend improvements:** Generate unique tracking `message_id` when using the test backend; add console backend for use in development. (See #85.)

v1.2.1

2018-02-02

Security

- Fix a **moderate severity** security issue affecting Anymail v0.2–v1.2: prevent timing attack on WEB-HOOK_AUTHORIZATION secret. (CVE-2018-6596)

More information

If you are using Anymail's tracking webhooks, you should upgrade to this release, and you may want to rotate to a new WEBHOOK_AUTHORIZATION shared secret (see docs). You should definitely change your webhook auth if your logs indicate attempted exploit.

(If you are only sending email using an Anymail EmailBackend, and have not set up Anymail's event tracking webhooks, this issue does not affect you.)

Anymail's webhook validation was vulnerable to a timing attack. A remote attacker could use this to obtain your WEBHOOK_AUTHORIZATION shared secret, potentially allowing them to post fabricated or malicious email tracking events to your app.

There have not been any reports of attempted exploit. (The vulnerability was discovered through code review.) Attempts would be visible in HTTP logs as a very large number of 400 responses on Anymail's webhook urls (by default "/anymail/*esp_name*/tracking/"), and in Python error monitoring as a very large number of AnymailWebhookValidationFailure exceptions.

v1.2

2017-11-02

Features

- **Postmark:** Support new click webhook in normalized tracking events

v1.1

2017-10-28

Fixes

- **Mailgun:** Support metadata in opened/clicked/unsubscribed tracking webhooks, and fix potential problems if metadata keys collided with Mailgun event parameter names. (See #76, #77)

Other

- Rework Anymail's ParsedEmail class and rename to EmailAddress to align it with similar functionality in the Python 3.6 email package, in preparation for future inbound support. ParsedEmail was not documented for use outside Anymail's internals (so this change does not bump the semver major version), but if you were using it in an undocumented way you will need to update your code.

v1.0

2017-09-18

It's official: Anymail is no longer "pre-1.0." The API has been stable for many months, and there's no reason not to use Anymail in production.

Breaking changes

- There are no *new* breaking changes in the 1.0 release, but a breaking change introduced several months ago in v0.8 is now strictly enforced. If you still have an EMAIL_BACKEND setting that looks like "anymail.backends.*espname*.*EspName*Backend", you'll need to change it to just "anymail.backends.*espname*.EmailBackend". (Earlier versions had issued a DeprecationWarning. See the *v0.8* release notes.)

Features

- Clean up and document Anymail's Test EmailBackend

- Add notes on handling transient ESP errors and improving batch send performance

- **SendGrid:** handle Python 2 `long` integers in metadata and extra headers

v1.0.rc0

2017-09-09

Breaking changes

- **All backends:** The old *EspName*Backend names that were deprecated in v0.8 have been removed. Attempting to use the old names will now fail, rather than issue a DeprecationWarning. See the *v0.8* release notes.

Features

- Anymail's Test EmailBackend is now documented (and cleaned up)

v0.11.1

2017-07-24

Fixes

- **Mailjet:** Correct settings docs.

v0.11

2017-07-13

Features

- **Mailjet:** Add support for this ESP. Thanks to @Lekensteyn and @calvin. (Docs)

- In webhook handlers, AnymailTrackingEvent.metadata now defaults to {}, and .tags defaults to [], if the ESP does not supply these fields with the event. (See #67.)

v0.10

2017-05-22

Features

- **Mailgun, SparkPost:** Support multiple from addresses, as a comma-separated `from_email` string. (*Not* a list of strings, like the recipient fields.) RFC-5322 allows multiple from email addresses, and these two ESPs support it. Though as a practical matter, multiple from emails are either ignored or treated as a spam signal by receiving mail handlers. (See #60.)

Fixes

- Fix crash sending forwarded email messages as attachments. (See #59.)
- **Mailgun:** Fix webhook crash on bounces from some receiving mail handlers. (See #62.)
- Improve recipient-parsing error messages and consistency with Django's SMTP backend. In particular, Django (and now Anymail) allows multiple, comma-separated email addresses in a single recipient string.

v0.9

2017-04-04

Breaking changes

- **Mandrill, Postmark:** Normalize soft-bounce webhook events to event_type 'bounced' (rather than 'deferred').

Features

- Officially support released Django 1.11, including under Python 3.6.

v0.8

2017-02-02

Breaking changes

- **All backends:** Rename all Anymail backends to just `EmailBackend`, matching Django's naming convention. E.g., you should update: `EMAIL_BACKEND = "anymail.backends.mailgun.MailgunBackend" # old` to: `EMAIL_BACKEND = "anymail.backends.mailgun.EmailBackend" # new`

The old names still work, but will issue a DeprecationWarning and will be removed in some future release (Apologies for this change; the old naming was a holdover from Djrill, and I wanted to establish consistency with other Django EmailBackends before Anymail 1.0. See #49.)

- **SendGrid:** Update SendGrid backend to their newer Web API v3. This should be a transparent change for most projects. Exceptions: if you use SendGrid username/password auth, Anymail's `esp_extra` with "x-smtpapi", or multiple Reply-To addresses, please review the porting notes.

  The SendGrid v2 EmailBackend remains available if you prefer it, but is no longer the default.

Features

- Test on Django 1.11 prerelease, including under Python 3.6.

Fixes

- **Mandrill:** Fix bug in webhook signature validation when using basic auth via the WEB-HOOK_AUTHORIZATION setting. (If you were using the MANDRILL_WEBHOOK_URL setting to work around this problem, you should be able to remove it. See #48.)

v0.7

2016-12-30

Breaking changes

- Fix a long-standing bug validating email addresses. If an address has a display name containing a comma or parentheses, RFC-5322 *requires* double-quotes around the display name (`'"Widgets, Inc." <widgets@example.com>'`). Anymail now raises a new `AnymailInvalidAddress` error for misquoted display names and other malformed addresses. (Previously, it silently truncated the address, leading to obscure exceptions or unexpected behavior. If you were unintentionally relying on that buggy behavior, this may be a breaking change. See #44.) In general, it's safest to always use double-quotes around all display names.

Features

- **Postmark:** Support Postmark's new message delivery event in Anymail normalized tracking webhook. (Update your Postmark config to enable the new event. See docs.)

- Handle virtually all uses of Django lazy translation strings as EmailMessage properties. (In earlier releases, these could sometimes lead to obscure exceptions or unexpected behavior with some ESPs. See #34.)

- **Mandrill:** Simplify and document two-phase process for setting up Mandrill webhooks (docs).

v0.6.1

2016-11-01

Fixes

- **Mailgun, Mandrill:** Support older Python 2.7.x versions in webhook validation (#39; thanks @sebbacon).
- **Postmark:** Handle older-style 'Reply-To' in EmailMessage `headers` (#41).

v0.6

2016-10-25

Breaking changes

- **SendGrid:** Fix missing html or text template body when using `template_id` with an empty Django EmailMessage body. In the (extremely-unlikely) case you were relying on the earlier quirky behavior to *not* send your saved html or text template, you may want to verify that your SendGrid templates have matching html and text. (docs – also see #32.)

Features

- **Postmark:** Add support for `track_clicks` (docs)
- Initialize AnymailMessage.anymail_status to empty status, rather than None; clarify docs around `anymail_status` availability (docs)

v0.5

2016-08-22

Features

- **Mailgun:** Add MAILGUN_SENDER_DOMAIN setting. (docs)

v0.4.2

2016-06-24

Fixes

- **SparkPost:** Fix API error "Both content object and template_id are specified" when using `template_id` (#24).

v0.4.1

2016-06-23

Features

- **SparkPost:** Add support for this ESP. (docs)
- Test with Django 1.10 beta
- Requests-based backends (all but SparkPost) now raise AnymailRequestsAPIError for any requests.RequestException, for consistency and proper fail_silently behavior. (The exception will also be a subclass of the original RequestException, so no changes are required to existing code looking for specific requests failures.)

v0.4

(not released)

v0.3.1

2016-05-18

Fixes

- **SendGrid:** Fix API error that `to` is required when using `merge_data` (see #14; thanks @lewistaylor).

v0.3

2016-05-13

Features

- Add support for ESP stored templates and batch sending/merge. Exact capabilities vary widely by ESP – be sure to read the notes for your ESP. (docs)
- Add pre_send and post_send signals. docs
- **Mandrill:** add support for esp_extra; deprecate Mandrill-specific message attributes left over from Djrill. See migrating from Djrill.

v0.2

2016-04-30

Breaking changes

- **Mailgun:** eliminate automatic JSON encoding of complex metadata values like lists and dicts. (Was based on misreading of Mailgun docs; behavior now matches metadata handling for all other ESPs.)

- **Mandrill:** remove obsolete wehook views and signal inherited from Djrill. See Djrill migration notes if you were relying on that code.

Features

- Add support for ESP event-tracking webhooks, including normalized AnymailTrackingEvent. (docs)

- Allow get_connection kwargs overrides of most settings for individual backend instances. Can be useful for, e.g., working with multiple SendGrid subusers. (docs)

- **SendGrid:** Add SENDGRID_GENERATE_MESSAGE_ID setting to control workarounds for ensuring unique tracking ID on SendGrid messages/events (default enabled). docs

- **SendGrid:** improve handling of 'filters' in esp_extra, making it easier to mix custom SendGrid app filter settings with Anymail normalized message options.

Other

- Drop pre-Django 1.8 test code. (Wasn't being used, as Anymail requires Django 1.8+.)

- **Mandrill:** note limited support in docs (because integration tests no longer available).

v0.1

2016-03-14

Although this is an early release, it provides functional Django EmailBackends and passes integration tests with all supported ESPs (Mailgun, Mandrill, Postmark, SendGrid).

It has (obviously) not yet undergone extensive real-world testing, and you are encouraged to monitor it carefully if you choose to use it in production. Please report bugs and problems here in GitHub.

Features

- **Postmark:** Add support for this ESP.

- **SendGrid:** Add support for username/password auth.

- Simplified install: no need to name the ESP (`pip install django-anymail` – not `...` `django-anymail[mailgun]`)

0.1.dev2

2016-03-12

Features

- **SendGrid:** Add support for this ESP.
- Add attach_inline_image_file helper

Fixes

- Change inline-attachment handling to look for `Content-Disposition: inline`, and to preserve filenames where supported by the ESP.

0.1.dev1

2016-03-10

Features

- **Mailgun, Mandrill:** initial supported ESPs.
- Initial docs

1.10 Anymail documentation privacy

Anymail's documentation site at anymail.dev is hosted by **Read the Docs**. Please see the Read the Docs Privacy Policy for more about what information Read the Docs collects and how they use it.

Separately, Anymail's maintainers have configured **Google Analytics** third-party tracking on this documentation site. We (Anymail's maintainers) use this analytics data to better understand how these docs are used, for the purpose of improving the content. Google Analytics helps us answer questions like:

- what docs pages are most and least viewed
- what terms people search for in the documentation
- what paths readers (in general) tend to take through the docs

But we're *not* able to identify any particular person or track individual behavior. Anymail's maintainers *do not* collect or have access to any personally identifiable (or even *potentially* personally identifiable) information about visitors to this documentation site.

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Anymail's maintainers have *not* connected our Google Analytics implementation to any Google Advertising Services. (Incidentally, we're not involved with the ads you may see here. Those come from—and support—Read the Docs under their ethical ads model.)

The developer audience for Anymail's docs is likely already familiar with site analytics, tracking cookies, and related concepts. To learn more about how Google Analytics uses **cookies** and how to **opt out** of analytics tracking, see

the "Information for Visitors of Sites and Apps Using Google Analytics" section of Google's Safeguarding your data document.

Questions about privacy and information practices related to this Anymail documentation site can be emailed to *privacy<at>anymail<dot>dev*. (This is not an appropriate contact for questions about *using* Anymail; see *Help* if you need assistance with your code.)

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